DEMOGRAPHY OF RUSSIA

From the Past to the Present

Tatiana Karabchuk,
Kazuhiro Kumo and
Ekaterina Selezneva

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Introduction

Kazuhiro Kumo, Tatiana Karabchuk and Ekaterina Selezneva

1.1 Aim and Scope

This book describes the unique Russian experience of the dynamics and factors determining demographic trends. To do so we: (1) collected numerous earlier studies and explored data in the Russian State Archive of the Economy, which became publicly available after the collapse of the Soviet Union and is still largely unexplored; (2) used available microdata from household surveys conducted in Russia since 1994; and (3) analyzed official statistics offered by the Russian Federal State Statistics Service.

Discussion on the uniqueness of Russian demographic trends started several decades ago. Between the collapse of the Soviet Union at the

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end of 1991 and 2010, Russia was characterized by a natural population decline—the number of deaths exceeded the number of births—also known as the Russian demographic crisis. International net in-migration from the former Soviet Union republics was observed contemporaneously; this partially mitigated Russia's depopulation. Since 2009 the population seems to have stabilized, but the trend of a natural population decline is unlikely to change. In fact, a similar trend has been observed since the 2000s in other advanced countries, such as Italy and Japan.

What are the factors lying behind this phenomenon? Is this trend a result of the USSR's collapse, or does it have a longer history? What were the dynamics of the numbers of births and deaths in the Soviet Union? What are the current demographic trends? How far does the Russian case differ from other countries' experiences? What solutions has the Russian government undertaken to mitigate the demographic problems? This volume attempts to answer these questions.

By the beginning of the twentieth century, decades later than Western countries, Russia experienced a reduction in mortality, especially infant mortality. The latter was the main factor in the subsequent population growth, which was as fast as that observed in Africa in the mid-twentieth century. The October Revolution of 1917 and the civil war that followed led to a huge decrease in the Russian population. Moreover, agricultural collectivization, Stalin's Purges, and the human loss caused by World War II, all induced tremendous fluctuations in population dynamics. By 1946 the total population of the territory occupied by the modern Russian Federation was less than that at the time of the October Revolution.

Russia did experience a small baby boom following World War II, but a decline in both fertility and mortality followed up until the early 1960s, also seen in other countries. Russian demographic trends then diverged from their Western European counterparts as a slowdown in infant mortality decrease and and an increase in adult male mortality were clearly observed. Life expectancy at birth either remained at or fell below the level of the 1960s for almost 30 years, significantly lagging behind advanced countries. Except for the periods 1963–1966 and 1986–1989, when male life expectancy at birth was above 64.0, this figure had been static since 1960; not until 2011, after the collapse of the Soviet Union, did it rise above 64.0 for the first time. On the other hand, the fertility rate

was almost always higher than in many Western European countries, due to multiple social support policies implemented by the socialist regime.

After the collapse of the Soviet Union, a rapid increase in mortality and a decrease in fertility resulted in the natural decline that began at the start of the 1990s. Fertility dropped quicker than in Western European countries. The last time that Italy's total fertility rate (TFR) was higher than required to maintain a stable population (population replacement level) was 1976 (TFR=2.11); in Russia this occurred in 1989 (TFR=2.01). In Italy, the natural decline in population began at least 15 years after the TFR fell below the population replacement level. The gap in life expectancy between Russia and other advanced countries, which was evident even in the late 1960s, thus became larger.

In the second half of the 2000s, with social stabilization and economic growth, Russian demographic indicators improved. However, the impact of historical trends is still significant and the future demographic situation remains unpredictable. Multiple disturbing factors make even short-term forecasts virtually impossible; however, medium- and long-term qualitative and quantitative predictions suggest a further, gradual natural decline in the Russian population, due to its age structure.

1.2 Approach

This book integrates approaches from several disciplines (demography, economics, and sociology) to provide a comprehensive overview of the demographic development through the eras of the late Russian Empire, the Soviet Union, and the modern Russian Federation.

The book focuses on the following issues:

(1) development of the population statistics system in the Russian Empire, Soviet Union, and Russian Federation, and the construction of long-term population statistics;
(2) population policies in Soviet and modern Russia concerning fertility and the family;
(3) marriage and divorce patterns as a proximate factor of demographic trends;

(4) decline in fertility and the role of uncertainty;
(5) probability of and factors for having second and third children;
(6) trends in mortality and its causes;
(7) changes in demographic distribution as a result of interregional migration.

The authors use a range of official publications and well-known data sets, as well as sources that are rarely consulted: (a) *Dvizhenie naseleniya v Evropeiskoi Rossii (Population Dynamics in European Russia)* edited by the Statistics Bureau of the Russian Ministry of Internal Affairs (1862–1918; official publication); (b) USSR Council of Ministers' declassified references (national archive); (c) nationally representative household survey data from the Russian Longitudinal Monitoring Survey – Higher School of Economics (RLMS-HSE); (d) oblast-level in- and out-migration matrix (available from the Russian Federal State Statistics Service).

1.3 Contents

The second chapter (***Population Statistics of Russia: The Russian Empire, the Soviet Union and the Russian Federation***) aims to: (1) offer an overview of the statistical systems and methods of maintaining population statistics in the Russian Empire, Soviet Union, and Russian Federation; (2) provide population statistics for territorial units comparable to those of the Russian Federation based on primary sources; and (3) take a general view of long-term population dynamics over the last century. The heterogeneity of territorial units across a country is rarely taken into account by population research covering both the imperial period and that following the October Revolution. Moreover, only a few studies use primary data to describe population dynamics, a gap this chapter bridges.

The chapter starts with the institutional background to collecting population statistics in the Russian Empire, and then examines the population statistics systems after the Soviet government was established. Thus, the population estimates rely on archival data, reported by territorial units comparable to those of the Russian Federation. This makes the chapter a

fundamental source of historical information about the development of population processes in Russia.

Further, the chapter highlights the role of structural factors and demographic waves, resulting from the tragic history of the twentieth century, in shaping the natural population decline—often referred to as depopulation. These factors are often neglected in the general public literature, which indirectly reinforces the following erroneous public beliefs: first, the collapse of the Soviet Union was the main reason for the worsening demographic situation; and second, the current depopulation is mainly due to low fertility.

It seems that official Russian government documents to combat depopulation have often overlooked these factors (see Chap. 3). Indeed, international experts often criticize the optimistic and ambitious demographic targets of the Russian government, which interprets the population growth since 2009, caused in part by structural factors, as evidence of the effectiveness of government policies.

The aim of **the third chapter** (***Population Policies in Soviet and Modern Russia***) is to provide a comprehensive overview of how population/fertility policies have changed between the October Revolution of 1917 and the present time; during this period, the reproductive function of women remained high on the political agenda. The chapter starts with the first legislation implemented immediately after the Revolution and during the 1920s. It then illistrates, chronologically, the development of the new Soviet concept of family through the 1930s to the 1950s, and the "masculinity crisis" of the 1960s—the period, according to Vishnevsky (2009), when latent depopulation started.

The chapter leads the reader through the pro-natal policies of the 1980s and later measures to combat the evident depopulation in the Russian Federation following the collapse of the Soviet Union. The concluding remarks are presented alongside a summary of achievements in the implementation of the first two stages of the *Concept for the Demographic Policy of the Russian Federation through 2025*. The authors pay close attention to such measures of demographic policy as: marriage and divorce regulations; family support through benefits and taxes; reconciliation between the family and work spheres (maternity/paternity leave, workplace flexibility); fertility promotion; childbearing and childcare support; and rare reproductive health protection initiatives.

The fourth chapter of the book (***Marriage and Divorce, 1994–2014***) addresses the dynamics of marriage and divorce rates as well as the determinants of getting married and divorced in the period 1994–2014 in Russia.

The chapter consists of descriptive statistics, a theoretical section and an empirical section. First is a discussion of current statistical trends, then an overview of the theoretical considerations and a review of existing empirical studies of contemporary marriage and divorce in Russia. Then ongoing Russian demographic changes within world trends for more flexibility in marriage are discussed. The authors group the factors into economic, social, physical, and psychological groups and estimate their impact on the probability of getting married or divorced within a year. The regression modeling is based on the panel representative household data RLMS-HSE for 1994–2014.

In many European countries females became more career oriented and independent, which made them less tolerant of unsuccessful marriages. Is this global trend relevant to Russian society? How many free Russian women are having children without husbands? Are children a real obstacle to divorce? All these questions are tackled in this chapter.

The fifth chapter (*Fertility and Uncertainty in Modern Russia*) investigates the probability of having a first child. The chapter covers a period of nearly two decades after the socio-economic transition began, focusing on women of fertile age (15–49) living with a partner, in or outside wedlock.

First, the authors study the most important individual characteristics, of both women and their partners, associated with a higher probability of having a first child. Transitional features during the period covered enabled an investigation into the role of uncertainty and insecurity, global and personal, in deciding to have a child. In fact, ex-Soviet citizens were ignorant of unemployment and non-standard employment contracts, while the proportion of temporary and part-time jobs has been increasing since the mid-1990s. In the second part of the chapter, the authors therefore expand on the set of explanatory variables, and investigate the role of objective and subjective insecurity in the labor market, including type of contract and unemployment concerns. Unlike previous studies that predicted women's unemployment was likely to induce a higher probability

of having children in post-socialist countries, the authors find that higher (employment) security is associated with having a child.

The sixth chapter (***Factors Affecting the Birth of Second and Third Children***) reveals the predictors for the birth of the second and third children in Russia. The chapter discusses how women's successful adaptation to new family and working conditions after the first child influences further fertility behavior and illustrates how the experience of returning to the labor market further affects fertility planning. This necessary but difficult return is often quoted as an explanation of their low fertility. However, high wages and stable employment increase the chances of having further children. There is strong evidence that the decision to have more than one child depends on the strength of women's position in the market, especially if the woman is the main breadwinner, a common situation in the late 2000s.

A negative experience after the first child—such as long-term unemployment, job instability, downward mobility or wage decrease—pushes women to prioritize their job over having further children. The probability of having a second and further children grows when the female is secure, either because of her husband's income or her own prospects in the labor market (e.g. the chance of finding a job easily after another childbirth). The authors test the empirical models on the basis of the nationally representative RLMS-HSE panel data for 2000–2009. Additionally, the results of qualitative interviews (30) with mothers living in different Russian regions were used to underpin the results from the quantitative tests in the chapter.

The complex phenomenon of the trend in Russian mortality cannot be explained by socio-economic factors alone. In the **seventh chapter** (***Changes in Mortality: Meta-Analysis***), the analysis is complemented by a literature review in the fields of both social and natural/medical sciences. The chapter begins with descriptive statistics illustrating the trends in both age-specific mortality rates by cause of death and life expectancy at birth. Statistical distortions and gaps in records are said to have an impact on data reliability, so there is discussion on whether the trends reflect reality.

While levels of medical care and environmental pollution are obviously important, they cannot completely explain either the rise in

mortality rates throughout the Soviet era or their fluctuation after the collapse of the Soviet Union. Hence, the chapter continues with a study of medical literature that significantly enriches the list of contributory factors. Previous research strongly suggests that alcohol consumption has been key in slowing down the growth in life expectancy at birth and the subsequent increase in mortality rates since the 1990s. The reason for high alcohol consumption is rooted not only in Russian culture but also in the impact of the turmoil in transitioning from a planned to a market economy for individual incomes and labor market conditions. Such economic stagnation must have affected alcohol consumption, resulting in a further increase in adult male mortality.

The eighth chapter (***Interregional Migration: Analysis of Origin-to-Destination Matrix***) examines regional economic conditions and their impact on interregional population redistribution patterns. The chapter starts with an overview of migration patterns in Russia immediately after the collapse of the Soviet Union, describing regional economic trends to familiarize the reader with the socio-economic context. Specifically, the authors address the unique migration flow towards the extreme north regions caused by Soviet-era policies, including: large construction projects, or the construction of resource-mining and military bases; the concentration of population in the European part of Russia, especially around Moscow; and the vitality of the resource-producing areas. Despite the difficulty in gathering reliable data, previous research has already indicated that such factors as regional economic conditions, market scale, and distance have played a part in emerging new migration patterns compared to experiences during the Soviet era.

The chapter continues with an econometric analysis of interregional migration patterns for 1990–2013 using data from the Russian Federal State Statistics Service (Rosstat). Unlike Andrienko and Guriev (2004), who relied on gross migration data from 1992 to 1999, the authors extend this period to include the 13 years after 2000, when Russia began to witness explosive economic growth due to soaring oil prices, and uses data from the Soviet era, 1990 and 1991. The authors also introduce into the analysis a list of previously ignored factors, such as the prominence of the resource-producing areas, and show their major impact on population redistribution patterns.

The book concludes with a short discussion on such issues as international migration and the population forecasts of the Russian Federal State Statistics Service.

1.4 Brief Description

The system for population registration and statistical data preparation was well developed in both the Russian Empire and Soviet Union. No other advanced country has a centralized statistical system, instead they have individual ministries collecting and publishing statistics; therefore, it is unique that the Russian/Soviet Statistics Bureau of the Ministry of Internal Affairs collects all kinds of statistics. After the collapse of the Soviet Union, population data for the periods of the Great Purge, the famine in the Volga River basin, and during World War I became available, offering the possibility for qualitative, as well as quantitative, research. The huge loss of life during the October Revolution, collectivization, the Great Purge, and World War II all had an impact on demographic waves and population structure in modern Russia, as evidenced by the archival materials used in this book.

The Soviet Union's fertility rate was relatively low compared with countries of a similar per capita income level, but it still allowed some population growth. After the collapse of the Soviet Union, however, it declined rapidly, for which social turmoil and the dramatic drop in all income levels are widely considered to be factors. Often overlooked, but also worth considering, are the long-term trends in demographic characteristics and the possible effects of Russian demographics catching up with stylized demographic transitions; the lowest fertility rate observed in Russia may only be a catch-up with the trends in advanced economies.

Alongside the rapid decline in fertility, a rapid rise in mortality was observed during the early years of modern Russia. These seemingly new phenomena, however, are rooted in the 1960s, when the improvement in life expectancy at birth stopped. After the collapse of the Soviet Union, those factors affecting mortality expanded due to deteriorating medical treatment, long-lasting effects from environmental pollution, and limitations in the cognitive capability of the government's statisti-

cal organization. Among the possible explanations for the upward trend in mortality, the effect of alcohol consumption seems plausible, behind which may lie increased social tension or social unrest. Further sociological surveys are needed to shed light on the connection between the two phenomena, however.

Interregional migration was facilitated mainly by central government during the Soviet era. After the collapse of the Soviet Union, though, the direction of modern migration flows was determined by the labor demand from resource mining, high incomes, and other socio-economic factors. The size of international labor migration also increased, especially in the second half of the 2000s, but most migrants stay in Russia for less than one year; the downward trend in total population is thus only slightly mitigated.

The Russian population declined naturally from 1992 to 2013 (more than 20 years) and, according to demographic experts, it will shrink by a further one-third by 2050 compared to 2008 (Vishnevsky and Bobylev 2009). However, these projections depend heavily on underlying assumptions of fertility, mortality, and other conditions. Currently, the number of deaths and births are the results of long-term demographic trends; therefore, the main trend of a declining population cannot be drastically changed in the short term. The challenges of Russian demographics will continue into the foreseeable future.

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2

Population Statistics of Russia: The Russian Empire, the Soviet Union and the Russian Federation

Kazuhiro Kumo

2.1 Introduction

This chapter offers an overview of the statistical systems and methods of compiling population statistics used in imperial Russia, the Soviet Union, and modern Russia. It compiles population statistics from primary sources for the territory covered by modern Russia after the collapse of the Soviet Union and it identifies long-term population dynamics from the mid-nineteenth century, covering the last days of imperial Russia up to modern Russia.

Most population studies that have looked at both imperial and Soviet Russia have focused their research on one of the periods, covering the other by reviewing other research (Lorimer 1946; Heer 1968; Simchera

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2006; Vishnevskii 2006). In most cases, the imperial era is treated as a single period, while the period after the revolution is treated as another (Vodarskii 1973; Kabuzan 1963; Rashin 1956; Zhiromskaia 2000). There are good reasons why previous research has dealt separately with imperial Russia and the post-revolution Soviet Union given that they used different systems for gathering and compiling statistics, and that they covered different territory. However this chapter is does not suffer from such limitations.

Previous research shows that this situation has clearly been a major obstacle to tracing the economic development of Russia through its entire history. It may actually be impossible to examine the modern development of Russia without looking at the imperial era.[1] After all, the imperial era paved the way for the industrialization that occurred in the Soviet Union, which suggests that any investigation into the long-term dynamics of Russia needs to begin with the compilation of statistics from primary sources.

This chapter represents the first attempt of its kind to compile population statistics on the territory covered by modern Russia that date back as far as the nineteenth century, using as many primary sources from imperial Russia as could be collected. A study like this is only possible now that Russia has emerged from the collapse of the Soviet Union. The authors take into account the differences in territory covered by imperial, Soviet, and post-Soviet Russia as they make their own estimates. They also survey population statistics for the territory covered by the present Russian Federation, which were extremely difficult to gather.

This chapter is organized as follows. After carrying out a literature survey that shows the gap between previous research covering the imperial Russian period and that which covers the Soviet and post-Soviet eras, and the paucity of previous research based on original materials, the authors then turn their attention to how the system for gathering and compiling population statistics in the Russian Empire was established.

Although the first, and last, population census of imperial Russia was conducted in 1897, Japan had carried out its first such census more than 20 years later, and population surveys of various kinds had been carried out before that. While the precision of such surveys is not generally thought to be high (MVD RI 1858; Rashin 1956),[2] they are at least useful for gauging population dynamics.

This chapter then looks at population statistics from post-revolution Soviet Russia and modern Russia. It would be impossible to list here all

the problems involved in compiling statistics from the Soviet era, but chief among them are: that the country was a battlefield during World War I; the civil war and incursions by foreign powers that followed the Russian revolution of 1917 (1918–1922); the frequent changes in administrative regions and the numerous famines between 1920 and 1930; the Great Purge of the Stalin era (1936–1940) and the suppression of statistics that accompanied it; and World War II and its aftermath, during which invasion forces temporarily captured the whole of the Ukraine, advanced as far as the suburbs of Moscow, and surrounded Leningrad (now St. Petersburg). The numerous problems with Soviet statistics are well documented, and these problems also affect the most basic statistics of all, population statistics.

The first challenge was to link population statistics from imperial Russia with those from Soviet Russia, and then adjust these statistics to make them correspond to the territory covered by modern Russia. Because the borders of administrative divisions in imperial Russia were not the same as those during or after the Soviet era, the authors needed to start by solving this problem. In particular, they needed to take account of differences in the volume of statistics compiled during the imperial era for European Russia, Siberia and the Russia's far east, and the Caucasus. With these problems in mind, this chapter set about compiling basic population statistics with the primary aims of: (1) relying on primary historical materials to gather as many statistics as possible for a 100-year period; and (2) attempt to harmonize them with the territory covered by modern Russia to the greatest extent possible. The purpose was to gather the most basic information required to track the development of Russia throughout its history.

2.2 Previous Research on Long-Term Russian Population Dynamics and Statistics

2.2.1 Population Research on the Imperial and Soviet Eras

Surprisingly little research has been conducted on the compilation of long-term population statistics in Russia. Obviously, a major factor behind this paucity of research is the fact that the Russian Federation

only became an independent nation, with its current territory, a quarter century ago. Even so, it is striking that many studies, even those supposedly attempting to explore the imperial and Soviet eras in an integrated fashion, have ignored the fact that the territory covered by Russia has changed, and that so few studies have been based on primary historical materials.

This section summaries the previous studies. Studies of population dynamics in the imperial era used various population surveys and official statistics. Notable among them are those of Koeppen (1847), Den (1902), and Troimitskii (1861), which were based on household censuses (*reviziia*), discussed later in this chapter. Although population surveys were conducted several times, each of these studies relied on data from only one survey, so they do not provide any clues to population dynamics.[3] In addition, they only cover the population and social structure for males basically.

In the Soviet period a lot of research on population history has been conducted. Studies by Rashin (1956), Kabuzan (1963, 1971), and Vodarskii (1973) provide broad coverage of the imperial era. The study by Vodarskii (1973) covers 400 years from the sixteenth century to the early twentieth century, but basically represents a compilation of secondary sources and previous research. Kabuzan (1963, 1971) bases his research on primary sources, such as household censuses, and explores the dynamics and social organization of the male population from the beginning of the eighteenth century to the middle of the nineteenth century. One useful thing he does do is put together tables of data from all the household censuses. However, most worthy of note is the study by Rashin (1956), in which he uses data that was published by the Ministry of the Interior's Central Statistical Committee (described later) almost without a break from the mid-nineteenth century to compile population statistics on the period from then up until the end of the imperial era. Of all the research on population in Russia, Rashin's 1956 study is frequently referred to for its description of the imperial era.[4]

In studies of population dynamics in the Soviet era, it is not surprising at all that the scope of inquiry of the majority of such studies is not the Russian Soviet Socialist Republic, but the Soviet Union as a whole

(Podiachikh 1961; Gozulov and Grigor'iants 1969, etc.). However, during the Soviet era it was extremely difficult to conduct research on the most vexing periods of Soviet population history, such as the chaos just after the revolution, the Great Purge, and World War II, because of the lack of opportunities to examine historical materials.

Among historical research conducted in Europe and North America, there is, as might be expected, a huge volume of literature on specific regions in Russia. If our discussion is limited to research covering the late imperial era to the period after the socialist revolution, the studies of Lorimer (1946) and Heer (1968) need to be mentioned. Lorimer's (1946) work is a painstaking attempt to trace economic development and population dynamics in the Soviet Union as a whole from the end of the imperial era to World War II. Because the study was not made with the aim of compiling statistics, it does not take adequate account of territorial adjustments or extract enough data from primary sources. Heer (1968) used secondhand references from various previous studies to compile dynamic statistics on the period from 1861 to 1965. Coale et al. (1979) only compare dynamic statistics in 1897, 1926, and 1959, years in which a population census was carried out, and base their study on the use of primary statistics. However, they do not attempt to differentiate between the territory covered by the imperial and Soviet eras. Clem's (1986) is a general discussion of all the censuses conducted between 1897 and 1979, and provides a useful list of almost all official publications relating to population censuses.

For the current chapter, Leasure and Lewis's (1966) study proved extremely useful. They focused on the population censuses carried out in 1897 and 1926 and estimated population statistics for each region, using the Soviet administrative divisions as of 1961, with a map showing the administrative divisions in 1897 and one of the same scale for 1961 and stating what percentage of each province in the imperial era is included in each of the 1961 administrative divisions.[5,6] Although the use of this method casts doubts over the accuracy of the study's findings, it is worth mentioning that the difference between the areas of each region estimated using the method and the official areas as of 1961 are within 2 % of the areas of each region.[7]

2.3 Recent Research Trends

A lot of new research has been conducted since the end of the Soviet era and the birth of the new Russia. This section mentions some studies that, like this chapter, have attempted to grasp the long-term dynamics. Since 2000, voluminous works on long-term dynamics have been published. Simchera (2006) provides a comprehensive treatment not just of the demographics, but of the Russian economy as a whole over the last 100 years. However, while Simchera's book features numerous tables of statistics, the views expressed and the data itself are basically just a review of previous research. In addition, its descriptions of its data sources are extremely vague, which casts significant doubt over their verifiability and makes it extremely difficult to assess or critique it. Vishnevskii (2006) uses dynamic statistics to focus on population changes over a 100-year period. For the imperial era he uses statistics for the whole of European imperial Russia, while for the Soviet era and beyond he adjusts statistics to match the territory covered by modern Russia—an inconsistency which needs to be mentioned. Like Simchera (2006), Vishnevskii (2006) relies entirely on previous research for statistics on the World War II period, and for the imperial era he uses data from Rashin (1956) to compare demographic shifts in Russia with those in various other countries. Although these studies do not constitute a systematic survey of population statistics, the insights they afford are valuable. However, the fact that neither study makes use of primary historical materials does raise questions.

Goskomstat Rossii (1998) is a publication that focuses on re-compiling population statistics from the Russian Federation State Statistics Committee (now the Federal State Statistics Service) for the 100-year period from 1897 to 1997 to match the territory covered by modern Russia. Some of its content may therefore overlap with this chapter. However, a close examination of the details reveals a lack of explanation for matters such as the methods of calculation employed and the assumptions upon which the calculations were based.[8]

Because it has become much easier to access archived historical materials since the collapse of the Soviet Union, a lot of research has been being carried out on population dynamics for hitherto inaccessible periods such as the Great Purge and World War II. With focused studies like

this, careful attention is paid to making adjustments for differences in territory and investigating the basis for calculations. Studies of this type worth mentioning include that of Zhiromskaia (2000), which deals with early Soviet Russia, and that of Poliakov and Zhiromskaia (2000, 2001), which is based on sources such as documents in the national archives. The former limits itself to examining the results of the 1926, 1937, and 1939 population censuses.[9] Because of limitations on the historical materials used and the years to which they relate, much of the research it contains covers the whole of the Soviet Union. The latter was not conducted for the purposes of obtaining a macroscopic view of population dynamics. Rather, it constitutes a collection of essays on specific topics that could not be studied during the Soviet era because the information was not publicly available. The topics covered include the results of the secret census conducted during the Stalin era, the make-up of the labour camp prisoner population, and population dynamics during World War II. Andreev et al. (1993) studied the Soviet Union as a whole from the period before the war right through to the collapse of the Soviet Union. Their estimates relating to population dynamics in the 1920s, which are based on archive materials, are of particular interest. In a later study (Andreev et al. 1998) archived historical materials were used to unearth dynamic statistics for the periods 1927–1939 and 1946–1949, when hardly any official statistics were published, and presented their estimates using multiple time series. They attempted to make territorial adjustments and gave relatively detailed information on their data sources, so their figures are verifiable to an extent. Population dynamics during the 1920s and 1930s were discussed by Rosefielde (1983), Wheatcroft (1984, 1990), Anderson and Silver (1985), and many others. However, Andreev et al. (1998) is the most important of all studies in exploring the periods of collectivization, the Great Purge, and the lead-up and aftermath of World War II.[10]

This section has mentioned a limited number of studies on the demographics of imperial and Soviet Russia, and there are numerous other studies from Europe and North America on Russian demographics. However, access to original historical materials from the Soviet era is a major problem, and this has probably hindered the compilation of long-term data. In addition, the modern Russian Federation has only existed as an independent nation since the collapse of the Soviet Union at the end of 1991, so it is not

surprising at all that no systematic study has been made of its population. Nevertheless, as this section has seen, previous research has failed to make territorial adjustments, even though this would not have been impossible even in the Soviet era, and has not sought to base itself on primary historical materials from the imperial era up to the end of the Soviet era.

2.4 Russian Population Statistics

2.4.1 Household Censuses (*Reviziia*) in Imperial Russia

Population surveys have a long history in Russia. It is widely known that household censuses, called *reviziia* (revisions), of people liable for taxes began with an order (*ukaz*) issued by Tsar Peter I on November 26, 1718 (Herman 1982; MVD RI 1858).[11] *Reviziia* were conducted on ten occasions, once every 10–15 years, until 1857–1858. However, it is also well documented that they were beset with a wide range of problems, such that their accuracy is strongly in doubt (MVD RI 1858; Rashin 1956). Many of these problems lie in the fact that any census that targets people liable for taxes will obviously be prone to inaccuracy.

The main objectives of these population surveys were to identify people who should pay taxes and to secure personnel for the army. The backdrop to this was that household-based taxation had been replaced with personal taxation (a poll tax), which made it necessary to identify the whole population (Herman 1982; MVD RI 1858, 1863).[12] In the beginning, the surveys were conducted under the leadership of the tax authorities (*kammer-kollegiia*). Anyone identified during the surveys would immediately assume an obligation to pay taxes, which meant that huge numbers of people tried to avoid being registered. Such behaviour was subject to penalties, such as penal servitude and fines, but this just encouraged people who had avoided registration to continue to do so. In 1721 an imperial edict was issued whereby people who had hitherto avoided registration would not be subject to punishment if they now agreed to register, and at the same time the poll tax was reduced. After that, the censuses began to reflect actual populations more accurately (MVD RI 1858, 1863).

Only men were liable for taxes, and the surveys only covered individual farmers, merchants, and traders designated as taxpayers. However, there was a plan to include women, who were not liable for taxes, in the statistics. And the household censuses included non-taxpayers such as members of the clergy, stagecoach drivers, and retired soldiers as well. However, a shortage of personnel to conduct the surveys, financial limitations, and the vastness of the land made it difficult to make the surveys comprehensive. No surveys of Poland, Finland, or the Caucasus were made, and there are hardly any records for members of the aristocracy (*dvoriane*) or government officials. Women were not recorded in the first, second, or sixth censuses. Only with the ninth household census of 1850–1851 were non-taxpayers such as aristocrats and government officials finally included (MVD RI 1858, 1863; Valentei 1985).

2.5 Compilation of Population Statistics by the Central Statistical Committee of the Ministry of the Interior

Imperial Russia began putting together a system for gathering and compiling statistics in the first half of the nineteenth century. In 1834 a Statistical Section (*statisticheskoe otdelenie*) was established within the Council of the Ministry of the Interior (*sovet ministerstva vnutrennikh del),*[13] and surveys and statistics at city or provincial (province = *gubernniia*) levels began to be published. In 1853 the Statistical Section at the Council of the Ministry of the Interior was merged with the tax office's Interim Lustration Committee to form the Statistical Committee of the Ministry of the Interior (*statisticheskii komitet ministerstva vnutrennikh del*). Then on March 4, 1858 the Statistical Committee of the Ministry of the Interior was reorganized as the Central Statistical Committee (*tsentralnii statisticheskii komitet*) to build a systematic foundation for the compilation of statistics.[14] Because the gathering of information by the statistical committees established for each province was inadequate, the Central Statistical Committee established two divisions, the Statistical Division and the Regional Division (*zemskii otdel*). From then on a system centering on the Central Statistical Committee was put in place for

the compilation of statistical data at the national level (MVD RI 1858, 1863; Goskomstat Rossii 1996).[15]

The Central Statistical Committee of the Ministry of the Interior not only used data from the household censuses (*reviziia*) described in the previous section to compile its population statistics. It also had to refer to parish registers, to compile statistics on births and deaths, and documents from police surveys, which were essential for obtaining figures for followers of each religion.

The parish registers (*metricheskie knigi*) were based on documents recording confessions[16] (*ispovedanie*) to the Russian Orthodox Church. These documents include records of each year's births, deaths, and marriages. Once a year, on February 1, following orders from the religious affairs division, the provincial governor would collect these figures and include them in the population schedule that was attached to a report sent to the tsar (MVD RI 1858, 1863).[17]

The number of births, deaths, and marriages among followers of other religions or sects, such as Roman Catholics, Protestants, Jews, and Muslims, were supposed to be reported to the local authorities by the heads of each parish (MVD RI 1863).[18] However, this does not allow one to grasp the numbers and demographics of worshippers who were not tied to any specific church, or separatists from the Orthodox Church (the Old Believers).[19] The ethnic and religious diversity in Imperial Russia, and the presence of a distinctive Russian separatist sect had a major impact on the accuracy of population statistics, one that was impossible to ignore. Therefore, to supplement this kind of information administrative-police surveys (*administrativno-politseiskii perepis*) were also referred to. These surveys were conducted by the police or administrative offices in each district using the list of dwellings from the household census.[20] This allowed newborn babies, recently deceased persons, and people who had moved in or out of the area to be added to or deleted from the census records. Because these surveys were not based on religion they contained figures that could not be obtained from the parish registers.

Population statistics were compiled by adjusting the figures for births, deaths, and movements from the last household census, conducted in 1858, obtained from the various records described above (MVD RI 1858, 1863; Goskomstat Rossii 1996). Following the issuance of an imperial

order in 1865,[21] the religious affairs division, as mentioned earlier, had provincial statistical committees draw up and submit lists of residents compiled from parish registers. This meant that while statistics on population dynamics were recorded from 1867 onwards, they lacked details such as age, which soon led to a realization that there was a need to obtain population data through surveys (MVD RI 1890). However, it was not until 1897 that the first national population census since the household censuses ended in 1858 was carried out. This was imperial Russia's first and last population census.[22]

2.6 Statistical Organization and Population Statistics in Soviet and Post-Soviet Russia

After the 1917 revolution the economic system was rapidly reorganized, and the system for compiling statistics was also reformed in various ways. Although the Supreme Council of People's Economy (*VSNKh: Visshii sovet narodnogo khoziaistva*), which was formed just after the revolution in December 1917, had a statistics and population survey department, in July 1918 the Central Statistical Board (*TsSU: Tsentralnoe statisticheskoe upravlenie*) was established with the aim of centralizing the compilation of statistics.[23] This was followed by the establishment of regional branches in September of the same year.[24] In addition, companies and organizations were required to submit to the Statistical Board information it deemed necessary and comply with orders it issued. Right from the beginning, however, the priority was not to ensure independence in the process of compiling statistics, but to facilitate economic planning, and the Statistical Board was therefore put under the control of what was then the People's Council (Popov 1988; Yamaguchi 2003). Then, in 1923, just after the civil war, the Central Statistical Board was attached to the Soviet Union Council of People's Commissars.[25] Despite this arrangement, the post-revolution civil war and incursions by foreign powers meant that in the early 1920s it was impossible to gather business or census statistics covering all Soviet territory.[26]

The watershed year for the system for compiling statistics was 1930. In January of that year the Central Statistical Board became a department

of the State Planning Commission (*Gosplan*) (Goskomstat Rossii 1996). The department's role was clearly based on the premise that the system for compiling statistics should contribute to economic planning. In 1931 the name of the Central Statistical Board was changed to the Central Administration of Economic Accounting of Gosplan (*TsUNKhU Gosplana: Tsentralnoe upravlenie narodnokhoziaistvennogo ucheta*), and from 1941 to 1948 was known as the Central Statistical Board of Gosplan (*TsSU Gosplana*) (Goskomstat Rossii 1996). Yamaguchi (2003) pointed out, probably correctly, that these reforms were carried out because during the rapid industrialization that occurred before World War II, particularly during the five-year plan that started in 1928, the existence of an independent statistical organization would have resulted in the emergence of a gap between the producers and users of statistics, and that this would have hindered the successful implementation of the economic plans.

Later, in 1948, the Board was separated from Gosplan and became the Central Statistical Board under the Council of Ministries of the USSR, and then in 1978 achieved independence as the Central Statistical Board. The Board has continued to conduct activities ever since and, following several name changes, is, at the time of publishing this volume in 2016, known as the Russian Federal State Statistics Service. The methods used for collecting and producing statistics are basically the same in the modern Russian Federation as they were in the Soviet era and characterized by centralization. Statistics were not produced by individual ministries and agencies. Rather, each ministry and agency provided statistical reports on corporations and organizations to the Central Statistical Board, which then compiled statistics from these reports (Goskomstat Rossii 1996). However, because the country's transition to a market economy following the collapse of the Soviet Union resulted in profound changes in the forms of corporations and the structure of industry, the old method of putting together production and other statistics, which centered on reports produced by individual business units, has clearly become less effective (Yamaguchi 2003). This has led to the introduction of the Unified State Directory of Enterprises and Organizations (*EGRPO: Edinii gosudarstvennii registr predpriiatii i organizatsii*) (Goskomstat Rossii 2001; Yamaguchi 2003) as part of a series of systematic reforms ti enhance statistical precision.

In 1920, less than three years after the revolution, the Soviet Union carried out its first population census to provide basic data for the implementation of the State Plan for the Electrification of Russia (*GOELRO: Gosudarstvennii plan elektrifikatsii Rossii*), which was a precursor to the five-year plans. However, with the post-revolution civil war still raging, the census had to be limited to the European parts of the Soviet Union. It was the 1926 census that became the first to cover the whole of the Soviet Union. In 1937 the first population census after the launch of the five-year plans was conducted. However, because the results showed the impact of the 1930s collectivization of agriculture and the major famines that followed, and the Great Purge, which began around 1935, they were kept on file at the Central Statistical Board and were not published. The 1939 census represents the last truly usable census from before World War II.[27] The first population census after World War II was conducted in 1959. Censuses were then carried out in 1970, 1979, and 1989,[28] and the first population census of modern Russia after the collapse of the Soviet Union at the end of 1991 took place in 2002.

Russian civil law contains provisions concerning the recording of population dynamics in each calendar year, such that citizens are required, and have been since the Soviet era, to notify the Division for Questions of Registration of Vital Statistics—known as *ZAGS* (*Otdel zapisi aktov grazhdanskogo sostoianiia*), an organization that handles the registration of births, deaths, and marriages—of any such changes.[29] The system remained unchanged after the collapse of the Soviet Union, with families obliged to report births within one month, and deaths within three days to *ZAGS*.[30] Residency registration (*propiska*), including the registration of interregional migration, had be done at local branch offices of the Ministry of Internal Affairs.[31] Using the data gathered from this system, population statistics have been produced and published annually since 1956 in *The National Economy of the RSFSR* (*Narodnoe Khoziaistvo RSFSR)*, a collection of official statistics.[32] Of course, it was impossible for residency registration alone to fully capture interregional migration and accurately record regional populations. It also should be mentioned that in the Russian Soviet Socialist Republic during the Soviet era, 0.75 % of the population was revised as being unregistered during the period between the 1959 population census and the 1970 census 11 years later (Kumo 2003).

2.7 Processing of Russian Population Statistics

2.7.1 Population Statistics from Imperial Russia

As mentioned earlier, no household censuses, which were designed to calculate the population of people liable for taxes, were conducted after 1858. This meant that the task of producing statistics shifted away from agencies under the jurisdiction of the tax authorities, which, it is fair to say, laid a foundation for improving statistical accuracy. In 1858 and 1863 the Central Statistical Committee of the Ministry of the Interior experimented with producing various statistics based on data, such as that from the household census. Then, from 1866, it began to compile and publish statistics, initially intermittently but later on a continuous basis.

The statistics from imperial Russia contained in this chapter were extracted from the series of official statistics published between 1866 and 1918.

Using data presented in sections such as "Population Dynamics in European Russia in the Year ****" (*Dvizhenie naseleniia v evropeiskoi Rossii ** goda*) from Central Statistical Committee publications entitled the *Statistical Bulletin of the Russian Empire* (*Statisticheskii vremmennik Rossiiskoi Imperii)*, published intermittently between 1866 and 1897, and *Statistics of the Russian Empire* (*Statistika Rossiiskoi Imperii)*, published between 1887 and 1916, it is possible to obtain figures for the period to 1910 for the numbers of births, deaths, infant deaths, and rates of these per 1,000 people for 50 provinces in imperial European Russia.[33] Total population (by province) is presented in some years and not in others. Statistics on births and deaths exist, but they cannot be directly relied upon to paint a picture of dynamics after the middle of the nineteenth century. This is because the imperial notion of European Russia differs greatly from the territory covered by modern European Russia or the Soviet era European Russia.

From 1904, statistical yearbooks entitled *Yearbook of Russia* (*Ezhegodnik Rossii)* (published between 1904 and 1910) and *Statistical Yearbook of*

Russia (*Statisticheskii ezhegodnik Rossii)* (published between 1912 and 1918) were published at regular intervals. Because the dynamic statistics on the population of European Russia they presented were probably preliminary, for the period 1904–1910 the authors used the numbers of births, deaths, and infant deaths in sources such as the "Population Dynamics … in the Year ****" section of *Statistics of the Russian Empire*, which was published a little after the years to which the data it contains relates. However, the *Yearbook of Russia* and the *Statistical Yearbook of Russia* are useful in that they record the populations of regions (provinces) and the districts within them not just for European Russia, but for the whole of imperial Russia. However, the question of how accurate these statistics are obviously arises. When the total population of European Russia according the 1897 population census is compared with the total populations extrapolated from the sections on population dynamics in the 1893, 1895, 1896, and 1897 editions of *Statistics of the Russian Empire*, it is possible to confirm that the disparity is less than 1.5 %.[34] Since the authors judged the statistics were reliable, this chapter uses the following procedure for processing statistics from the imperial era.[35]

(1) For imperial European Russia for the period 1904–1916, all the figures for population and numbers of births, deaths, and infant deaths that could be obtained for all the years that had data were sorted by region (*gubernias, oblasts, and krais*).
(2) Because the national borders of the Russian Federation after the collapse of the Soviet Union do not match the borders of the *gubernias*, *oblasts*, and so on of imperial Russia, this chapter used the proportion of the land area of each of the administrative divisions of imperial Russia that was included in the territory of the Russian Soviet Federated Socialist Republic (RSFSR), (i.e., the territory of the present Russian Federation, as produced by Leasure and Lewis (1966)), to calculate populations and numbers of births, deaths, and so on for each region. The author then added up the totals to estimate figures for the European part of the present Russian Federation.[36]

(3) The problem was how to handle the Caucasus, Siberia, and the Russia's far east, because no dynamic statistics were published on these regions during the imperial era. The same is true for the portion of imperial Russian Finland that is included in the present Russian Federation, though the total population of this region could be obtained for 1885 and 1904–1916. Looking at the regional distribution of the total population of imperial Russia using the method described in (2), one can see that the total population of the Caucasus, Siberia, the Russia's far east, and the portion of Finland described above as a percentage of the total population of the territory of the present Russian Federation was no more than 21.3 % in any of the years between 1885 and 1916 for which figures could be obtained, and about four-fifths of the total population of these regions resided in European Russia.[37] Given this situation and to grasp the overall trend the figures for the crude birth, death, and infant mortality rates obtained in (2) for the European part of the present Russian Federation were applied to these territories outside European part of the Russian Empire. The crude birth, death, and infant mortality rates for European Russia were applied to the 1916 population of the Caucasus, Siberia, and the Russia's far east (plus part of Finland), calculated using the method described in (2), and were used to go back and calculate populations for previous years.
(4) For the years 1901 to 1903, using the method described in (3) above, this chapter used the crude birth rate, crude death rate, and infant mortality rate for European Russia to go back and extrapolate populations for these years.
(5) Modern Kaliningrad is not included for the imperial era.[38]
(6) For reference purposes, the dynamics were also calculated for the years 1891 to 1900 for the regions of imperial European Russia that lie within the European part of the present Russian Federation. The rates of natural increase obtained were then applied to the entire territory, and a time series for total population was produced. This chapter also used crude birth and death rates for imperial European Russia (not the European portion of the present Russian Federation) to go back and extrapolate populations for the years 1867–1890.[39]

2.8 Population Statistics in Soviet and Post-Soviet Russia and Related Problems

The biggest problem with studying population statistics on post-revolution Soviet Russia is that it is not always easy to get hold of reliable data. Although population censuses were carried out in the early years of the Soviet Union, in 1926, 1937, and 1939, and the first census after World War II was conducted in 1959, it is often impossible to obtain information from official statistics to fill in the gaps between these years. This is especially difficult for the period from 1917 to 1921, when revolution, civil war, and incursions by foreign powers turned the country into a battleground. The same goes for 1941–1945, when the nation was in the grip of World War II. It is also extremely difficult to obtain population statistics on the 1930s, a period marked by the confusion of the collectivization of agriculture and the ensuing major famines, and the Great Purge. In short, hardly any population statistics were published from the end of the 1920s to the beginning of the 1950s. The only pre-1950 figures that could provide a reliable benchmark were often not official statistics, but historical materials from the statistical authorities that can be viewed by examining official archive materials.

Because of this situation, for this chapter the idea of obtaining primary historical materials to make independent estimates of Soviet-era population statistics was abandoned, and the focus became to present as many figures as could be obtained to serve as a basis for such statistics. This chapter used officially published statistics and historical materials from the archives (Russian State Economic Archive, *RGAE*).[40] From 1956 onwards, statistics were published without a break and it was relatively easy to obtain data dating back to 1950.

Next, changes in administrative divisions and their territories, which occurred after the revolution and around the time the Soviet Union was established in the 1930s and because of World War II, had to be accounted for. Even if the changes that resulted from the war are ignored, a major systemic shift occurred with the establishment of the republics that were to make up the Soviet Union, created for each of the nation's

different ethnic groups. Although it would be impractical to list all the changes, a few points need to be kept in mind. Most of the changes in the 1920s and 1930s were made in accordance with the Soviet Union's famed "national delimitation" policy of redrawing the boundaries of imperial Russian administrative divisions on ethnic lines, which led to the establishment of republics named after the predominant ethnic group they contained:[41]

- From the establishment of the RSFSR in 1917 until 1936, modern Kazakhstan and Kyrgyzstan were included in the RSFSR as the Kazakh Autonomous Republic and the Kyrgyz Autonomous Oblast (later the Kyrgyz Autonomous Republic).
- Modern Uzbekistan, Tajikistan, Turkmenistan, and part of Kazakhstan were included in the RSFSR as the Turkestan Autonomous Republic from the revolution until 1924.
- Until 1924, the Orenburg Oblast of modern Russia was included in the Kazakh Autonomous Republic described above and, therefore, is included in the RSFSR.
- In 1924 the Vitsebsk Oblast, now part of Belarus, was transferred from the RSFSR to the Byelorussian Republic. The same thing happened to the Gomel Oblast, also now part of Belarus, between 1924 and 1926.

The above factors need to be taken into account when using statistics from the 1920s and 1930s to derive population statistics for the territory covered by the modern Russian Federation. Care also needs to be taken with factors such as: (1) the treatment of the area around the Karelian Isthmus and the Republic of Karelia of the modern Russian Federation, which were acquired from Finland following the Winter War of 1939–1940 and the Continuation War (1941–1944); (2) the incorporation into the present Ukraine (where it remains) of the Crimean Autonomous Republic (later the Crimean Oblast), which was under the control of the RSFSR until 1954; and (3) the inclusion of the Tyva autonomous republic into the RSFSR, which occurred after 1944.

2.9 Results

Figures 2.1, 2.2, 2.3, 2.4 and Table 2.1 show the results of compiling population statistics on imperial Russia, Soviet Russia, and modern Russia, using the methods described in the previous section. A short summary of the results now follows.

As can be seen from the total population figures in Fig. 2.1, the impact of the Russian Revolution and the turmoil that followed it, and that of World War II, was enormous. Following the revolution in 1917, it took until around 1930 for the population to recover to its pre-revolution level. It was not until 1956 that the population surpassed its level on January 1, 1941, just before the outbreak of the war with Germany. If one compares the population of the territory covered by the present Russian Federation at the end of the imperial era with that in 1946, one sees that nearly 30 years of population growth had been wiped out. Although this

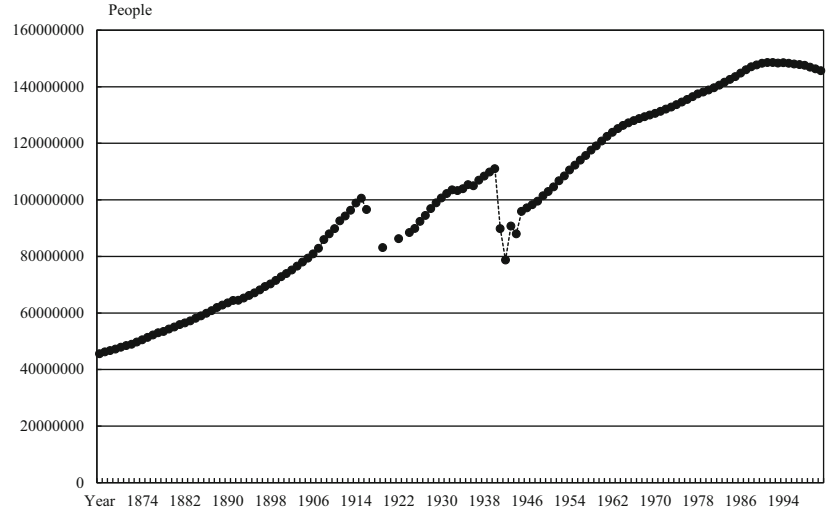

Fig. 2.1 Total population (*Notes*: The figures for the period during World War II are just rough estimates, because data was lacking for numerous regions. In addition, the figures for 1928–1938 (extrapolated from the population in 1927) and 1945–1949 (extrapolated from the population in 1950) were calculated using the difference between the number of births and deaths, and therefore do not reflect changes caused by social factors such as migration)

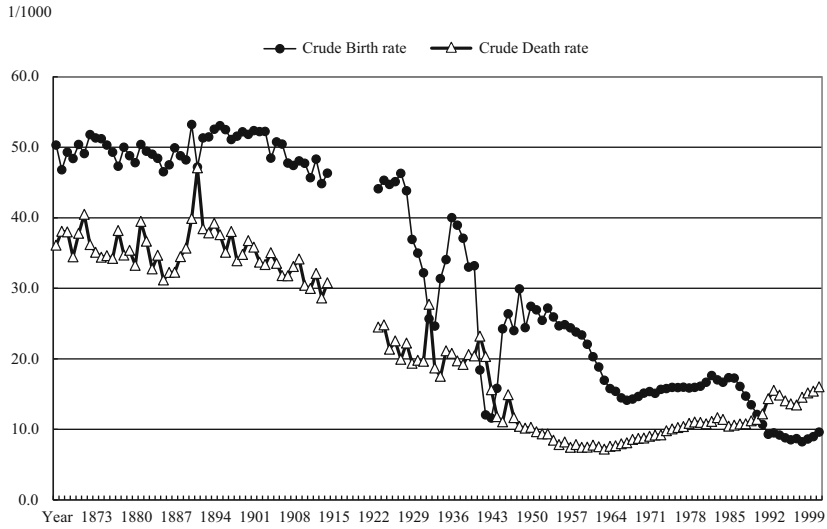

Fig. 2.2 Crude birth rate and crude death rate (*Notes*: Rates for 1867–1890 are for the European part of imperial Russia; rates for 1891–1917 are for the territory of European Russia within the present Russian Federation; rates for 1918–2002 are for the entire territory of the present Russian Federation. Rates for the 1927–1938 and 1942 periods are just rough estimates, because data was lacking for an extremely large number of regions. Figures for 1924–1925 were only calculated for European Russia)

is well known to those who study the demographic history of the Soviet Union (see Poliakov and Zhiromskaia 2000, 2001; Vishnevskii 2006), this chapter is the first attempt to produce a population time series for the period up to the 1860s in the late imperial era for the territory covered by the present Russian Federation.

As mentioned earlier, it is possible, based on the limited data available, to use the total population and number of births, deaths, and infant deaths at the end of the nineteenth century to go back and extrapolate data for the European part of the present Russian Federation during the imperial era. As described in Sects. 2.3 and 2.4, because figures can be obtained for each of the regions (called *gubernias* in the imperial era) from 1891 to the early twentieth century, the data for these regions can be considered reasonably accurate. However, the method used in this

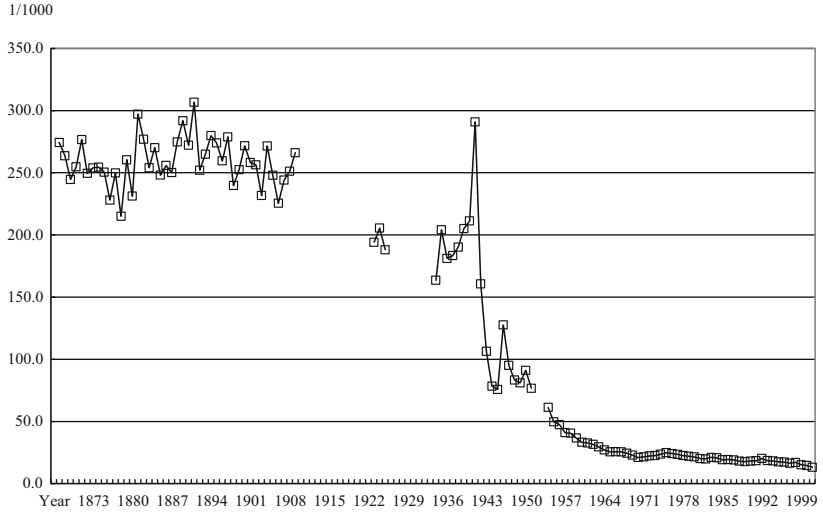

Fig. 2.3 Infant mortality (including archive data for the period of World War II)

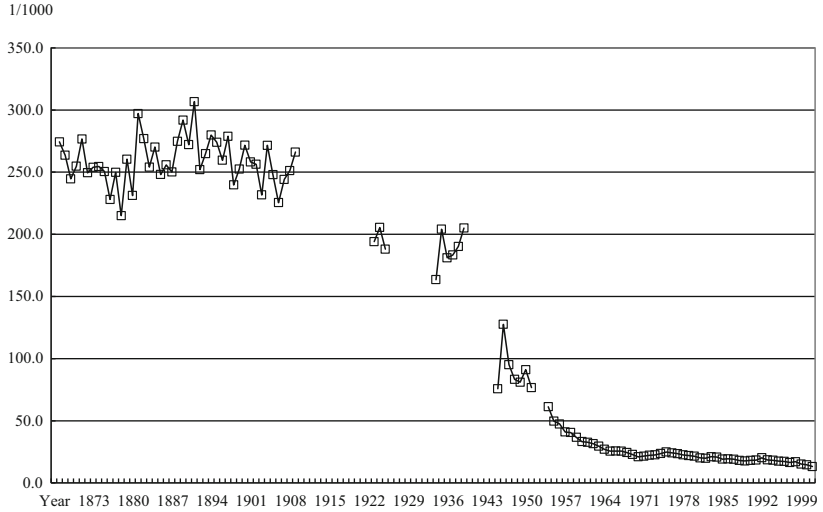

Fig. 2.4 Infant mortality (excluding archive data for the period of World War II) (*Note*: Notes are the same as those for Fig. 2.1)

Table 2.1 Results of Data Mining and Estimation

Year	Total population	No. of births	No. of deaths	No. of infant deaths	Crude birth rate	Crude death rate	Infant mortality	Natural increase	Source
1867	45606000	2293000	1647000		50.3	36.1		14.2	[38], [60], [64]
1868	46262000	2165000	1762000	593900	46.8	38.1	274.3	8.7	[38], [60]
1869	46668000	2301000	1773000	606500	49.3	38.0	263.6	11.3	[38], [60]
1870	47202000	2285000	1626000	558700	48.4	34.4	244.6	14.0	[38], [60], [63]
1871	47870000	2413000	1809000	614600	50.4	37.8	254.7	12.6	[38], [55], [59]
1872	48482000	2380000	1963000	658500	49.1	40.5	276.6	8.6	[38], [55], [58]
1873	48903000	2533000	1769000	631900	51.8	36.2	249.4	15.6	[38], [55], [57]
1874	49679000	2549000	1744000	647000	51.3	35.1	253.9	16.2	[38], [55], [56]
1875	50497000	2585000	1738000	658100	51.2	34.4	254.5	16.8	[38], [54], [55]
1876	51359000	2583000	1778000	647200	50.3	34.6	250.5	15.7	[38], [53], [54]
1877	52177000	2572000	1785000	586500	49.3	34.2	228.0	15.1	[38], [53]
1878	52976000	2506000	2023000	625900	47.3	38.2	249.8	9.1	[38], [51], [52]
1879	53463000	2673000	1855000	574800	50.0	34.7	215.0	15.3	[38], [49], [51]
1880	54294000	2650000	1921000	689900	48.8	35.4	260.4	13.4	[38], [47], [49]
1881	55033000	2631000	1830000	608100	47.8	33.3	231.2	14.5	[38], [46], [47]
1882	55844000	2815000	2205000	836300	50.4	39.5	297.1	10.9	[38], [45], [46]
1883	56461000	2791000	2070000	772900	49.4	36.7	276.9	12.8	[38], [45], [48]
1884	57191000	2802000	1873000	711800	49.0	32.7	254.0	16.3	[38], [39], [44]
1885	58136000	2815000	2015000	760600	48.4	34.7	270.2	13.8	[38], [39], [40], [41]
1886	58947000	2742000	1837000	680400	46.5	31.2	248.1	15.4	[37], [38], [40], [46]
1887	59866000	2844000	1930000	727400	47.5	32.2	255.8	15.3	[36], [37]
1888	60793000	3034000	1962000	758600	49.9	32.3	250.1	17.6	[36]
1889	61884000	3020000	2135000	830000	48.8	34.5	274.8	14.3	[34], [35]

1890	62782000	3026000	2241000	883000	48.2	35.7	291.8	12.5	[33], [34]
1891	63577000	3383000	2537000	920500	53.2	39.9	272.1	13.3	[12], [30], [31]
1892	64435000	3041000	3033000	932700	47.2	47.1	306.7	0.1	[12], [29], [30], [31], [32]
1893	64443000	3307000	2477000	833300	51.3	38.4	252.0	12.9	[2], [12], [31]
1894	65284000	3358000	2471000	889600	51.4	37.8	264.9	13.6	[12], [26], [27], [30]
1895	66184000	3477000	2597000	972900	52.5	39.2	279.8	13.3	[12], [26], [28], [29]
1896	67076000	3559000	2522000	975100	53.1	37.6	274.0	15.5	[12], [26], [27], [28]
1897	68128000	3576000	2391000	928000	52.5	35.1	259.5	17.4	[12], [26]
1898	69334000	3543000	2638000	987800	51.1	38.0	278.8	13.0	[12], [25]
1899	70251000	3622000	2382000	868200	51.6	33.9	239.7	17.7	[12], [24], [25]
1900	71514000	3732000	2488000	942200	52.2	34.8	252.4	17.4	[12], [23], [24]
1901	72780000	3771000	2674000	1024000	51.8	36.7	271.6	15.1	[12], [22], [23]
1902	73895000	3868000	2647000	998700	52.3	35.8	258.2	16.5	[21], [22]
1903	75136000	3924000	2533000	1006000	52.2	33.7	256.3	18.5	[13], [20], [21]
1904	76553000	3999000	2553000	926300	52.2	33.3	231.6	18.9	[12], [19], [20]
1905	77989000	3778000	2734000	1026000	48.4	35.1	271.5	13.4	[11], [18], [19]
1906	79365000	4028000	2660000	998700	50.7	33.5	248.0	17.2	[10], [17], [18]
1907	80874000	4079000	2571000	919700	50.4	31.8	225.4	18.7	[9], [16], [17], [18]

(*continued*)

Table 2.1 (continued)

Year	Total population	No. of births	No. of deaths	No. of infant deaths	Crude birth rate	Crude death rate	Infant mortality	Natural increase	Source
1908	82871000	3957000	2631000	965900	47.7	31.8	244.1	16.0	[8], [15], [16]
1909	85962000	4077000	2844000	1024000	47.4	33.1	251.3	14.3	[7], [14], [15]
1910	87960000	4227000	3003000	1125000	48.1	34.1	266.1	13.9	[6], [14]
1911	89832000	4287000	2731000		47.7	30.4		17.3	[4], [5], [6]
1912	92533000	4228000	2772000		45.7	30.0		15.7	[3], [4], [5]
1913	94260000	4553000	3026000		48.3	32.1		16.2	[2], [3], [4]
1914	96307000	4317000	2756000		44.8	28.6		16.2	[2], [3]
1915	98832000	4578000	3042000	1915–1917:	46.3	30.8		15.5	[1], [2]
1916	100563000			World War I					[1]
1917	96585000								[1]
1918				1918–1922:					
1919				Turmoil of the revolution, civil war, and					See notes at the end for 1918–1945.
1920	83077000			incursions by					
1921				foreign powers					
1922									
1923	86265000	***2362495	***1262658	***329968					
1924		***2983462	***1658396	***579232	***44.1	***24.5	***194.1	*19.6	
1925	88413000	***3486044	***1903550	***716349	***45.3	***24.8	***205.5	*20.5	
1926	89874000	4020000	1919000	756000	44.7	21.4	188.1	*23.4	
1927	92372000	*4166971	*2080600		*45.1	*22.5	***217	*22.6	
1928	*94458371	*4276332	*1840944		*46.3	*19.9		*26.4	
1929	*96893759	*4138975	*2099648		*43.8	*22.2		*21.6	
1930	*98933086	*3576495	*1875730		*36.9	*19.4		*17.6	

1931	*100633851	*3573238	*2020003		*35.0	*19.8		*15.2	
1932	*102187086	*3339568	*2038250		*32.2	*19.6		*12.5	
1933	*103488404	*2706729	*2920611		*25.7	*27.7		*-2.0	
1934	*103274522	*2627899	*1994229		*24.6	*18.7		*5.9	
1935	*103908192	*3339922	*1863532	*546042	*31.4	*17.5	*163.5	*13.9	
1936	*105384582	*3648268	*2261761	*744653	*34.1	*21.1	*204.1	*12.9	
1937	104929343	*4197595	*2179054	*760306	*40.0	*20.8	*181.1	*19.2	
1938	*106947884	*4140000	*2096000	*758968	*38.9	*19.7	*183.3	*19.2	
1939	108380000	*4017939	*2080643	*764149	*37.1	*19.2	*190.2	17.9	
1940	*109813600	*3624000	*2262000	*743000	33.0	20.6	205.0	12.4	
1941	*111016200	*3682726	*2263056	*777885	*33.2	*20.4	*211.2	*12.8	
1942	* **89794900	* **1654086	* **2084172	* **480933	* **18.4	* **23.2	* **290.8	* **–4.8	
1943	* **78708500	* **947612	* **1598199	* **152213	* **12.0	* **20.3	* **160.6	* **–8.2	
1944	* **90688500	* **1049543	* **1413788	* **111723	* **11.6	* **15.6	* **106.4	* **–4.0	
1945	* **87992300	* **1387556	* **1040687	* **108806	* **15.8	* **11.8	* **78.4	* **4.0	
1946	*95904000	*2325368	*1061793	*176157	*24.2	*11.1	*75.8	14.0	
1947	*97168000	*2563151	*1448482	*326986	*26.4	*14.9	*127.6	12.2	
1948	*98283000	*2358263	*1145486	*224249	*24.0	*11.7	*95.1	13.0	
1949	*99496000	*2977280	*1034963	*248156	*29.9	*10.4	*83.3	20.7	See notes at the end.

(*continued*)

Table 2.1 (continued)

Year	Total population	No. of births	No. of deaths	No. of infant deaths	Crude birth rate	Crude death rate	Infant mortality	Natural increase	Source
1950	101438000	2476000	1031000	200600	24.4	10.2	81.0	14.2	
1951	102945000	2825000	1059000	*257404	27.4	10.3	*91.1	17.2	
1952	104587000	2819000	1009000	*216356	26.9	9.6	*76.7	17.3	
1953	106715000	2717000	998900		25.5	9.4		16.1	
1954	108430000	2949000	1014000		27.2	9.3		17.8	
1955	110537000	2866000	935200	*175572	25.9	8.5	*61.3	17.5	
1956	112266000	2769000	880700	*137604	24.7	7.8	*49.7	16.8	
1957	114017000	2832000	935900	*134108	24.8	8.2	*47.4	16.6	
1958	115665000	2819000	861600	115600	24.4	7.4	41.0	16.9	
1959	117534000	2796000	920200	*113110	23.8	7.8	*40.5	16.0	
1960	119046000	2782000	886100	102000	23.4	7.4	36.7	15.9	
1961	120766000	2662000	901600	88540	22.0	7.5	33.3	14.6	
1962	122407000	2483000	949600	81190	20.3	7.8	32.7	12.5	See notes at the end.
1963	123848000	2332000	932100	73550	18.8	7.5	31.5	11.3	
1964	125179000	2122000	901800	62640	17.0	7.2	29.5	9.7	
1965	126309000	1991000	958800	53800	15.8	7.6	27.0	8.2	
1966	127189000	1958000	974300	50090	15.4	7.7	25.6	7.7	
1967	128026000	1851000	1017000	47450	14.5	7.9	25.6	6.5	
1968	128696000	1817000	1040000	46390	14.1	8.1	25.5	6.0	
1969	129379000	1848000	1107000	45150	14.3	8.6	24.4	5.7	
1970	129941000	1904000	1131000	43510	14.7	8.7	22.9	5.9	
1971	130563000	1975000	1143000	41520	15.1	8.8	21.0	6.4	
1972	131304000	2015000	1182000	43430	15.3	9.0	21.6	6.3	
1973	132069000	1995000	1214000	44340	15.1	9.2	22.2	5.9	
1974	132799000	2080000	1222000	46930	15.7	9.2	22.6	6.5	

1975	133634000	2106000	1310000	49810	15.8	9.8	23.6	6.0	
1976	134549000	2147000	1353000	53330	16.0	10.1	24.8	5.9	
1977	135504000	2157000	1388000	52210	15.9	10.2	24.2	5.7	
1978	136455000	2179000	1417000	51290	16.0	10.4	23.5	5.6	
1979	137410000	2179000	1490000	49150	15.9	10.8	22.6	5.0	
1980	138127000	2203000	1526000	48500	15.9	11.0	22.0	4.9	
1981	138839000	2237000	1524000	47990	16.1	11.0	21.5	5.1	
1982	139604000	2328000	1504000	46990	16.7	10.8	20.2	5.9	
1983	140530000	2478000	1564000	49190	17.6	11.1	19.8	6.5	
1984	141583000	2410000	1651000	50720	17.0	11.7	21.1	5.4	
1985	142539000	2375000	1625000	49380	16.7	11.4	20.8	5.3	See notes at the end.
1986	143528000	2486000	1498000	47580	17.3	10.4	19.1	6.9	
1987	144784000	2500000	1532000	48510	17.3	10.6	19.4	6.7	
1988	145988000	2348000	1569000	44780	16.1	10.7	19.1	5.3	
1989	147022000	2161000	1584000	39030	14.7	10.8	18.1	3.9	
1990	147665000	1989000	1656000	35090	13.5	11.2	17.6	2.3	
1991	148274000	1795000	1691000	32490	12.1	11.4	18.1	0.7	
1992	148515000	1588000	1807000	29210	10.7	12.2	18.4	−1.5	
1993	148562000	1379000	2129000	27950	9.3	14.3	20.3	−5.1	
1994	148356000	1408000	2301000	26140	9.5	15.5	18.6	−6.0	
1995	148460000	1364000	2204000	24840	9.2	14.8	18.2	−5.7	
1996	148292000	1305000	2082000	22830	8.8	14.0	17.5	−5.2	
1997	148029000	1260000	2016000	21740	8.5	13.6	17.3	−5.1	
1998	147802000	1283000	1989000	21100	8.7	13.5	16.4	−4.8	

(*continued*)

Table 2.1 (continued)

Year	Total population	No. of births	No. of deaths	No. of infant deaths	Crude birth rate	Crude death rate	Infant mortality	Natural increase	Source
1999	147539000	1215000	2144000	20730	8.2	14.5	17.1	–6.3	
2000	146890000	1267000	2225000	19290	8.6	15.1	15.2	–6.5	See notes at the end.
2001	146304000	1312000	2255000	19100	9.0	15.4	14.6	–6.4	
2002	145649000	1397000	2332000	18410	9.6	16.0	13.2	–6.4	

Notes to the Data on Imperial Russia

[a]The statistical books contained numerous miscalculations and typographical errors. Particularly conspicuous were instances where the populations of all the provinces did not add up to the figure for the total population, and instances where the populations of all the districts of a province did not add up to the population of the province. In cases when the data was clearly incorrect, more appropriate figures were recalculated and checks were made that the figures matched each other, wherever possible

[b]The accuracy of data for the imperial era differed from year to year and region to region

[c]The number of births, deaths, and marriages for 1871 do not represent the total of such figures for each province

[d]Because infant mortalities per 1,000 child deaths in 1867–1869 were not presented, they were calculated by using data for each province. However, data on the number of deaths by age could not be obtained for some provinces, so these provinces were not included in the total number of deaths (denominator) and the number of deaths for each age (numerator)

[e]The numbers of infant deaths for the years up to and including 1883 were calculated by adding up the numbers of deaths of males and females under one month old, between one and three months old, between three and six months old, and between six months and one year for all religious sects

Sources of Data for the Imperial Era

[1] Tsentral'nyi statisticheskii komitet MVD, Statisticheskii ezhegodnik Rossii (Statistical Yearbook of Russia), vip. 13 (1918); [2] to zhe, vip. 12 (1916); [3] to zhe, vip. 11 (1915);[4] to zhe, vip. 10 (1914); [5] to zhe, vip. 9 (1913); [6] to zhe, vip. 8 (1912); [7] Tsentral'nyi statisticheskii komitet MVD, Ezhegodnik Rossii (Yearbook of Russia), vip. 7 (1911); [8] to zhe, vip. 6 (1910); [9] to zhe, vip. 5 (1909); [10] to zhe, vip. 4 (1908); [11] to zhe, vip. 3 (1907); [12] to zhe, vip. 2 (1906); [13] to zhe, vip. 1 (1905). [14] Statistika Rossiiskoi Imperii: dvizhenie naseleniia v evropeiskoi Rossii (Statistics of the Russian Empire: the movement of the population in European Russia) za 1910 god, vip. 93 (1916); [15] to zhe, 1909 god, vip. 89 (1914); [16] to zhe, 1908 god, vip. 88 (1914); [17] to zhe, 1907 god, vip. 87 (1914); [18] to zhe, 1906 god, vip. 85 (1914); [19] to zhe, 1905 god, vip. 84 (1914); [20] to zhe, 1904 god, vip. 74 (1911); [21] to zhe, 1903 god, vip. 70 (1909); [22] to zhe, 1902 god, vip. 66 (1907); [23] to zhe, 1901 god, vip. 63 (1906); [24] to zhe, 1900 god, vip. 62 (1906); [25] to zhe, 1899 god, vip. 58 (1904); [26] to zhe, 1898 god, vip. 56 (1903); [27] to zhe, 1897 god, vip. 50 (1900); [28] to zhe, 1896 god, vip. 48 (1899); [29] to zhe, 1895 god, vip. 47 (1899); [30] to zhe, 1894 god, vip. 45 (1898); [31] to zhe, 1893 god, vip. 41 (1897): [32] to zhe, 1892 god, vip. 38 (1896); [33] to zhe, 1891 god, vip. 34 (1895); [34] to zhe, 1890 god, vip. 33 (1895); [35] to zhe, 1889 god, vip. 24 (1893); [36] to zhe, 1888 god, vip. 21 (1892); [37] to zhe, 1887 god, vip. 18 (1891); [38] to zhe, 1886 god, vip. 12 (1890); [39] to zhe, 1885 god, vip. 11 (1890); [40] Statistika Rossiiskoi Imperii: Sbornik svedeniia po Rossii (Statistics of the Russian Empire: Collection of information on Russia), 1890, vip. 10 (1890); [41] to zhe,

1884–1885 godi, vip. 1 (1887); [42] Statisticheskii vremennik Rossiiskoi Imperii: Sbornik svedenii po Rossii (Statistical Annals of the Russian Empire: Collection of information on Russia), vip. 40 (1897); [43] Statisticheskii vremennik Rossiiskoi Imperii: dopolnitelnaiia svedeniia po divizheniiu naseleniia v evropeiskoi Rossii (Statistical Annals of the Russian Empire: Additional information on the movement of the population in European Russia) za 1876, 1877 i 1878 godi (po ulzdaniia tablitsi), ser. 3, vip. 25 (1890). [44] Statisticheskii vremennnik Rossiiskoi Imperii: dvizheniie naseleniia v evropeiskoi Rossii za 1884 god, ser. 3, vip. 24 (1889); [45] to zhe, 1883 god, ser. 3, vip. 23 (1887); [46] to zhe, 1882 god, ser. 3, vip. 21 (1887); [47] to zhe, 1881 god, ser. 3, vip. 20 (1887); [48] ser. 3, vip. 8 (1886); [49] to zhe, 1880 god, ser. 3, vip. 7 (1887); [50] to zhe, 1876–1880 gg. , ser. 3, vip. 6 (1885); [51] to zhe, 1879 god, ser. 3, vip. 3 (1884); [52] to zhe, 1878 god, ser. 2, vip. 25 (1884); [53] to zhe, 1877 god, ser. 2, vip. 24 (1883); [54] to zhe, 1876 god, ser. 2, vip. 23 (1883); [55] to zhe, 1875 god, ser. 2, vip. 22 (1883); [56] to zhe, 1874 god, ser. 2, vip. 21 (1882); [57] to zhe, 1873 god, ser. 2, vip. 20 (1882); [58] to zhe, 1872 god, ser. 2, vip. 18 (1882); [59] to zhe, 1871 god, ser. 2, vip. 17 (1881); [60] to zhe, 1870 god, ser. 2, vip. 14 (1879); [61] to zhe, 1869 god, ser. 2, vip. 13 (1877); [62] to zhe, 1868 god, ser. 2, vip. 12 (1877); [63] Statisticheskii vremennnik Rossiiskoi Imperii, ser. 2, vip. 10 (1875); [64] to zhe, ser. 2, vip. 1 (1871); [65] to zhe, vip. 1 (1866); [66] Statisticheskie tablitsi Rossiiskoi Imperii (Statistical tables of the Russian Empire) (1863); [67] to zhe, (1858)

Notes to the Data on Soviet and Post-Soviet Russia

* Total populations for 1940–1945, numbers of births and deaths for 1927–1938 and 1941–1949, and numbers of infant deaths for 1935–1939, 1941–1949, 1951–1952, 1955–1957, and 1959 were not extracted from officially published statistics but directly from archive materials. The authors eliminated the data for Krimskaia ASSR/ob from the data for the Russian Soviet Federated Socialist Republic (RSFSR) (it was not necessary to do this for 1957) and added to it the data for the Karelo-Finskaia SSR when it was possible and necessary to do so. The data does not include numbers of births and deaths for (1) the Iakutskaia ASSR for 1927 and 1933–37, (2) the Dagestanskaia ASSR, Sakhalin, and Kamchatka for 1927, (3) the Ingushskaia AO, Kabardino-Barkarskaia AO, and the Chechenskaia AO for 1929, (4) Sakhalin and Kamchatka for 1930, (5) two regions in the Gorkovskii Krai, three regions in the ASSR of Nemtsev-Povolzhia, rural parts of the Chechenskaia AO, the Ingushskaia AO, Sakhalin, and Kamchatka for 1931, and (6) rural parts of the Ingushskaia AO and Chechenskaia AO, the Severo-Osetinskaia AO, Sakhalin, and Kamchatka for 1932. Note that these regions were later to be covered by the ZAGS system for registering births, deaths, etc. (see Footnote 29 to the main text). Dynamic statistics for 1941 and total populations for 1944–1945 are lacking for the Karelo-Finskaia SSR and are therefore not included. For 1948–1949 there is a note that around 100 ZAGS branches were not functioning properly. For reference, in December 1949 there were 42,704 ZAGS branches in the RSFSR (RGAE, F. 1562, O. 20, D. 841, L. 2). In rural regions in 1926, a single ZAGS branch would serve between 900 and 4,000 residents (TsSU SSSR 1928a). Total populations for 1928–1936 and 1938 were calculated using the cumulative numbers of births and deaths for 1927–1935 and 1937, as given in archived historical materials. Total populations for 1946–1949 were extrapolated from the total population in 1950, as given in officially published statistics, and the numbers of births and deaths as given in archived historical materials. Crude birth and death rates for these years are no more than rough estimates derived from these extrapolated total populations. Infant mortality rates for 1951–1952, 1955–1957, and 1959 were calculated by dividing the numbers of infant deaths as given in archived historical materials by the numbers of births as given in officially published statistics.

** Statistics for 1942–1945 do not exist for a large number of regions. Both dynamic statistics and total populations are lacking, so the dynamic statistics and total population statistics for these regions do not match. The dynamic statistics do not include regions that were under occupation or regions where the ZAGS system was not functioning normally because of the turmoil of the war. The lack of data took many forms, with, for example, there being no data for January–May for some regions, only data for January and February for others, and no data at all for some regions. There was so much variation that it is impossible to describe here the individual situations of all the regions affected.

(*continued*)

Table 2.1 (continued)

*** This note applies to all the dynamic statistics for 1923–1925: (1) the figures are only for European Russia; (2) the regions for which data was lacking changed year by year; (3) there were large differences in the accuracy of the data for different regions; (4) because there are differences in the regions covered, as described in (2), changes in absolute figures are meaningless (for example, the figures for 1923 are all small because Uralskaia Ob., Orenburgskaia Gb., Mariiskaia Ob., Chbashskaia ASSR, and Votskaia Gb. were not covered that year). The numbers of births, deaths, and infant deaths are for the European parts of the RSFSR, less those for Krimskaia ASSR and Gomelskaia Gb. Crude birth, death, and infant mortality rates for 1924 and 1925 were calculated using only the total populations of regions for which the numbers of births, deaths, and infant deaths could be obtained. Note that although the Krimskaia ASSR was excluded from the rates, this could not be done for the Gomelskaia Gb. because the source did not give the population, so the rates include the data for the Gomelskaia Gb. No rates are given for 1923, and it was impossible to make even a rough estimate because one could not even obtain the total population for European Russia.

Sources of and Notes on Total Populations

1990–2002: Chislennost naseleniia rossiiskoi federatsii (The number of population of the Russian Federation) na nachalo 1990–2002, Rosstat, Moskva, 2006; 1966–1969, 1971–1974, 1976–1979, 1981–1984, 1986–1989: Demograficheskii ezhegodnik Rossii (Demographic Yearbook of Russia) 2002, Goskomstat, Moskva, 2003; 1960, 1965, 1970, 1975, 1980, 1985: Demograficheskii ezhegodnik Rossii 2005, Goskomstat, Moskva, 2006; 1961–1964: Demograficheskii ezhegodnik Rossii 2001, Goskomstat, Moskva, 2002; 1950–1959: Naselenie SSSR (Population of the USSR) 1987, Goskomstat SSSR, Finansy i Statistika, Moskva, 1988; 1946–1949: see Note * above; 1945: RGAE, F. 1562, O. 20, D. 564, L. 2; 1944: RGAE, F. 1562, O. 20, D. 479, L. 2–3; 1942–1943: RGAE, F. 1562, O. 329, D. 1452, L. 111–113; 1941: RGAE, F. 1562, O. 20, D. 242, L. 3–4; 1940: RGAE, F. 1562, O. 20, D. 241, L. 35–41; 1939: Itogi vsesoyuznoi perepisi naseleniia (The results of the All-Union census) 1959 goda, TsSU, Moskva, 1962; 1937: Poliakov, Yu. A., Zhiromskaia, V.B., Tiurina, E.A. and Vodarskii, Ia.E. eds. (2007), Vsesoiuznaia perepis naseleniia 1937 goda: obshie itogi, Sbornik dokumentov i materialov (Census of 1937: the overall results, collection of documents and materials), Moskva, ROSSPEN; 1928–1936, 1938, 1947–1949: see Note * above; 1927, 1931: NarKhoz SSSR statisticheskii spravochnik (National Economy of the USSR Statistical Manual) 1932, TsNKhU SSSR, Moskva, 1932; 1926: Estestvennoe dvizhenie naseleniia RSFSR (The natural movement of the population of the RSFSR) za 1926 god, TsSU RSFSR, Moskva 1928; 1923: Sbornik statisticheskikh svedenii po soyuzu SSR (The collection of statistical data on the USSR) 1918–1923, TsSU SSSR, Moskva, 1924; 1920, 1925: Statisticheskii Ezhegodnik (Statistical Yearbook) 1924 g. , TsSU SSSR, Moskva, 1925.

[f]All figures are for January 1, except for years in which a population census was conducted. The figure for 1989 is for January 12 (when a population census was conducted). The figure for 1979 is for January 17 (when a population census was conducted). The figures for 1959 and 1970 are for January 15 (when population censuses were conducted). Figures for 1941 and after include the Karelian Isthmus and Ladoga Karelia, which were acquired from Finland. Figures for 1946 and after include Kaliningrad (acquired from Germany during World War II), the southern part of Sakhalin, and the Kurile Islands (both acquired from Japan during World War II). The figure for 1939 is for January 17 (when a population census was conducted) and is for the RSFSR less the population of the Krimskaia ASSR. The figure for 1937 is for January 6 (when a population census was conducted) and is for the RSFSR less the population of the Krimskaia ASSR plus the number of persons serving in the Red Army and the Ministry of the Interior's Border Guard Service. The figure for 1927 is for the RSFSR, less the populations of the Krimskaia ASSR, the Kazakhskaia ASSR, the Kara-Kalpakskaia AO, and the Kirgizskaia ASSR. The figure for 1926 is for December 17, when a population census was conducted, and is for the RSFSR less the populations of the Krimskaia ASSR, the Kazakhskaia ASSR, and the Kirgizskaia ASSR. It is noted that the registered populations of regions such as the Caucasus are frequently incomplete, but there is so much variation that it is impossible to describe here the individual situations of all the regions affected. The figure for 1925 is for the RSFSR less the populations of the Krimskaia ASSR, the Kazakhskaia ASSR, the Gomelskaia Gb., and the Kirgizskaia AO plus

that of the Orenburgskaia Gb., which was part of the Kazakhskaia ASSR at that time. The figure for 1923 is for March 15, and is the total population of the RSFSR on that date, less the populations of the Krimskaia ASSR, the Gomelskaia Gb., the Kirgizskaia ASSR, and the Turkestanskaia AR plus that of the Orenburgskaia Gb., which was part of the Kirgizskaia ASSR at that time. Figures for rural residents in 1916 and urban residents in 1920 for the Turkestanskaia AR are each based on census figures. The figure for 1920 is for August 28, when a census was conducted, and is based on the administrative divisions as of January 1, 1925. It is the population of the RSFSR less the populations of the Krimskaia ASSR, the Gomelskaia Gb, the Kirgizskaia ASSR, and the Turkestanskaia AR plus that of the Orenburgskaia Gb., which was part of the Kirgizskaia ASSR at that time.

Sources of Numbers of Births and Deaths and Birth and Death Rates

1990–2002: Rosstat Website, http://www. gks. ru/wps/portal accessed on June 22, 2007; 1960, 1965, 1970, 1975, 1980–1989: Demograficheskii ezhegodnik Rossii 2006, Rosstat, Moskva, p. 66; 1961–1964, 1966–1969, 1971–1974, 1976–1979: Demograficheskii ezhegodnik Rossii 2000, Goskomstat, Moskva, 2001, p. 55; 1950–1959: Naselenie SSSR 1973, TsSU SSSR, 1975, Moskva, p. 70; 1949: RGAE F. 1562, O. 20, D. 841, L. 2, L. 14, L. 43; 1948: RGAE, F. 1562, O. 20, D. 758, L. 2, L. 14, L. 47; 1947: RGAE, F. 1562, O. 20, D. 696, L. 6, L. 51, L. 121; 1946: RGAE, F. 1562, O. 20, D. 636, L. 3, L. 48, L. 117; 1945: RGAE, F. 1562, O. 20, D. 577, L. 6, L. 51, L. 130; 1944: RGAE, F. 1562, O. 20, D. 501; 1943: RGAE, F. 1562, O. 20, D. 418; 1942: RGAE, F. 1562, O. 20, D. 341; 1941: RGAE, F. 1562, O. 329, D. 553, L. 4, L. 157; 1940: NarKhoz RSFSR (National Economy of the RSFSR) 1964, TsSU RSFSR; 1939: RGAE F. 1562, O. 20, D. 152; 1927–1938: RGAE, F. 1562, O. 329, Ed. Khr. 256, L. 15–26; 1926: Estestvennoe dvizhenie naseleniia RSFSR za 1926 god, TsSU RSFSR, Moskva 1928; 1924–1925: Estestvennoe dvizhenie naseleniia soiuza SSR (The natural movement of the population of the USSR) 1923–1925, TsSU SSSR, Moskva 1928.

Sources of Numbers of Infant Deaths and Infant Mortality Rates

1970, 1980, 1990, 1995, 2000–2005: Rosstat Website, http://www. gks. ru/wps/portal accessed on June 22, 2007; 1960, 1965, 1975, 1980–1989, 1991–1994, 1996–1999: Demograficheskii ezhegodnik Rossii 2006, Rosstat, Moskva, p. 66; 1959: RGAE, F. 1562, O. 27, D. 808, L. 4; 1957: RGAE, F. 1562, O. 27, D. 353, L. 3–11; 1956: RGAE, F. 1562, O. 27, D. 212, L. 15; 1955: RGAE, F. 1562, O. 27, D. 103, L. 4; 1952: RGAE, F. 1562, O. 20, D. 1011, L. 2, L. 23, L. 192; 1951: RGAE, F. 1562, O. 20, D. 962, L. 2, L. 17, L. 44; 1940, 1950, 1958: NarKhoz RSFSR 1964, TsSU RSFSR; 1939, 1941–1949, 1961–1964, 1966–1969, 1971–1974, 1976–1979: (same as numbers of births etc.); 1935–1938: F. 1562, O. 329, D. 256, L.138. Figures for 1935 and 1937 do not include the Iakutskaia ASSR. Figures for 1936 do not include the Dalnevostochnii Krai. In addition, because the data is at the macro level, they include the Krimskaia ASSR (the total population used as the basis for calculating the rates does not include the population of the Krimskaia ASSR, and this imbalance needs to be borne in mind.) The Karelo-Finskaia SSR was not included because of a lack of data; 1927: Statisticheskii spravochnik SSSR (Statistical Handbook of USSR) za 1928, TsSU, Moskva, 1929; 1924–1926: (same as for numbers of births, deaths, etc.).

chapter cannot ensure the accuracy of the figures for the non-European territory of the present Russian Federation.

What is noticeable when looking at Fig. 2.2 is the high crude birth rate in the late imperial era and the slight decline in the crude death rate at the end of that era.[42] These observations have already been made by researchers such as Rashin (1956) and Vishnevskii (2006), but apart from the study by Rashin (1956), no other research has made use of primary historical materials. In fact, most other studies have simply quoted Rashin's (1956) study. The current chapter, however, proves that Rashin's (1956) findings were correct.[43] No clear upward or downward trend in the infant mortality rate can be discerned.

If one now links the imperial and Soviet eras, one can see from Fig. 2.2 that there was a marked decline in the crude birth and death rates before and after the two world wars. This was also pointed out by Vishnevskii (2006). The time series of population during the imperial era was produced simply by invoking the data on crude birth and death rates for the European part of the present Russian Federation (for 1891–1903) and the entire European part of imperial Russia (for the period up to and including 1890). This means that the findings in this chapter, obtained by using rates as the basis for the findings, more or less match the findings of previous research.

For the early Soviet era, this chapter attempted a survey of archived historical materials, but not all the figures needed were found. The notes to Table 2.1 mention that, depending on the year, there were large differences in the accuracy of the data, for example in terms of the regions covered. There was almost no data at all for 1916–1923, which includes the period from the end of the revolution to the conclusion of the civil war, while for 1928–1945 there were numerous regions for which data was lacking. There will obviously be large fluctuations in the figures for these two periods. These were Russia's most tumultuous periods, so even if data could be obtained it would probably not be particularly reliable.[44] However, if it is admissible to overlook fluctuations caused by external factors, the results of the examination presented in this chapter should be of some help in identifying population trends.

Now to discuss the data for the Soviet era. Apart from the figures for infant deaths between 1927 and 1938, the dynamic statistics presented

here are from the same historical materials used by Andreev et al. (1998). As for the infant deaths figures, Andreev et al. (1998) give the source as the Goskomstat SSSR archives, but this cannot be verified because they did not identify the registered number of the materials. The authors therefore conducted their own investigation at other public archives to determine the authenticity of the data. Although the historical materials this chapter used to extract total populations for 1941–1945 partially match those used by Ispov (2001), the figures this chapter presents are different. This is because Ispov (2001) did not make adjustments for places like the Crimean Autonomous Republic (later Oblast), and the authors would like to stress that the figures presented in this chapter are correct as population figures for the territory of the present Russian Federation, excluding regions that were under occupation.

This chapter identified the numbers of births, deaths, and infant deaths during World War II (1941–1945). While Ispov (2001) produced only two- to three-year time series, this chapter presents figures for every year. However, because data is lacking for many regions for this period, it is impossible to use the statistics as they stand. In addition, the crude death rate for regions for which data could be obtained would undoubtedly have been lower than it was for regions for which data is lacking (e.g. regions that were under occupation). So the key problem is the unusually high death rate that one would expect to see in those regions for which data was lacking. In fact, unless the natural rate of increase is a negative figure, whose absolute value is larger than the figure obtained here, it is impossible to explain the decline in total population during World War II. The infant mortality rate jumps in 1943, and archived historical materials support this (Fig. 2.3). Whether or not this reflects reality cannot be determined from the historical materials obtained. If the infant mortality rates for World War II are eliminated, it is possible to discern a major trend (Fig. 2.4).

The numbers of births, deaths, and infant deaths for 1946–1949 and the number of infant deaths for 1951–1952, 1955–1957, and 1959 differ from those in the historical materials used by Andreev et al. (1998). Unfortunately, there is no way of ascertaining the causes of these not insignificant differences because the historical materials for 1946–1955 used by Andreev et al. (1998) remain classified.[45] The authors did manage

to find dynamic statistics for 1946–1955 by examining declassified historical materials. With regard to this period, it is worth mentioning that the population at the beginning of 1946 and on February 1, 1947 were obtained from archived historical materials, but difficulties were experienced when trying to compare them with the 1950 population as presented in official statistics.[46] This chapter therefore used the number of births and deaths to go back and extrapolate populations for 1946–1949 from the population in 1950.

Finally, the dynamics of modern Russia are well known (Shimchera 2006; Vishnevskii 2006). The rise in the crude death rate since 1991 is particularly striking. In imperial Russia the crude death rate climbed most noticeably in 1891, during which there was a large-scale famine; while the periods in which the crude death rate jumped during the Soviet-era periods for which data were obtainable were 1933–1934, also a time of severe famine, and World War II. That the population dynamics seen in the present Russian Federation since 1991 are unusual is clear for all to see.

2.10 Challenges Remaining

This chapter began with a review of the systems that have been used to compile population statistics in Russia from the imperial era, through the Soviet era, and into the modern Russian era. Next, using primary sources, it went on to estimate and present a time series of the imperial Russian population of the territory covered by the present Russian Federation by adjusting population statistics for imperial Russia to match this territory; and then did the same for the Soviet and post-Soviet eras, basing figures on as many primary sources as were obtainable. The aim was to build a foundation for viewing the populations of imperial, Soviet, and post-Soviet Russia in an integrated way. However, many of the problems could not be solved, and have had to be set aside as requiring further investigation.

(1) Reliability of Imperial-Era Data and Estimates for Non-European Regions of Russia

It is probably inevitable that the accuracy of data from the imperial era is doubtful. Nevertheless, a time series for European Russia that meets certain standards can still be put together, and it is sometimes possible to compare estimates based on dynamic statistics with the figures for total population included in official statistics. A major problem one faces is obtaining, and judging the reliability of, data on regions outside European Russia, such as the Caucasus, Siberia, and the Russia's far east.

As mentioned earlier, it is almost impossible to get dynamic statistics or total populations for regions outside European Russia in the nineteenth century. From the historical materials examined the authors were able to obtain total populations and dynamics for 1856, total populations for 1858,[47] and total populations for 1885, but their accuracy is open to question. The methods used to prepare population statistics in imperial Russia, described in Sect. 2.5 of this chapter, were also applied to non-European Russia. However, except for some data for 1856, no information on dynamics in the regions outside European Russia was published. Therefore, to produce the long-term time series of population for this chapter, statistics for the European part of imperial Russia were accepted at face value, though they do need to be re-examined. It will also be necessary to try and find other usable statistics.

(2) Scrutiny of Historical Materials for 1910s–1930s in the Official Archives and Re-Examination of Statistics

Given the tragedies of the revolution, civil war, incursions by foreign powers, War-communism, and famine, it would not be odd if a marked decline in population from the end of the 1910s to the early 1920s was observed. This is indeed the case. In the last years of the imperial era and at the beginning of the Soviet era, the population dropped sharply, probably because of factors such as the large number of people who fled the country during the revolution and ensuing civil war. As far as the authors can tell from the investigations made for this chapter, there is no data at all for the period from the revolution to the first half of the 1920s.

The same can be said for the 1930s. Between 1930 and 1933, the collectivization of agriculture led to a decline in crop yields, and this

resulted in famine. Yet it is widely known that crops continued to be exported from regions such as the Ukraine, despite the fact that people at home were starving (Rosefielde 1983). It has also been pointed out that the Great Purge, which reached its peak in 1936–1938, claimed several million victims (Rosefielde 1983; Wheatcroft 1984).[48] This presents the problem of whether to trust dynamic statistics that do not show anything unusual, other than the marked increase in the crude death rate between 1933 and 1934, even if these statistics have been stored in official archives not yet made public. Andreev et al. (1998) raised clear objections to this and made their own estimates. Any large change in dynamics can easily be seen years later in the distorted population pyramids they leads to, so the authors recognize the need for a re-examination.

(3) Surveys of Statistics During and Immediately after World War II

World War I and World War II turned Russia into a battlefield, and it is hardly surprising that statistics are lacking for regions that were under occupation. The archived historical materials the authors found enabled one to identify the regions for which data is lacking. However, even the figures for regions for which data can be obtained are lacking in credibility.[49] Statistics for just the regions for which data for 1942–1944 can be obtained show the rate of natural increase was indeed negative, but the annual rate of decline is less than 1 %. These statistics therefore do not reflect the true population dynamics during World War II, which show up clearly in the distorted age distribution derived from the 1959 census. Further investigations and estimates are therefore required.

It would obviously be unrealistic to expect a high level of accuracy from statistics when the country was in turmoil. However, one also needs to be careful not to immediately deny the usefulness of such statistics and reject them out of hand. This is because if one demands precision, usable statistics for the early years of the Soviet Union are extremely scarce. The authors think that it is therefore better to obtain whatever statistics are available, and use them to get an idea of overall trends.

As described in this chapter, the demographic history of Russia showed extreme fluctuation. If one looks at the trends from the late imperial era to the early Soviet period, it is easy to grasp that huge turmoil caused by the Russian Revolution, Great Purges and the World War II deeply affected the

dynamics of Russian demography. Data mining and processing presented in this chapter were enabled thanks to the fact that governmental archive materials became accessible after the collapse of the Soviet Union. Mining and consolidation of formerly closed data were, however, still under progress and it is still difficult to take an analytical approach at a national level.

After the dissolution of the Soviet Union, Russian demographics suffered from huge changes again. These have been indicated in Table 2.1 and Fig. 2.1, but more specifically, a decline in total population was observed because of a rapid decrease in fertility and an increase in mortality.

Modern demographic analysis in Russia became widely possible after the collapse of the Soviet Union and the birth of modern Russia. The background to this is, firstly, that household-level and individual-level microsurvey data became accessible and, secondly, internal and formerly closed materials from the governmental statistical organization became usable for researchers. The usable data for the demographic trends in the Soviet Union and that for modern Russia differ considerably from each other; therefore the approaches to be taken should also be different. The demographic trend at the current time is, however, a mirror of past phenomenona. Without any relation to the break or the gap in the analytical approaches taken, the trends in the past remain and affect the demographic dynamics of modern Russia.

In the remaining chapters of this book, factors behind the demographic trends in the modern Russian Federation and situations during the Soviet era are referred to as as necessary. It should be pointed out that there are phenomena observed in modern Russia that originate in the history of the Soviet regime.

2.11 Appendix: Time Series of Alternative Estimates of the Total Population of the Territory Covered by the Present Russian Federation in the Imperial Era

As said in the main text, it is possible to produce a time series for the population of European Russia that meets certain standards, with the problem being the populations of regions outside European Russia, such

as the Caucasus, Siberia, and the Russia's far east. Here the authors make alternative estimates based on the statistics for European Russia during the Imperial era.

(1) The populations of each province during the imperial era can be obtained as (a) actual data only for certain years, namely 1867, 1870, 1883, 1885, 1886, 1891, and after. In addition, because data on births and deaths for each province exist for every year from 1867, it is possible to extrapolate (b) estimated populations for the other years by subtracting figures for natural increase from the populations in 1916. Furthermore, it is possible to adjust the actual data for the years mentioned above to the area of the European part of the present Russian Federation. The population of the present territory of European Russia was between 60 % and 63.5 % of the population of imperial European Russia, but the trend was for this percentage to decline. For the other years, meanwhile, only the total population (not the population of each province) of imperial European Russia could be obtained. For these total populations, the authors adopted a (c) procedure of focusing on years for which it was possible to make adjustments for area and applying, with some leeway, the ratio of the total population of the present territory of European Russia and the total population of imperial European Russia, and calculating means for years for which both total and by-province populations were available. The authors used this procedure to calculate the total population of the territory covered by modern European Russia.
(2) The populations of the non-European territory of the present Russian Federation in the imperial era were obtained from (a') actual data for 1885 and 1904 and after. Although statistics do not exist for other years, it is possible to produce a (b') time series for cases where the rate of increase was exactly the same as that of imperial European Russia. The total population of this territory as a proportion of the total population of the territory of modern European Russia increased continuously from 1885, when it was 18.3 %, to 1916, when it was 26.9 %. For 1885 and earlier (c'), the authors fixed the total population of this territory as a proportion of the territory of modern European Russia at 18 %, steadily increasing this percentage for the

years that followed, and then applying actual percentages once again to 1904 and after, to calculate hypothetical populations for the non-European parts of the present Russian Federation. In doing this the calculation for the base total populations of European Russia used both (b) and (c).

The above figures were then put together to present a time series for the total population of the territory covered by the present Russian Federation. The results are shown in Figure 2.A alongside the estimated (main) time series from the main text, and one can see that the two series are similar. This is because both series are based on dynamic statistics for imperial European Russia, and because during the imperial era the total population of the non-European part of the present Russian Federation as a proportion of the total population of the territory of the present Russian Federation was always less than 23 %. However, neither method accurately takes into account the population dynamics of the non-European part of the present Russian Federation. If it were possible to use time series for indicators such as grain yields, it would obviously be better to use such figures. Again, though, the problem is whether such data would be obtainable and reliable.

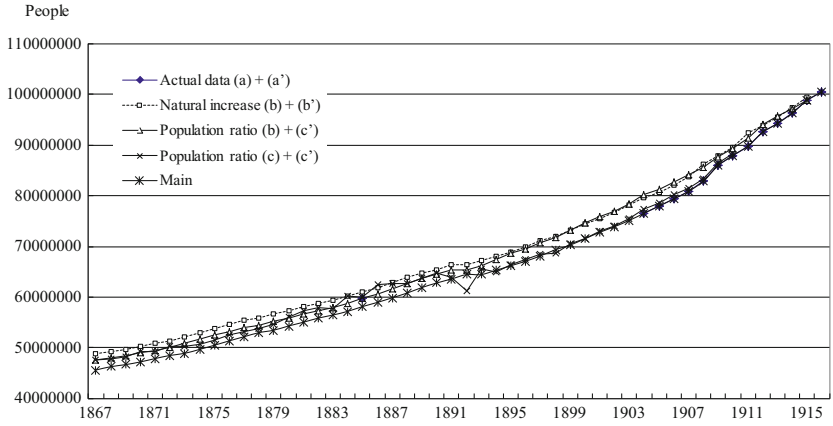

Fig. 2.A. Comparison of substitute time series of estimates of the total population of the territory covered by modern Russia

Notes

1. As an example of the modernization that occurred during the imperial era, the volume of domestically produced steel for railways overtook the volume of imports of such steel during the late 1800s. See Falkus (1972).
2. However, some say that 5 % or less of the total population was missed (Valentei 1985), and given that they provide an otherwise unavailable insight into the period from the early eighteenth century to the end of the nineteenth century, they are well worth looking at.
3. Koeppen (1847) studied only the 1830s, Den (1902) only the end of the eighteenth century and beginning of the nineteenth century, and Troinitskii (1861) only the mid-nineteenth century.
4. The same can be said of studies by Vodarskii (1973), Vishnevski (2006), and other researchers. Many studies rely completely on Rashin (1956) for their descriptions of the population from the late 1800s to the early 1900s. In the authors' view, none of the research on population dynamics in this period has surpassed Rashin's (1956) approach of constructing almost all of his data from publications by the Imperial Central Statistical Committee.
5. The areas of provinces in the imperial era were calculated using maps produced by organizations such as the Imperial Geographic Society. See MVD RI (1858, 1863). The authors attempted, for the early imperial era, to use changes in regional areas to estimate changes in administrative divisions, and then use these estimates to investigate the changes in administrative divisions. However, the approach was abandoned because differences in the precision of the maps altered the numbers.
6. These administrative divisions refer to economic regions (*ekonomicheskie raioni*).
7. The biggest differences were with the vast yet sparsely populated West Siberia economic region (4.13 %, 1897), and the Southern economic region (3.22 %, 1926), which centers on modern Ukraine. The effect of the former difference is likely to be small, and the latter region is not part of the modern Russian Federation.

8. *Goskomstat Rossii* (1998) gives the total population at the time of the 1917 revolution as 91,000,000. Even ignoring the fact that this figure is too simplistic in comparison with those of other years, it is difficult to believe that it is possible to obtain reliable population statistics for that year. The Tsentralnii statisticheskii komitet MVD (1918) describes the 1917 population figure as "preliminary." In February 2007, when the 1917 population statistics were checked using archived historical materials from the Russian State Economic Archive *RGAE*, this population figure was described as the "possible population in 1917" (*veroiatnaia chislennost naseleniia*) (RGAE, F.1562, O.20, D.1a). On July 31, 2007 four population statisticians were interviewed on this matter at the headquarters of Russia's Federal State Statistics Service (Rosstat) and said that the 1917 figure published in *Goskomstat Rossii* (1998) was an estimate, which the publication made no mention of. There is also no mention of the fact that populations for each region based on the 1937 population census were affected by personnel such as border guards and soldiers being treated differently in the statistics. In addition, the figures for the total populations of the republics in 1937 differ from those disclosed elsewhere. Although it claims that the number of soldiers etc., which were only recorded for the federation as a whole, were not just added to the estimate of the population of the Russian Republic, it does not mention that the estimation method was based on estimates. Moreover, it presents figures representing the results of the 1897 population census of imperial Russia that have been converted to match the present territory of Russia. According to these figures, the population of the territory of the present Russian Federation (excluding Kaliningrad, the Kurile Islands, and southern Sakhalin) in 1897 was 67,473,000. Among the historical materials examined at the Russian State Economic Archive was the TsSU SSSR (1941), which calculates the 1897 populations of the administrative divisions as they were in 1941 using detailed area proportions. Using these figures to calculate the total population of the territory of modern Russia gives a figure of 66,314,000, which casts doubt over the accuracy of the figure presented in *Goskomstat Rossii*

(1998), for which the methods of calculation used are not explained at all clearly.

9. The results of the 1937 population census have not been officially made public by the statistical authorities. Zhiromskaia (2000) conducted her study using archived historical materials. TsSU SSSR (1937) tells one that not only was a total population figure calculated, but that tables of data for things like occupations by educational attainment and domicile (i.e. urban or rural) were also produced.
10. Ispov (2001) deals with the 1941–1945 period (i.e. World War II), but does not adjust the territories (or mention this lack of adjustment) of the Crimean Autonomous Republic (then part of Russia, now part of Ukraine) or of the Karelo-Finnish Republic (then a Soviet republic separate from Russia, now part of Russia).
11. From here onwards all dates until 1917 use the Russian calendar in this chapter. The Gregorian (western) calendar is 13 days behind the Russian calendar in 20th-21st century.
12. It has been posited that household-based taxation encouraged households to band together to form new households, so as to reduce the tax burden (Kluchevsky 1918).
13. *Polnoe sobranie zakonov Rossiiskoi Imperii, sobranie* 2, *tom* 9, *otdelenie* 2, 7684. (Complete Collection of Laws of the Russian Empire, Collection 2, Volume 9, Section 2)
14. *Polnoe sobranie zakonov Rossiiskoi Imperii, sobranie* 2, *tom* 33, *otdelenie* 1, 32826. (Complete Collection of Laws of the Russian Empire, Collection 2, Volume 33, Section 1)
15. Some writers have pointed out that, nevertheless, a fully functioning, centralized statistical system did not really exist (Goskomstat Rossii 1998; Yamaguchi 2003). The predominant view is that the activities the *zemstvo* statistical bureaus conducted independently were extremely useful in gathering regional statistics. However, while they achieved a lot of success in compiling statistics on agriculture, their population statistics probably did not surpass those of the regional statistical bureaus under the supervision of the Central Statistical Committee. This is partly because *zemstvo* statistical bureaus were only established originally in 34 provinces, and even at the outbreak of World War I they only existed in 43 provinces, which covered only around half of the territory of the empire (Goskomstat Rossii 1998).

16. Confessions (*ispovedanie*) normally refers to admitting and repenting for sins. In this context, however, it appears to have a broader meaning, which includes believers reporting births, deaths, and so on to the church.
17. The reports that were sent to the tsar were handwritten. They contained from several dozen to several hundred pages, and schedules of statistics were included at the back. These schedules listed the number of births, deaths (for each sex), and marriages in each of the province's *uezds* (districts). See, for example, Otchet (1864a).
18. Like those based on the parish registers of the Orthodox Church, statistics based on the parish registers of the Protestant and Roman Catholic churches are believed to be fairly accurate. Note that the dates recorded were the date of baptism not the date of birth, such that infants who died before they were baptized were not recorded, and the date of burial not the date of death (MVD RI 1866). The reports sent to the tsar by provincial governors recorded the population of the region for the year to which they related. See, for example, Otchet (1864b).
19. The separatists (Old Believers, *raskolniki*) left the Orthodox Church after opposing changes in rites that were made by the Church in the 1650s. Some of their sects rejected all contact with other sects and lived in the interior of Russia, making it very difficult to obtain information about them.
20. Statistics were not compiled from the surveys. They were merely intended to supplement the household censuses by recording information on things like people who had moved house (MVD RI 1866).
21. *Sobranie ukazov*, 1866, st.141. (Collection of Decrees, 1866, Chapter 141.).
22. Obviously, there may have been a large number of problems with the methods used when conducting the fieldwork for this, Russia's first, population census. Although labelled as a self-administered survey, Valentei (1985) has pointed out that because of the low level of literacy at the time, those conducting the surveys were often the surveyors who filled in the forms.
23. Dekret soveta narodnikh komissarov o gosudarstvennoi statistike ot 25 iulia 1918. (Decree of the Council of People's Commissars on State Statistics from July 25, 1918).

24. <Polozhenie ob organizatsii mestnikh statisticheskikh uchrezhdenii> ot 3-go sentiabria 1918 g. (Regulations on the organization of local statistical agencies from September 3, 1918.)
25. <Postanovlenie sovet narodnykh komissarov SSSR> ot 17-go iulia 1923. (Resolution of the Council of People's Commissars of the USSR on July 17, 1923.)
26. For example, the population census carried out in 1920 only managed to cover the European parts of the Soviet Union. Other regions could not be surveyed.
27. Only a single volume of tables of data from the 1939 population census was published. It included populations by region and sex, the number of workers by level of educational attainment (i.e., graduation from junior or senior high school) and sex, working populations by region and industry, working populations by sex and region, and population composition by region and ethnic group. See Poletaev and Polskii (1992).
28. See Clem (1986) for more information on population censuses in the Soviet Union.
29. *ZAGS* is an organization that registers matters such as births, deaths, marriages, and divorces. It retains the same name in modern Russia that it had during the Soviet era, and is under the supervision of the Ministry of Justice. See <Kodeks o brake i seme RSFSR ot iunia 1969 goda> (Code of Marriage and Family in RFSFR from June 1969). The decision to establish *ZAGS* was made between 1917 and 1918, with the organization intended to replace the parish registers that had been used until then. Apparently, however, because of factors such as the turmoil of the civil war, it was not until the end of 1919 that the cities of European Russia introduced the new system, and even in 1923 the system still only covered urban areas, albeit across the nation (TsSU SSSR 1928a). By 1926 the system seems to have been functioning throughout the whole of the Russian Soviet Socialist Republic, given that the number of infants under one year old recorded in the 1926 census nearly matched the number of births minus infant mortalities derived from the *ZAGS* records. However, it is posited that the *ZAGS* system remained inadequate in the following regions: the Yakutia Autonomous Republic, the Bashkortostan Autonomous Republic, the Dagestan Autonomous Republic, the

Ingush and Chechen autonomous oblasts and other parts of the north Caucasus, Sakhalin, Kamchatka, central Asia, and the Caucasus (TsSU SSSR 1928b; TsSU RSFSR 1928).

30. Obzor Federalnogo zakona No,143-FZ ot 15. 11. 97 <Ob aktakh grazhdanskogo sostoianiia> (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) (Review of Federal Law <On Acts of Civil Status>, as amended by Federal Law of 25. 10. 2001.)
31. Residency registration (*propiska*) is under the purview of the Ministry of Internal Affairs. <Polozhenie o pasportnoi sisteme v SSSR> ust. postanovleniem SM SSSR ot 28 avgusta 1974 g. N677 (s izmeneniiami ot 28 ianvaria 1983 g. , 15 avgusta 1990 g.) (Regulations on the Passport System in the USSR> Resolution of the USSR on August 28, 1974 No.677 (as amended on January 28, 1983, August 15, 1990); Postanovlenie pravitelstva RF ot 17 iulia 1995 g. N713 (v redaktsii ot 16 marta 2000 g.) (RF Government Decree of July 17 1995 No.713 (as amended on March 16, 2000). Residency of half a month or more in the Soviet era, and 10 days or more in modern Russia, needed to be reported within three days. In the Soviet era (from 1974 onwards), failure to register residency was punishable by a fine of between ten and 50 roubles. However, the *propiska* system only became effective in 1932 (Andreev et al. 1998).
32. Although the registers of births, deaths, etc. and residency registers cannot record everything, people obviously have various incentives to report events and changes in their lives. See Matthews (1993).
33. Infant mortality rates can be calculated from tables showing the number of deaths by age in months (there are no tables showing the number of deaths of infants up to one year old.) Rates for the other events (births, deaths, etc.) can be calculated as long as a total population figure (i.e., the denominator), can be obtained. Unfortunately, figures for the total population were only provided in a limited number of years.
34. When calculated by extrapolating from crude death rate and crude birth rate statistics, the total registered population in European Russia in 1897 was around 94,800,000. The census, meanwhile, gives a figure of just over 93,400,000 for European Russia.

35. The method used here is extremely simple and involves the application of dynamic statistics on the whole of imperial European Russia to the modern Russian Federation. The Appendix contains alternative estimates of the total population made using the ratio between the European and non-European parts of the present Russian Federation for years for which actual data could be obtained.
36. Leasure and Lewis (1966) also calculated the proportions of the land areas of imperial Russian *gubernias* outside European Russia (the Caucasus, Siberia, the Russia's far east, etc.) that were included in the territory of the RSFSR. They used these proportions to calculate the 1916 total population of regions outside European Russia.
37. Although the Russia's far east covers a vast area, development there did not begin in earnest until after the start of the twentieth century. Until then its population was extremely small. Even in 1904, the entire population east of Lake Baikal was less than 1.2 million (Tsentralnii statisticheskii komitet M. V. D., 1905).
38. Part of the Konigsberg region that was broken up and combined with Poland and the Soviet Union after World War II was renamed Kaliningrad in 1946, and currently exists as a Russian enclave sandwiched between Poland and Lithuania.
39. Because the authors could only obtain by-region birth and death statistics for some of the years between 1867 and 1890, they abandoned efforts to harmonize the old and new territories. Crude birth and death rates for imperial European Russia were always included in the preamble to the official statistics described earlier.
40. The total population for 1937 was not obtained from official statistics or archived historical materials, but from Poliakov, Zhiromskaia, Tiurina and Vodarskii's (2007) collection of archived historical materials relating to the 1937 population census. This is because from the start of the study to the writing of this chapter, the results of the 1937 census were out on loan to officials of the RGAE, and the authors were unable to examine them, although they did examine all the other original historical material.
41. Sulkevich (1940) provides a short summary of this.
42. The decline in the crude death rate from 1891 is statistically significant, while the crude birth rate shows no clear upward or downward trend.

43. Rashin (1956) produced and discussed processed statistics for periods five years apart.
44. Although the authors were able to obtain dynamic statistics for 1927–1938 and dynamic and population statistics for 1942–1945 from the Russian State Economic Archive, data was lacking for some regions for every one of the years (see notes to Table 2.1).
45. At the time of writing in July 2015, the historical materials they used were archived as "RGAE, Fond 1562, Opis 33s, Delo 2638." The "s" following the Opis series number stands for *sekretno*, which means "classified," and it is unclear how they were able to access them. The authors were refused access.
46. According to RGAE, F. 1562, O. 20, D. 626, L. 2-3 (1946) and RGAE, F. 1562, O. 20, D. 684 (1947), the population was 90,295,000 at the beginning of 1946 and 94,661,000 on February 1, 1947. However, compared with the 1950 population of 101,438,000, these figures are too small. Moreover, the difference between the figures for 1946 and 1947 is too large. Between 1946 and 1949, increases/decreases due to inter-Union republican and international migration were tiny, so it was decided that one could not rely on the total population figures for these years. Note also that the authors were unable to find out the total population in 1948–1949 using archived historical materials. (The Delo list in the Soviet Union's Central Statistical Board's Opisi 20 series of population statistics did not contain any total population statistics for these years.)
47. Statistics for 1856 and 1858 were not used because they relied entirely on data from the household census, and the Ministry of the Interior's Central Statistical Committee noted that they were incomplete (MVD RI 1858, 1863).
48. According to documents discovered by Zemskov (2000) in the Russian State Historical Archive, between 700,000 and 1,300,000 people were sent to labor camps each year between 1935 and 1940 (note that the authors have not examined these documents).
49. During World War II, the eastern front shifted frequently, and TsSU SSSR (1942), which presents population statistics for the first day of every month in 1942, shows that the occupied regions for which data was lacking changed from month to month.

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3

Population Policies in Soviet and Modern Russia

Ekaterina Selezneva

3.1 Introduction

The roots of the modern demographic situation in Russia go back deeper in history than the dissolution of the Soviet Union. In the twentieth century, often overlapping periods of revolution, civil and world wars, famines, and purges created a permanent lack of population resources and pronounced demographic waves. These waves were often amplified by policies targeting family life and fertility.

From the very foundation of the Soviet states, significant efforts were made to promote the autonomy of women as individuals, and their abil-

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ity to support themselves economically, while never leaving out of focus their reproductive function. Soviet ideology brought about revolutionary change to models of family formation and the upbringing of children. During the twentieth century, Russian women were assigned the triple role of social and political activists, workers, caregivers and mothers. While the relative significance of these different roles changed through the century, the identity of men as defenders of the Motherland and as main breadwinners remained rather more stable.

By the end of the 1960s, a masculinity crisis had hit the country and the motto "Take care of men!" ("*Beregite muzhchin!*") was promoted. Contemporaneously, women continued to develop strategies to cope with the burden of multiple responsibilities (worker/mother-caregiver), either by asking relatives for help or by giving birth to fewer children. It was also in the mid-1960s, when – as Vishnevsky (2009) notes – a process of depopulation began. According to Vishnevsky, a *latent depopulation* stage continued up to the moment of the dissolution of the Soviet Union (a sub-period characterized by a decrease in the fertility rate below the replacement fertility level of 2.15), followed by an *evident depopulation* stage up until the mid-2000s (a sub-period characterized by deaths outnumbering births), which then developed into the *depopulation aggravation* stage (characterized by a decrease in the number of women of reproductive age after 2004, and a decrease in the working age population from 2007; apart from some short-term reversals of the trends due to favorable dynamics linked to demographic waves).

In this context, we offer an overview of the main steps undertaken, first by the Soviet and later by the modern Russian governments, to influence family formation models and fertility levels, to improve the demographic situation between 1917 and 2015. While current literature contains a handful of studies on historical and modern fertility trends, only scattered facts for underlying governmental policies can be found, especially in English. This chapter provides the first long-term systematic overview of the legislation acts regulating fertility and the family in the Soviet Union and modern Russia. The state(s) struggled with comparatively low fertility and high mortality throughout the last century. However the difference in the state's attitude (ideology) and its financial capacity to address demographic issues has changed dramatically. Thus we address the Soviet Union and the modern periods in two separate sections. After tracing the course of the demographic policy, we further group the evidence into politically and ideologically more homogeneous sub-periods.

The overview also pays close attention to such measures of demographic policy as: marriage and divorce regulation; support of families through family benefits and the tax system; reconciliation of family and work spheres (maternity/paternity leave, workplace flexibility measures); fertility promotion; childbearing and childcare support; and rare reproductive health protection initiatives.[1] This chapter provides evidence on the demographic policies chronologically, from the October revolution of 1917 up until the dissolution of the Soviet Union in 1991 in Sect. 3.2, and from the creation of the modern Russia in 1991 to 2015, in Sect. 3.3. The last section briefly summarizes the main characteristics of the demographic policies in both periods. It concludes with a list of weaknesses in current policies that should be addressed in the future.

3.2 1917–1991: Soviet Period

3.2.1 1917 to Early 1930s: Political Mobilization of Women

The revolution of 1917 brought about wide social change, including new ideas on gender roles and relations between spouses. A range of experiments in the sphere of sexual and family/marriage relations began (Zdravomyslova and Temkina 2004).

Women were targeted by the state as a distinct population group that was lagging behind men in terms of literacy, political education, and participation in political life; they were considered as being too traditional and concentrated on the private sphere, and not yet ready for the Soviet transformation. Women were supposed to be introduced to social and political life with the help of state policies. The so-called *woman question* was formulated above all as a political question, though the reproductive function of women was never set aside by the state. For example, the 1917 decree "On an eight-hour working day,"[2] besides introducing a minimum wage and limiting working hours for both sexes, stated that women and adolescents below the age of 18 should not be exploited for work in underground conditions and occupations. Furthermore, a truly revolutionary step was made by the decrees "On parental leave" and "On insurance in case of illness".[3] The first established an allowance at the rate of 100 % of a woman's salary

for the period of eight weeks preceding and eight weeks following the birth of a child. The employer was prohibited from admitting/forcing women to work during this 16-week period. For the first nine months after delivery, breast-feeding mothers became eligible for an allowance at the rate of 25–50 % of their salary. Their working day was legally limited to six hours, and 30-minute breaks every three hours were prescribed for feeding the babies.

Article 18 of the Constitution of 1918, gave Soviet citizens of both sexes not only the right but also the obligation to work. To facilitate the introduction of women to their role as workers, in 1920 a number of quotas were established in political and economic spheres; the so-called *Zhenotdel* (Women's Department in the Party) was created to facilitate women's liberation (Hutton 1996). Working women were becoming increasingly economically independent from men.

This increasing economic independence was accompanied by a desacralization of marriage and an enhancement of freedom in private relations. The process was begun by two decrees introduced as early as December 1917: "On civil marriage, children, and keeping the registry books"[4] and "On terminating marriage".[5] The former, while recognizing pre-revolutionary Church-conducted marriages, introduced the institution of civil marriage registered by the state as the only legitimate union of two spouses. The decision to marry may be taken independent of parental agreement from the age of 16 for women and 18 for men. As a symbol of gender equality, wives were not expected to abandon their own surnames in favor of those of their husbands. Children received equal rights irrespective of whether they were born within or outside of wedlock. The paternity of illegitimate children could be recognized and enforced through the courts, based only on a request by the mother.

The second decree "On terminating the marriage" was similarly revolutionary, introducing not only the right of spouses to decide on the need to divorce but also to do so with no explanation of their reasons to the authorities. The divorce could be signed through a registrant authority, and was considered in a court only in the case of disputes concerning custody over children or division of property. However, the decree still contained some gender-biased rules, such as the entitlement of women with no means of supporting themselves after divorce, to alimony payments from ex-husbands. Divorced men had no mirroring/respective right.

The first Code of Laws "On marriage, family life, and foster care rights and obligations"[6] was based on the two above-mentioned decrees and appeared less than a year later, in 1918. The Code upheld equal rights between spouses, such as when deciding on where the family was to reside, and on the common surname taken by the spouses and by their children (Art. 100). A novelty of the code was that spouses acquired rights over their own property; the "common wealth" concept was abolished (Art. 105). Thus a spouse (usually the woman) without a wage income, who was only taking care of a house and a plot while not holding ownership of them, was denied property rights over the fruits of her work. In order to gain rights over possessions, women were forced to start working for a wage (Denisova 2010).

Children born out of wedlock were reconfirmed in their rights on a par with legitimate children (Art. 133). Fathers of illegitimate children were obliged to participate in financial provision for their children; paternity continued to be recognized by the courts on the word of the mother without additional proof. Child support could be assigned to several potential fathers (Art. 140–144).

To combat widespread and increasing illegal abortions, with their harmful if not lethal consequences, the decree "On artificial interruption of pregnancy"[7] legalized abortion in the Russian Soviet Federative Socialist Republic (RSFSR) in 1920, for the first time in Europe. After the announced legalization, the operation was performed at no cost for women. The initiative was a forced measure intended to bring women into the relatively safe environment of hospitals; it worked well in urban areas, while illegal abortion procedures were still widespread in rural areas. Legal abortion became a widespread contraceptive measure, which led to hospitals being overloaded with abortion operations by the 1930s. By 1924, a special commission was considering every abortion request; priority was given to women in bad health and poor socio-economic conditions. In the case of a negative decision by the commission, the abortion could still be carried out for payment. To mitigate the rapidly increasing number of abortions, some restrictions were introduced in 1926; no abortion was allowed for the first pregnancy or for those who had undergone the operation within the six preceding months. Abortion became a paid-for operation for virtually all procedures after 1930. As Gross Solomon (1992) notes, possibly due to

an historically high fertility rate, "the demographic (as indeed the moral) consequence of legalizing abortion remained a minor theme until the early 1930s." (p. 60) No contradiction was seen between the legality of abortion and a general commitment of the state to pro-natalist policies.

In the Labor Code of 1922,[8] the leave of eight weeks before and after the birth of a child as introduced by the 1917 decrees, were reconfirmed. There was a possibility of additional maternal leave for breast-feeding mothers and for mothers of children below the age of eight if childcare was unavailable. Pregnant women were given the right to decline business trips and job-related relocations from the fifth month of pregnancy; they should also have been allocated to less difficult/heavy work on the same salary as in the previous six months. Quotas protecting women against being fired in the process of rationalization were established, in particular for pregnant women and single mothers with children below the age of one.

The Labor Code of 1922 elaborated a number of restrictions on women's working conditions. Women (and adolescent men below the age of 18) were prohibited from employment during night shifts. Exceptions were allowed only in those industries where there was an urgent production necessity, but pregnant or breast-feeding mothers remained excluded from jobs potentially harmful to health, and from occupations performed in underground conditions. Article XIII of the Code proclaimed that women (and men under 18) were banned from especially hard jobs and those potentially hazardous to health. The People's Commissariat for Labor (VTsIK) was tasked with overseeing the list of banned occupations.

The Code of Laws "On marriage, family life, and foster care rights and obligations" of 1926 further weakened the value of marriage.[9]. Its definition of marriage included cohabitation, joint housekeeping and bringing up children (Art. 12). The Code of Laws equalized the rights of those in registered and *de facto* (a testimony could confirm that a man and a woman cohabited) marriages. However, its registration remained the main proof of the fact of the marriage; the rights and obligations of spouses, especially those related to property and child rearing were recognized only in the case of a proven marriage. This inconsistency in the Code on the definition and consequence of marriage is noted by some researchers (e.g. Dementieva 2009). The Code also reintroduced the

mutual (joint) ownership of possessions of a couple, abolished in 1918, while keeping the individual rights to private property acquired before marriage (Art. 10). Marriage age for women was raised to 18 and hence equated to that of men. Divorces were now confirmed by the Registry of Civil Deeds (ZAGS), reducing the role of courts. A divorce could be declared without the mutual consent of both spouses, and even with one or both spouses absent during the proceedings, in its turn initiated by a note of divorce sent to the court by one of the spouses (the so-called ystem of a postcard divorce).

Zdravomyslova and Temkina (2004) argue that in the 1920s the model/image of new Soviet people was under construction. The New Soviet woman was seen as a citizen whose responsibility was to produce (economic goods and services) and reproduce (population); children were supposed to become, first and foremost, part of the Soviet family of people. New Soviet man was seen as a citizen whose responsibility was martial (defense of the Soviet country) and labor mobilization (working for the Soviet country).

The institution of motherhood began its transformation into the mother–state combination (women were expected to use public childcare facilities provided by state or workplace from the moment they returned to work), while fatherhood was represented via economic/financial support of a family. The tradition of non-participation of fathers in child rearing was repeatedly enhanced by state policies (e.g. Rotkirch 2000; Ashwin and Lytkina 2004; Zdravomyslova and Temkina 2004).

3.2.2 The 1930s–Mid-1950s: Development of the "Soviet Family" Concept

Implementation of the First Five-Year Plan began in 1929. The Plan was supposed to produce rapid industrialization, with an emphasis on heavy industry, as well as the transformation of individual farms into state collective farms. Collective farms, as supposedly more efficient agricultural organizations, would create a surplus labor force in rural areas that was intended to be used in urban areas for industrial work. Extensive internal migration was taking place: peasants were moving to cities, workers were

moving to big construction projects. The latter especially often lived in a nomadic manner, leaving families behind them. In the literature, authors often emphasize the continuation of the purposeful (through socio-economic policies) weakening of family ties (Zdravomyslova and Temkina 2004; Dementieva 2009).

As a solution to the housing problem, *kommunalka* (communal flats) became widespread, with several families residing in the same flat and sharing kitchen and bathroom facilities. Researchers note that the experience of living in kommunalka was comparable to living with an extended family in which women bore the traditional roles. Additionally, the deficit of consumption goods in the pre-war, war, and post-war periods promoted the traditional division of functions among genders: women sewed, cooked, and performed other traditional female functions (Denisova 2010).

At the same time, women represented "a 'reserve' army to be drafted into the economy to sustain rapid economic growth" (Sakwa 1998, p. 196). During the forced industrialization, the norms banning some occupations and working conditions as harmful for women's reproductive health were relaxed; those working in potentially harsh and harmful conditions would be compensated for by additional vacation days and other benefits. A movement arose of women learning traditionally male professions (tractor driver, airplane pilot). In the 1930s, the concept of the Soviet super-woman was elaborated, solidifying the "normality" of the double burden for women. By the end of the first 5-year plan period in 1934 it was officially declared that the "woman question" - in its political part - was solved.

In the 1930s, the state turned to the valorization of the institute of registered marriage and of the role of women as mothers of big families. The pro-choice practice established after the introduction of abortion legalization was ended with the Abortion Ban of 1936.[10] Abortion was legally allowed only in hospitals, and only in case of danger to the mother's health and life. In other cases abortion became both illegal and unpatriotic. Mass media supported the law before and during its implementation. The creation of large families was encouraged; subsequently, a range of measures was introduced, including new benefits for large families and single mothers, increased punishment for non-payment of

alimony (child support), and some restrictions on the divorce procedure. Vishnevsky et al. (2006) argued that the abortion ban was supposed to shift people's value orientation, displacing the focus from private interests to those of the country. Young constructors of communism, with a new collective mentality, were needed.

In connection to the Abortion Ban, a criminal responsibility charge for employers (a fine of 1,000 rubles or six months corrective labor) was introduced in October 1936. They were held criminally responsible for decreasing the wages of expectant mothers (those with a work record of at least one year with a pause of employment of no longer than a month), and for refusing to hire a pregnant woman (if the rejection was based on the pregnancy).

The new edition of the Constitution in December 1936, besides guaranteeing equal rights for men and women in all spheres of life, also emphasized the protection of mothers' and children's welfare through maternity leave and state allowances, especially to large families (Art. 122). Additionally, it highlighted an intention to expand the number of daycare centers for children of all ages, and to provide better medical provision for expectant mothers and infants. Though, as researchers note, promises and reality did not always meet, especially in rural areas (Denisova 2010).

Among measures supporting the reestablishment of the image of the normality of a large family, one may note the tax for childlessness (*nalog na bezdetnost*), introduced in November 1941.[11] This 6 % tax was applied to the incomes of men aged 25–50, and of married women aged 20–45, if their earnings were higher than 70 rubles per month (the minimum wage).[12] Tax exemption was given to parents whose children died during the – at that time ongoing – war, to war heroes, and the medically incapable.

The image of women as mothers (of large families) and primary caregivers was further promoted by the establishment of the honorary title of Mother Heroine (*Mat'-geroinia*) in 1944.[13] New medals were introduced: the Motherhood medal (I degree for six children; II degree for five children); and the Order of Maternal Glory (I class for nine children; II class for eight children; III class for seven children). The honorary title of Mother Heroine (Order Mother Heroine and a certificate conferred by the Presidium of the Supreme Soviet of the Soviet Union) was awarded to

mothers who gave birth and raised ten or more children. The award was made upon the fifth birthday of the last child, provided that the other children (both natural or adopted) remained alive, with the exception of those lost in the war. Mother Heroines were entitled to a number of privileges, such as a retirement pension, the payment of public utility charges, and the supply of food and other goods.

The length of temporary disability leave for child delivery and care, which was reduced at the end of June 1941 to 35 days before delivery and 28 days after, was increased to 35 plus 42 days (56 in case of complications or multiple births) in 1944; while the total duration still remained shorter than in the pre-war period.

Unlike in previous regulations, the new state lump-sum benefit at birth was to be given to mothers (whether with a husband or widowed) on the birth of their third child rather than the seventh, as before.[14] Monthly allowances were paid from the child's second year until the age of 5. Unwed mothers received the right to monthly assistance amounting to 100 rubles for one child, 150 rubles for two children and 200 rubles for three and more children.

The 1944 decree confirmed the plans to: extend the network of child-care institutions, consulting centers and milk kitchens; organize evening groups in kindergartens and crèches. Crèches, kindergartens, rooms for breast-feeding, and women's personal hygiene rooms were required at factories and offices employing women.

The eligibility rules for the tax on bachelors, single and childless citizens of the USSR were also modified. Previously, the 6 % tax was paid by men (between the ages of 20–50) and married women (20–45 years) without children; this was extended to citizens possessing one or two children who also became taxable at 1 % and 0.5 % respectively. Tax contributions from farmers were supposed to be paid in the form of a lump sum, assessed depending on their contribution to agricultural taxes. Exemption from taxation was allowed for the following categories of citizens: service men, serving officers of army units and military institutions and their wives; women receiving assistance or a pension from the state for the support of children; citizens whose children had perished or disappeared at the front during the Patriotic War; students of secondary or higher educational institutions under 25 years of age; invalids with first and second grades of disability.

The 1944 decree also introduced, for the first time since 1918, a range of measures to strengthen the institution of the (registered) family. Only officially registered marriages were accepted as being legitimate; registration of *de facto* marriages with a note on the length of the latter was allowed. At the moment of registration, a compulsory entry was made in the internal passports of each spouse containing details of the other. Additionally, the law abolished the right of a mother to appeal to the court with a demand for the establishment of paternity and to obtain alimony for the support of a child, if the mother was not cohabiting in a registered marriage. As Zakharov (2008) noted, this measure could be considered as restorating "illegitimate child" status, which was abolished soon after the revolution.

The procedure of divorce returned to the public courts, with applications again requiring motives for dissolution rather than just the spouses' details. A ten rubles fee was paid upon presentation of the notice, and 100 to 200 rubles after the verdict on the dissolution of the marriage (an amount that constituted roughly 8 % to 16 % of an engineer's wages in 1944).[15] Wife, husband, and witnesses could be summoned for court examination and the court had an obligation to attempt a reconciliation between the spouses. The decision of the court was then published in a local newspaper, paid for by the spouse who initiated the divorce.

The post-war 1947 decree "On the amount of state allowance to mothers of large families and to single mothers"[16] stated that previously established benefits, introduced to mitigate the harsh war conditions, had become unfairly large and an excessive burden on the country's budget. This was despite a growing economy and the improving purchasing power of ruble. The decree halved the amounts of benefits and allowances from the 1944 decree.[17]

The levels of monthly allowances were comparable to the monthly fees for a child's attendance at kindergartens and crèches.[18] The decree of the Soviet of Ministers No. 3000 established a flat rate fee, varying according to the type of childcare institution and urbanization. A child received 60 rubles in urban areas and 50 rubles in rural areas for kindergarten fees, and 45 and 30 rubles as crèche fees. The decree also obliged the relevant Ministries to develop a new pay scale related to parents' salaries. In addition, a special instruction was issued that in case a place allocated to a

child in a childcare facility was not being used for reasons other than the illness of the child, quarantine, or parent's vacation leave, the parents were supposed to refund the fee in its entirety.[19]

3.2.3 Mid-1950s–Mid-1960s: Khrushchev Thaw

At the twentieth Congress of the Communist Party the cult of Stalin was abolished and a new intensive period of building Communism was proclaimed. Simultaneously, the welfare of citizens received some attention, and a massive housebuilding program allowed the return of the private sphere. A number of measures towards the liberalization of family-related legislation were introduced.

One of the most important steps was the decriminalization of abortion (if undertaken during the first 12 weeks of pregnancy) from November 1, 1955.[20] Fertility, and abortion in particular, again became a woman's personal decision. However, the lack of sexual education and the general unavailability of contraception contributed to the reestablishment of the culture of abortion as one of the most used instruments for family planning (by the 1960s, abortion was the easiest/most accessible method of contraception, according to Perlman and McKee 2009).

In February 1955 the length of temporary disability leave for birth and childcare returned to 56 days before delivery and 56 (to 70) days after delivery, the 1917 standard. The period of leave was covered by a temporary disability benefit amounting to two-thirds of salary and the eligibility criteria were extended, while the requirement of having had three uninterrupted months of employment at the current employer was abolished. In the case of poorer families, where the salary during the two months preceding delivery did not exceed 50 rubles, a lump-sum benefit of 12 rubles for newborn care goods and 18 rubles for feeding the newborn were paid to a spouse whose employment record was longer than three months at his/her current employer. However, some work-family reconciliation measures were reduced, such as paid leave for taking care of a sick child, which was cut to just three days.[21]

In the mid-1960s, further improvements to social protection for the most vulnerable families took place. Among the new measures was a monthly allowance of 35 rubles per child for a family with men in obliga-

tory military service (for the duration of the service).[22] The length of childcare leave due to delivery and childcare for agricultural workers was aligned to that of other workers, regardless of the length of their employment record from January 1, 1965.[23] Families with disabled children (I and II degree of disability), who had reached the age of 16, were recognized as a separate group eligible for benefits.[24]

In the literature, the end of the 1950s and 1960s is sometimes seen as a period when there was a crisis of masculinity, of poor men's health, and a discussion on how to improve it, possibly making wives responsible for their husbands' health (e.g. Avdeeva 2010). In the official discourse, the crisis of gender roles is seen through the prism of the demographic crisis. In the mid-1960s, the Soviet Union was among the first countries in which the overall fertility rate decreased below replacement fertility (Vishnevsky 2009).

The new Code of Laws on marriage and family life came into the force on November 1, 1969. It declared the need to further reinforce the equal position of spouses within the family, and to pursue the creation of a communist family free from material concerns. Some of the acts of the Stalinist period were canceled. Among others, applications for the dissolution of marriage could again be processed either through ZAGS or the courts. Some measures to defend the socially more vulnerable spouse after divorce were reintroduced.

3.2.4 The 1970s: Completion of the System of Benefits to Families

At the beginning of the 1970s, the necessity of developing a consistent demographic policy appeared in discussions. Demographic policy was ambitiously referred to as a "system of measures directly aimed at shaping the conscious demographic behavior of members of society in a way that suits society." (Smith 1983, p. 1) However, demographic and family policies were not among the main targets of social policy in the period. Existing policies suffered from the absence of regional differentiation according to regional birth rates and the socio-ethnic composition of the population (Novikova et al. 1978).

During the 1970s a debate on the working conditions of women (and especially pregnant women), contemporaneously with the promotion of the ideology of motherhood as women's natural predestination, came back to the fore. By the end of the decade "saving the family" and strengthening the institution of marriage, became a priority. As the number of marriages started to fall, the extent of divorces and births out of wedlock attracted particular attention.

The tradition of a low contraception culture persisted. Through the 1970s, the Ministry of Health took a conservative position regarding oral contraception and disseminated the idea that contraceptive pills were unsuitable for 80–90 % of women, due to their direct and indirect health effects. The opinion that abortion was less harmful to women's health than oral contraception was promulgated. Some authors consider this an indication of the fears of the state for its decreasing control over fertility and the fall in the number of births if contraception was more available.[25]

In 1973 the eligibility for pregnancy and maternity benefits (already 100 % of salary) was extended to all women, regardless of their employment record and membership status in the trade unions.[26] Agricultural workers also became eligible for the same allowance as industrial workers. The length of paid temporary disability leave due to the necessity of taking care of a sick child was increased from three to seven days.

Among the legislation adopted during the 1970s, the further introduction of subsidies for poor families should be mentioned.[27] A family was considered poor if per capita family income was below 50 rubles (or 75 rubles in the extreme northern and far eastern regions). In 1974, about 5 % of the population was considered poor according to this criteria. A subsidy of 12 rubles per month, per child below the age of eight, was introduced from November 1, 1974.[28] However, families with two working spouses (the average worker's wage was about 190 rubles per month) were generally ineligible for child allowances even if they were raising four or five children (Litvinova 1989). Litvinova noted that allowances to large families were often seen as a tool of fertility stimulation, while their role was primarily social and not demographic.

As for the working conditions of women, a new edition of the list of prohibited jobs was issued in 1978.[29] The Labor Code banned women from occupations that required the lifting and moving of heavy items,

night shifts, and other potentially harmful (for reproductive functions) conditions. Requirements for productivity (the norms of production) for pregnant women and mothers with children under the age of one and a half were lowered or these women were required to be transferred to a job with lighter physical duties but with the same average salary until their child reached the age of 18 months. As before, breaks of at least 30 minutes for lactation were mandatory at least once every three hours and were counted as working time. If legal requirements were violated,[30] compensation in the form of additional payments/vacation days was to be provided. Working mothers received the right to request flexible working schedules in the form of a partial week and/or partial working day.

The XXVII Session of the General Assembly of the United Nations (UN) in 1972 designated 1975 as International Women's Year and called for the end of discrimination against women in all spheres of activities all over the world. Following the UN challenge, the leadership of the USSR stated a need for more effective population policies at the twenty-fifth (1976) and twenty-sixth (1981) Party Congresses. Brezhnev, in his speech to the twenty-sixth Party Congress, called for the creation of favorable conditions for women in their (triple) role of workers, mothers, and housekeepers. In this triad, the professional sphere became the sphere of creativity and self-realization for women (Novikova et al. 1978; Smith 1983). As for fertility, the paid period of maternity leave was extended up to one year during the 1976–1980 Five Year Plan, putting the last cornerstone into the system of allowances and benefits to families with children summarized in the Constitution of 1977 (Korsanenkova 2010).

3.2.5 1981–1983: Fertility Stimulation

The response to the calls of the Party leadership came in 1981–1983. A new set of measures for family, and especially large family, support, and for the creation of better conditions for population growth and youth education were adopted. The improvement of the working conditions of mothers, and the development of a rational combination of state- and family-based system for the upbringing and education of children was the basis for new legislation.[31] Measures were introduced to compensate

for quality of life/welfare gaps between families with different numbers of children and to create favorable living conditions for young families. A lump sum benefit at birth was established at 50 rubles for working women and women in out-of-service training on the birth of their first child, and 100 rubles at the birth of second and further children (Art. 4). For non-working mothers, the amount of the state lump-sum benefit was fixed at 30 rubles regardless the order of the child; the benefit also was paid when the father of the child was in work or studies. For working mothers with an employment record above one year, and for women in out-of-service training, a one-year, partially paid childcare leave was introduced. The payment was equal to 50 rubles per month in the extreme north and far eastern regions and to 35 rubles per month in other areas. The unpaid period of childcare leave became extendable up to 18 months while still being counted as a part of the employment record (for the purposes of pension and other benefits calculations). The same resolution introduced several additional benefits for working mothers with two or more children under the age of 12 (Art. 3): an additional three days of paid leave, up to a total of 28 calendar days; the right to take priority for vacation days during the summer or other requested time-periods; and additional unpaid childcare leave for up to two weeks (with 50 % of salary paid starting from the twelfth Five Year plan period 1986). In addition, from 1981 all students in higher, secondary and vocational training institutions, who had children and demonstrated a good academic record, were paid a scholarship (Art. 4).

Resolution No. 235 also contained a suggestion to introduce in the near future an exemption from the "Tax on bachelors, single and childless citizens of the USSR" for newly married couples for the first year of marriage.

To improve the living conditions of single mothers, an allowance of 20 rubles was introduced from December 1, 1981 to mothers with children younger than 16, or 18 if they were studying without a scholarship (Art. 4, Resolution 235), and an allowance to unmarried mothers with children whose fathers evaded alimony payments was established.[32] In 1986, eligibility for unmarried single mother benefits, introduced in 1981, was extended to widows with children who were not receiving a pension for the loss of a breadwinner.

Apart from money allowances, the length of childcare leave was also increased to 56 days before birth (with a proposal to extend this to 70 days starting from the twelfth Five Year plan period in 1986) and 56 days after delivery, or 70 days in the case of two or more children. The plans for an increase of the length of leave coincided with the announcement of further plans for extensive construction of childcare institutions.

From January 1, 1984, poor families (with a monthly per capita income below 50 rubles, or 75 rubles in the far east and extreme north regions) became entitled to a monthly allowance of 12 rubles per child aged below eight. The benefits and allowances for large families established by Resolution of the Soviet of Ministers in 1947 remained in force.[33]

Beginning in 1981 the privilege of a lower pension age for mothers raising five or more children or a child born with disability, was introduced. The pension could be assigned in the case of an employment record of at least five years and of three uninterrupted years of work at the moment of application for the pension.

To solve one of the most acute problems, housing, young families (first marriage with both spouses under the age of 30) were entitled to the priority allocation of a room, or a one-room apartment, when a child was born within three years of the marriage (Resolution 235). From 1982 enterprises and collective farms were allowed to lend interest-free loans for improving the living conditions of young families – with an employment record of at least two years at the enterprise – of up to 1,500 rubles for a period of eight years. If a second child was born during the term of the loan, the family would receive a 200 rubles deduction, and at the birth of a third child a 300 rubles deduction.[34]

Resolution No. 235 from January 22, 1981 also promoted the necessity of youth education in the spheres of sexual upbringing and family life. A sense of responsibility (towards family and society) and respectful behavior towards women and the elderly needed to be propagated. Hence, a school program was supplemented by two obligatory courses. "Hygiene and sexual education" (*Gigienicheskoe i polovoe vospitanie*) was introduced in 1983 for pupils in their eighth year of school, and in 1985 "Ethics and psychology of family life" (*Etika i psihologiia semeinoi zhizni*) was taught during the two last years of school, the ninth and tenth grades.

Several initiatives were undertaken in the sphere of contraception and safeguarding reproductive health. From January 1, 1985, women undergoing abortion were entitled to three days disability leave and a temporary disability benefit for those three days.[35] In cases of spontaneous abortion, abortion due to medical reasons, and cases when women received a salary below the minimum wage level, the allowance was paid for the whole period of the temporary disability. In cases when temporary disability due to abortion lasted more than ten days, a temporary disability benefit was paid starting from the eleventh day of temporary disability.

In 1987, the Ministry of Health issued a development plan for the healthcare system for the following ten years; the plan included a paragraph on the necessity of combatting abortion and the introduction of modern measures of contraception. This was a 180-degree turn with respect to the previous position of the state on contraception and abortion.[36]

3.2.6 Second Half of the 1980s: Further Benefits for Working Mothers

The introduction of the new demographic policy in 1981–1983 coincided with the entry of the large cohort born at the end of the 1950s and beginning of the 1960s into their most fertile age range of 20–24. Concern with the number of women of fertile age became one of the trends of the second half of the 1980s; the previously introduced fertility measures were extended and further developed in the framework of a socially oriented economy. The development of regionally specific programs for birth stimulation was announced as a priority in 1987.[37]

One of the trends of the period was a further enhancement of the system of support measures to the most vulnerable families, namely poor and large ones. Since 1985, the age of children receiving monthly money allowances for poor families was increased from eight to 12. From January 1, 1986, monthly allowances for children of military servicemen were augmented to 35 rubles.[38] Payments for temporary leave for taking care of a sick child under the age of 14 was lengthened to 14 days (and

50 % of salary). In cases when leave needed to exceed 14 days, the mother would receive a certificate of temporary exemption from work.[39]

A further extension of benefits available to working pregnant women and women with children came into force in 1987:[40] the administration of enterprises could not deny a request from a pregnant woman, or a woman with children under the age of eight, for a part-time schedule (lower hours, or number of working days). Also, young mothers with children under the age of one were now allowed to work part-time or work at home, while retaining their childcare allowance.

In 1987 large or poor families received the right of access to consumer durable goods in shortage, and the right to a stable food supply for children in their second year of life. School age children from poor families with a single household head bringing up three or more children below the age of 16 were entitled to receive school/sports/pioneer uniforms, and breakfasts at school without payment.[41]

As proposed in 1981, exemptions from the childlessness tax was extended on the first year after marriage beginning from February 1, 1987.[42]

While the health of the population indirectly improved as a consequence of the alcoholic beverages ban of 1985–1987, no significant initiatives were undertaken to improve reproductive health. Possibilities for family planning were virtually nonexistent, due to the lack of information, specialized medical services, and modern contraception methods; abortion remained the main means of contraception.[43]

In contemporary analytic publications (e.g. Litvinova 1989), moderate criticism of the family and fertility policy measures appeared. Regional differences were emphasized as not yet being adequately incorporated into the policies, thus causing regional imbalances (while in RSFSR the number of desired children was under two, in the Republics of Central Asia it was around seven – a fertility level close to the reproductive limit). In addition, the author criticized the persistent lack of housing for young families, inactive family planning propaganda and the scarcity of contraception measures other than abortion. The suggestion was to correct the legal and social mechanisms of fertility stimulation to get two to three children from each physically and morally healthy family, and not a maximum of children from a maximum of families. The author

(Litvinova) proposed the introduction of a child allowance of a significant amount for the first child and that fathers and grandmothers could also take childcare leave.

3.2.7 1989–1991: Regional Specifics in Fertility Stimulation

Regional specifics in fertility stimulation measures finally appeared in legislative documents from 1989 to 1990. Regional (republic) governments were allocated more freedom in the establishment of allowances and privileges and more differentiated regional coefficients for the centralized state allowances were introduced. A number of resolutions further promoted the advancement of maternal and children's health and the social protection of families with children.[44] Emphasis was placed on the specificity of the period, namely transition to a regulated market economy by 2000. However, the measures developed were not fully implemented due to the political changes the country underwent at the end of the decade.

Resolution 1420–1 further increased ante-partum leave (70 days starting from December 1, 1990) and postpartum leave (56 days; 70 days in case of complications or multiple births). The leave was granted to women in its entirety regardless of the number of days used by women for ante-partum leave. Childcare leave was also extended from 1989 with a paid period of up to one and a half years and an unpaid period of up to three years, with the right to restart work at the same position in the enterprise. In a revolutionary manner, childcare leave became parental leave, meaning that not only mothers but fathers and other close relatives became eligible (Resolution No. 1420–1, Art. 7). Unlike in previous periods, when flat rate benefits were widespread, the new allowance calculation became linked to the level of the minimum wage and hence indexed for inflation (for example, childcare benefit up to the child's age of one and a half became equal to one minimum wage); regional coefficients could also be applied. In the case of the birth of two or more children the allowance was paid for each child.

Another novelty introduced allowed parents without an employment record, as well as those who had less than one year of employment, to be eligible for the allowance at 50 % of the minimum wage. The law extended the right of working mothers to request flexible (part-time day/week) working schedules until the child reached the age of 14.

For the social (and pension) protection of mothers, the law regarded their employment record as being uninterrupted for the means of calculating allowances when caring for a child up to the age of 14 (or 16 in case of child with disabilities) in cases when the women returned to the workforce at child's mentioned age (Art. 8).

Resolution No. 759 abolished the allowance paid to large families from the birth of their fourth child until the age of five (established in 1947). The outdated allowance was replaced by a series of allowances and grants. From December 1, 1990 a grant of three times the minimum wage (210 rubles) paid at childbirth was established. Starting from the age of one and a half years, the moment when the paid childcare leave period would be completed, each child under the age of six in families with a per capita family income below two times minimum wage was entitled to a monthly allowance amounting to 50 % of minimum wage. Regional coefficients applied to adjust the allowances to the living standards of the regions.

Additional measures for the most vulnerable families included an increase in the monthly state allowance to single mothers (until the child reached 16, or 18 if the child was studying without a scholarship). The monthly allowance of 12 rubles per child up to the age of 12 in poor families with per capita monthly family income below 50 rubles was kept (for families in the extreme north, far east, and Siberia the threshold was 75 rubles). Families with a per capita family income lower than 60 rubles were exempted from the monthly fee for childcare institutions; families with four children or more received a 50 % deduction in fee payments.[45]

Some privileges for the mothers of multiple children were included in the law on "Pension provision" (Par. 18). Mothers of five or more children who took care of them until the age of eight, and mothers of disabled children who took care of them until the age of eight, had the right to

early retirement at the age of 50, with an employment record of 20 years accumulated (including the time of childcare), or, with a time record of 15 years (with childcare not included). Moreover, time spent on childcare (until the age of three of each child; or six years in total for several children) was included in the employment record, as well as the time caring for a child with a disability until the age of 16. Mothers Heroines received the right to a social pension equal to an old-age pension.

New tax deductions were also established:[46] a complete exemption for Mothers Heroines and persons with disabilities (starting from January 1, 1991); a 30 % reduction in tax for large families with three or more children, and single mothers with two or more children under the age of 16.

The main tendency of the legislative documents of 1990–1991 was an orientation towards increasing the length of childcare leave and the absence of efforts to promote the integration of women into the market economy (e.g. Posadskaya 1992). This strategy contributed to lowering women's unemployment figures but also likely deepened inequality between the two sexes. Women's competitiveness in the labor market decreased; women, in particular those with children, were becoming increasingly expensive in the labor force due to their rights to a partial working day, flexible working hours, taking additional days of absence for family reasons, and additional vacation days. In reality, a mechanism to implement protectionist schemes was missing. Apart from the relative drop in competitiveness, women remained banned from some jobs through the list of prohibited occupations inherited from Soviet times. The existence of the list itself was in violation of the Constitution of the Russian Federation.[47] Some inconsistencies persisted; women, while virtually barred from the oil-drilling industry (which was characterized by high wages and a number of benefits including shorter working hours, longer holidays, and earlier retirement), were welcomed into other potentially dangerous occupations, such as medicine, which were poorly paid and often had bad working conditions.

Among the projects that were not realized in full (Resolution 1420–1; see footnote 44) was the further development of the network of childcare institutions at all levels, and of medical ones, and the construction and modernization of the latter (planned for 1991–1992); a system of allowances for relatives providing childcare up to the age of three; a new system

of allowances to families with children with disabilities raising children within their families.

3.3 1992–2015: Modern Russia

3.3.1 1992–2000: Children's Welfare Takes Priority

The Russian Federation inherited the main principles and directions of demographic policy from the Soviet Union, although in 1991–1992 the pro-natalist policy of the Soviet state had, in fact, ended.

Following Article 7 of the Constitution, the principles of a social state (*sotsial'noe gosudarstvo*) were the background to the new policies. A new concept of state family policy was developed based on the following principles:[48] that the family is autonomous in its decision making; the child's interests, regardless of age and sex, must be pursued; all family types have equal rights in their access to state support; social assistance is differentiated in accordance to family characteristics; men and women are equal in sharing housekeeping responsibilities and in the opportunities for employment; social assistance includes a number of measures covering all the spheres of vital family functions. In line with the new concept, a number of decrees and policies targeted the welfare of children and mothers.

The presidential decree "On top-priority tasks for the development of the education system of RSFSR" urged for the development of a federal program, "Children of Russia".[49] The main goal of this federal program became the maintenance of social guarantees for children, their access to education and health care, and respect for children's rights. The target program "Children of Russia" ran from 1994 until 2010, changing its focus to the most urgent issues during its duration.[50] It included six sub-programs: (1) Family planning (*Planirovanie sem'i*); (2) Children of the North (*Deti Severa*); (3) Children with disabilities (*Deti-invalidy*); (4) Orphan children (*Deti-siroty*); (5) Children of Chernobyl (*Deti Chernobylia*); and (6) the baby-food industry (*Industria detskogo pitaniia*). In addition, the Anti-AIDS program (*Anti-SPID*), and some others, were

implemented to ameliorate population health, morbidity, mortality, and problems with health service provision.

The extensive system of childcare allowances and benefits was simplified. Starting from January 1, 1994, a unified monthly allowance for children was introduced.[51] This replaced the set of allowances and benefits previously in force, such as: (a) the monthly allowance for children between one and a half and six years old; (b) the monthly allowance for children of single mothers; (c) the monthly allowance for children whose parents evade alimony payments; (d) the state allowance for children of military servicemen on compulsory service; (e) the state allowance for children under tutelage; (f) the allowance for HIV positive children below the age of 16; (g) monthly payments for children ineligible for benefits or pensions below the age of 16 (in education but not in receipt of a scholarship due to poor academic progress under the age of 18; for students of establishments of general education, until completion of their education); (h) monthly compensation for a child's nourishment/food to families with children below the age of three; (i) quarterly compensation for price increases in child-related goods to families with minor children; (j) annual compensations for clothing; (k) allowances for non-working mothers with children below one and a half years. The new unified monthly allowance was paid for each child, whether natural or adopted, depending on family support, from the birth of the child until the age of 16 (or until completion of their studies). The allowance was paid independent of the eligibility of the child to a pension scheme (social or pension due to breadwinner loss) or/and to alimony payments. The amount of the allowance was fixed at 70 % of minimum wage for children under six and 60 % for children between six and 16 years old.

To improve reproductive health and promote modern methods of contraception other than abortion, sexual education was incorporated into school teaching plans in the framework of the federal target program "Family planning" (a sub-program of the federal program "Children of Russia"). However, financing of the "Family planning" program was suspended in 1998 after extensive criticism from the Russian Duma (*Federal'noe Sobranie*) and the Russian Orthodox Church.[52] The federal target program "Safe motherhood" (*Bezopasnoe materinstvo*) promoted new methods of contraception, and general attention to reproductive

health among women, though particular attention was paid to the prevention of abortions.[53]

Larger and poorer families were targeted by a special federal program from 1999.[54] Additional benefits varied across regions and included, among others, discounts on day care and public transportation, subsidies for childcare institution fees, and social scholarships to students.

3.3.2 2000: Demographic Policy Until 2015—Combating the Demographic Crisis

Regardless of the annual natural loss of around 400,000 people during 1992–2000, demographic projections for the second half of the 1990s were still rather optimistic, although even these did not predict a reversal of the decline (e.g. Pirozhkov and Safarova 2006). However, by the end of the decade mass media and the government began to be concerned about the demographic situation describing it as a "demographic crisis" (Isola 2008).

To handle the situation, a set of legislative documents envisaged the main points and priorities for the further development and national security of Russia. The concept for the demographic policy of the Russian Federation until 2015 was announced in September 2001.[55] It was intended as guidelines for the government and local authorities in their efforts to stabilize the population and to create favorable conditions for population growth. The main focus was on three spheres:

1. Fertility regulation and strengthening family ties and family support, including:

   - Promotion of the family model with at least two children regarded as the societal norm.
   - Improvement of life standards, the quality of family life, and stability of the labor market.
   - Creation of favorable socio-economic conditions for youth education, professional development, and housing.
   - Creation of working conditions allowing the combination of work and family responsibilities for families with children.

- Development of strategies targeting family placement of orphans.

2. Health and longevity of the population.
3. Migration and population distribution.

The importance of propaganda (mass media) to the success of the concept's implementation was stated explicitly. The promotion of a higher social value for children was supposed to convince individuals to reconsider their priorities and diminish the perception of children as obstacles to the achievement of other personal goals. In the framework of the Family Planning Program (2002), television and radio programs on topical issues of family planning were broadcast.

In 2003, to encourage an increase in the number of births,[56] nine of the 13 reasons that women could use to apply for a legal abortion from the twelfth to the twentieth week of pregnancy were abolished. Such social reasons as a disabled child in family, unemployment, very low income (lower than subsistence level in the region), three children in the family, inappropriate housing (e.g. no flat of their own, living in a dormitory) were removed from the law. Only the following reasons were retained: disability of the husband (I-II group of disability), death of the husband during pregnancy, pregnancy which followed rape, a court decision on the termination of parental rights, incarcerated pregnant women. In the foreign press the decree was seen as a sign of an increase in the influence of the Russian Orthodox Church.[57] Perlman and McKee (2009) argued that

> "national concern about declining fertility has led to policies that may have detrimental effects on family planning. For example, government financial incentives encourage women to have more children, legislation enacted in 2003 reduced the number of indications for legal abortion, and the government has expressed little support for and sometimes actual opposition to family planning programs" (p. 41)

At the same time, the high abortion rate in Russia signaled the urgent need to improve the population's awareness of modern family planning methods.

As researchers note, in 2004 there was still potential for a further fertility increase, as the actual number of children per woman was lagging

behind the ideal number of children that women wanted to have (Maleva and Siniavskaia 2006). Among the factors frequently cited for this was an unfavorable male to female ratio and poor housing conditions (UNDP 2008, p 21). It was emphasized that policymakers should not have relied only on financial methods to stimulate fertility.

3.3.3 Second Half of the 2000s: Birth Certificate and Maternity Capital

While in 2004 the number of women of fertile age began to decrease, the official statistical body, the Russian Federal State Statistics Service (*Rosstat*), predicted a continuous growth of the birth rate until 2016.[58] However, in 2006 the overall fertility rate per woman was only 1.3, with the highest age-specific fertility for the age ranges 20–24 and 25–29 being 85 and 77 per thousand, respectively. These numbers were nearly twice as low as in 1970, when the rate was 153 and 110, respectively, and total fertility per woman was equal to two.[59]

It was in 2006 that the public interest was drawn to the problem of depopulation by a number of politicians, such as the President of the Russian Federation Vladimir Putin and the Chairman of the Council of the Federation Sergey Mironov, who called for action to fight the problem. Mironov stated in a February 2006 interview that "Family is the basis of the state" and that for the previous 15 years Russia had had no consistent and efficient demographic policy, and that the demographic situation was not considered a priority by a majority of politicians. Mironov declared that both the relevant presidential decree and the Concept of Demography policy until 2015 (issued in 2001) were no more than a declaration of intentions. In his opinion the demographic crisis was developing spontaneously, driven by an unstable economy, aggressive mass culture, and the propaganda of consumerism. Mironov called for the creation of favorable economic and social conditions to achieve an increase in fertility. In April 2006, President Putin stated in his address to the Federal Assembly that Russia urgently needed a range of long-term programs targeting both an increase in the fertility rate and a decrease in mortality, and the creation of attractive conditions for migra-

tion.[60] Demographer Sergei Zakharov (2006) wrote that it was the first time in post-Soviet Russia that the pro-natalist position of government was so clearly stated and that an emphasis was placed on stimulating fertility and not providing support to families.

Contemporaneously, the Russian government made improvement of the population's health a national priority. The National Priority Project "Health" was launched in January 2006, with a budget equating to more than 400 billion rubles between 2006 and 2009. This substantial injection of finances into the Russian health system funded the project's main activities: augmenting the salaries of primary and emergency care physicians; facilitating the purchase of primary care equipment; buttressing vaccination programs; providing free medical examinations; constructing new high-tech centers for tertiary care; and promoting fertility.

The birth certificate (*rodovoi sertifikat*) was introduced in the framework of the National Programme "Health" from January 1, 2006.[61] The main goal of this financial instrument has been an amelioration in the quality of medical services during prenatal observation, delivery and the first year of life of the newborn. To achieve this goal, a payment for services was supposed to be transferred to the hospitals and doctors chosen by patients (and not obligatorily linked to their place of residence, as before). An indirect goal was to discourage women from having abortions. The certificate initially consisted of two coupons intended to cover, though partially, the expenses of women in health centers for prenatal visits (*zhenskaia konsul'tatsiia*) (2,000 rubles, or about 65 euros) and in maternity hospital (5,000 rubles). The nominal value of the certificate was augmented several times (up to 10,000 rubles in 2007; up to 11,000 rubles in 2008). The third coupon, for use in pediatric clinics, was added in 2011 (1,000 rubles) and intended for medical check-ups for babies under one year old, to combat infant mortality and to improve the health of the newborn.

A second new important scheme, "maternity capital", was introduced on January 1, 2007 by the federal law on "Additional Measures of State Support for Families with Children."[62] It offered a certificate for a sum of 250,000 rubles (about 8,000 euros), subject to a correction for inflation every year,[63] to mothers on the birth of their second and subsequent children. From the time that the child reaches the age of three, the certificate

could be used for one of the three following purposes: improvement of housing conditions (partial payment for a mortgage); as a payment for children's education; or as a pension contribution for the mother. A family is entitled to a maternity capital certificate in the case of the birth (or adoption) of a second child (or third or subsequent child, if the family had not previously used its right to receive these funds) between January 1, 2007 and December 31, 2016. It is important to note that a family would be eligible to receive the certificate only once; moreover, in the framework of this program no cash allowances were paid to women on the birth of their children.

Other measures proposed during this period included:

- A discussion on the reintroduction of the tax for childlessness (abolished in 1992) was begun by Minister of Health Mikhail Zurabov and Deputy Chairman of the State Duma Committee for Health Protection Nikolai Gerasimenko, although the measure did not find support among other deputies.[64]
- More constraints on abortions were introduced in mid-2009 within the framework of the program "Sanctity of motherhood", although they were only implemented in two regions of Russia (Krasnoyarsk region and Volgograd oblast) by the Ministry of Healthcare and Social Development, including a compulsory consultation with a psychologist (religious representative) to encourage women to change their minds.[65]
- Some measures of family support were revised in 2006, leading to the augmentation, and wider coverage, of allowances for children under one and a half years old; so that part-time workers and those working at home also became eligible for childcare allowances. The procedure of payment of the allowance at birth was simplified.[66] However, by mid-2007, childcare and family allowances were still too low (and constituted only an insignificant share of incomes) and childcare facilities, such as preschool, were insufficient (e.g. UNDP 2008, p. 10). From January 1, 2007, non-working mothers could receive a monthly child benefit of 1,500 rubles for their first child and 3,000 for their second (up to the age of one and a half years). Pregnant women were eligible for a lump sum benefit of 300 rubles for registration at a

medical institution during the early term of pregnancy (up to a maximum of 12 weeks).

In October 2007 a new "Concept for Demographic policy to 2025" was adopted.[67] The concept claimed to take a systematic approach to demographic problems, while paying particular attention to the heterogeneity of regional development, and to the interaction of government bodies and civil society at all levels.

The goals of the new concept included:

- Stabilizing the population at 142 to 143 million people by 2015; creating the prerequisites for further growth and increasing the population up to 145 million by 2025.
- Increasing longevity (to 70 years by 2015, and 75 years by 2025); decreasing mortality (by 30 % by 2015 and 1.6 times by 2025, with 2006 as the base); and increasing fertility (by 1.3 times by 2015, and 1.5 times by 2025, also using 2006 as the base).

The program had three stages of implementation, each with a different focus:

1. Stage I (2008–2010): a focus on decreasing population losses and increasing migration flows (e.g. improvements in the diagnosis of disease and amelioration of working conditions).
2. Stage II (2011–2015): a focus on stabilizing the demographic situation (e.g. improving population health).
3. Stage III (2016–2025): a focus on the prevention of any possible deterioration and an evaluation of already implemented projects (e.g. the promotion of second and more births).

The Concept of Demographic Policy to 2025 came under criticism. A number of experts pointed out that even in cases of active and efficiently implemented demographic and migration policies a recovery from the crisis and stabilization of population were unlikely (Vishnevsky 2009, UNDP 2008). In addition, the focus on short-term consequences was warned against. Experts noted that current policies might only stimulate

a change in the timing of births but not the desire to have more children. This may only amplify or create new demographic waves in Russia, and generations with very different demographic destinies living contemporaneously. This distortion could lead to unfavorable social and demographic realities that are rarely taken into account by politicians (Vishnevsky 2009; Botev 2008).

3.3.4 2007–2010: Program of Demographic Development Until 2025, Stage I

The list of measures to be implemented during Stage I (2007–2010) of the concept program included, among others: the improvement of medical care during pregnancy and delivery; improvement of the system of social support for families with children; prevention of family problems and child abandonment; promotion of female employment for mothers with children under three years old; measures on strengthening families, and the popularization of family values.

Some additional measures were supposed to be undertaken through the federal program "Children of Russia" in 2007–2010,[68] which were intended to create favorable conditions for the multi-dimensional development of children, as well as state support of children in difficult life situations. The program was supposed to contribute to the socio-economic development of Russia through the following channels: improvement of the demographic situation (lowering the mortality of newborn, children, and mothers; improvement of their health conditions); improvement of the social climate in society (a decrease in the numbers of neglected children and orphans); and particular attention to be paid to the conditions of children and families in difficult life situations. The program included three sub-programs: Healthy Generation (*Zdorovoe pokolenie)*, Gifted Generation (*Odarennye deti*), and Children and Family (*Deti i semya*).

From 2007, families with children were entitled to the partial payment of kindergarten fees: 20 % for the first child; 50 % for the second; and 70 % for the third.[69]

In 2008 the childcare allowance system was reinforced by two more measures:[70] a lump-sum allowance to the pregnant (under 180 days)

wives of citizens in obligatory military service (14,000 rubles in 2008); a monthly allowance to families with children under the age of three of citizens in obligatory military service (6,000 rubles in 2008). Both allowances are corrected for inflation and paid regardless of the level of other allowances received by the mother. It is important to note that the introduction of the two allowances followed an amendment to the legislation that canceled a postponement of military service for men whose wives were pregnant (less than 26 weeks) or who had children under the age of three.

A presidential decree designated 2008 as the Year of the Family.[71] Programs promoting family values and the development of favorable conditions for large families were implemented and a focus placed on implementation at the regional level.

During the Year of the Family, the new Order of Parental Glory was established;[72] this enabled the reintroduction of an award akin to the Mother Heroine title abolished in 1991. The Order is awarded to parent(s) or adoptive parent(s), regardless of the official status of their union, for successfully raising a large family with seven or more children as citizens of the Russian Federation. A grant of 50,000 rubles accompanies the Order, rising to 100,000 rubles since 1 January, 2013. A family is eligible for the award when the seventh child reaches the age of three, and their siblings are still living, with exceptions in the case of older children killed or missing in action in defense of the Motherland or its interests, or in the performance (or as a consequence of the performance) of military, official or civic duties. An adequate level of healthcare, education, and harmonious development of children is also taken into account. During 2008, eight families from eight different Russian regions were awarded the Order. In 2010, the Medal of the Order of Parental Glory was established,[73] awarded for successfully raising a family with four children.

Two years after the introduction of the birth certificate scheme, official sources published a positive evaluation of its implementation. The scheme covered 92.7 % of pregnant women in 2008;[74] and a great improvement in the work of health centers for prenatal visits and maternity hospitals was reported. A number of clinics and consultation centers were renovated and the equipment upgraded, especially in the area of neonatal

screening and diagnostics (in 2006–2008: 1,148.9 million rubles (about 48 million euros) were spent on the program "Children of Russia"). The official reports underlined a gradual but steady improvement in women's health (e.g. 36.8 % of births were without complications in pregnancy in 2008 against 35.1 % in 2006), mothers' mortality fell by 12.3 % from 2006 to 2008, and perinatal mortality by 13.3 %, down to 8.3 per 1,000 live born.

However, the new schemes and the system of allowances connected to childhood and motherhood were still criticized. An independent analysis of the birth certificate scheme (Borozdina and Titaev 2011), demonstrated that the main goals of the certificate's introduction had not been achieved by 2011. Individualization of medical services remained rare; the system of health centers for prenatal visits was still mainly financed according to Soviet planning. Double financial accounting, to fit both schemes, had become a widespread practice. Another scheme, the maternity capital scheme, was mentioned as being "nothing but a way to support the Russian pension system, because it is too small for other purposes." (Avdeeva 2010, p 72) Voices of criticism were also raised against the low effectiveness of, and difficulty of access to, the allowances system, with the poorest, marginal or lonely parents mainly counting on its benefits. The share of children between the ages 0–16 receiving social allowances did not extend much beyond 40 % (Avdeeva 2010, p 72). The availability of places in pre-school facilities was still lacking. Revised payments compensating expenditures on kindergartens (20 % for the first child, 50 % for the second, and 70 % for the third) were criticized as strengthening inequalities between families.

Gender discrimination as an indirect impact of the policies was mentioned by some researchers. There had been a further institutionalization of gender inequalities in the labor markets and in the domestic sphere, which may "continue to depress the fertility rate of Russian women." (Avdeeva 2011, p. 3) Interestingly, a case of gender discrimination against men was confirmed in proceedings held in 2010–2011 by the European Court of Human Rights in the case of Konstantin Markin, "a military serviceman [who] was not entitled to the same parental leave as a military servicewoman would have had in his case."[75]

On the completion of Stage I of the implementation of the Concept of Demographic development up to 2015, Rosstat reported a gradually diminishing natural population decline;[76] and in 2009, for first time since 1994, a population increase of 10,500 people (0.01 %). The decisive role of migration in forming this surplus was not emphasized; amplification of migration was, however, one of the goals of Stage I. On January 1, 2010, the population of the Russian Federation was 141.9 million people, just slightly lower than the lower boundary of the target established by Concept 2025. Unfortunately, net migration figures declined by 30 % in 2010 and a decline in population was registered again.[77] It was the first time since 2004 that a growth in the number of deaths was registered (20,500 deaths more when compared to 2009). In 2010, in 72 regions of the Federation, a decrease in the number of births was observed.

3.3.5 2011–2015: Program of Demographic Development Until 2025, Stage II

The plan for the period 2011–2015, Stage II, targeted: a decrease in the newborn mortality level (in particular, through the further introduction of new centers of prenatal diagnostics);[78] improvements in the maternity capital investment mechanism (including schemes for regional financing); and construction of housing for young families in rural areas. The target total fertility rate per woman was fixed at 1.65–1.70 by 2015 (against 1.58 in 2011).

At the beginning of this period, several controversial measures that would likely worsen the conditions of women were proposed. Three examples induced a wave of protests, including a change in the procedure for calculating the allowance available during pregnancy and childcare leave during the first one and a half years of a child's life, some amendments to abortion regulation, and developments in the system of juvenile justice.

In December 2010 and January 2011 a number of protests by pregnant women against the amendments to the Federal Law No. 343 "Allowances for temporary disability, pregnancy and delivery under compulsory social insurance" that were supposed to come into force on January 1, 2011 took

place in several big cities.[79] The new procedure for calculating monthly maternity benefit was supposed to change the base from the amount of the last salary (income during a year preceding the pregnancy, divided by either 365 or the number of actual worked days) to the net income gained during two calendar years preceding pregnancy (divided by 730). The procedure was opposed as it was seen as significantly reducing the amount of benefit due because of periods of low income during the two years preceding pregnancy that were widespread among women after the crisis of 2008–2009, as well as periods of sickness, retention during pregnancy, and of vacations. The governmental response to these protests was to introduce a "special transition period," between January 1, 2011 and December 31, 2012, during which it was possible to choose which of the two procedures was most suitable to calculate the allowance on a case-by-case basis. The general procedure was supposed to be changed from January 1, 2013, when the calculation would be based only on the periods when a woman was actually in work (and paying contributions to the Fund of Social Insurance).[80]

Numerous attempts to introduce further obstacles to abortion procedures were discussed at the Russian Duma with the aim of stimulating fertility growth.[81] Contemporaneously, several funds, such as the fund for socio-cultural initiatives (*Fond sotsial'no-kul'turnykh initsiativ*),[82] promoted anti-abortion initiatives. Among these, two can be noted: a yearly information week "Give me a gift of life!" (*Podari mne zhizn'!*) in July; and "The day of family, love, and fidelity" celebrated on July 8, which began in 2008.[83] The fund promoted obligatory pre-abortion consultations and distributed leaflets presenting the consequences of abortion, sometimes in an exaggeratedly negative way. However, the fund also accompanied pre-abortion consultations with some schemes of material help to women who abandoned their decision to abort, such as shelters for pregnant women with no place to stay. Another fund initiative, although it does not yet cover the whole of Russia, is a program to promote the safeguarding of female reproductive health, "White rose" (*Belaia roza*). The program established centers of diagnostics and the prevention of oncological diseases in the reproductive sphere in St. Petersburg, Arkhangelsk and several other cities.[84]

In July 2011 President Dmitri Medvedev signed into law additional restrictions to the legality of abortions during the later months of pregnancy to those introduced in 2004. An interest group, "Fight with abortions, not with women," was formed to campaign against the new measures.[85] The measures entailed the expansion across the whole of Russia of the pilot project implemented in Krasnoyarsk Area and Volgograd Oblast in 2006–2007 of obligatory consultations with a psychologist when an abortion is requested. The intention of these consultations was to convince women (sometimes in an aggressive manner) to carry the child to term. The activists of the interest group noted that during the consultations the possible complications of abortion were emphasized, and a concerted attempt made to develop a sense of guilt about considering the procedure.[86] Problems with contraception were left out of the scope of these consultations. The new amendments to the law included a time gap between the request for abortion and the operation of at least 48 hours for a pregnancy of 4–7 weeks and 11–12 weeks, and of at least seven days – the, so-called, week of silence – for a pregnancy of 8–10 weeks. For pregnancies of 12 to 22 weeks, three of the four social reasons for the procedure were removed, namely groups 1–2, the invalidity of the father, death of father during pregnancy, and being in prison during pregnancy. Only rape as the reason for pregnancy was left among the social reasons for a late-term abortion.[87]

Among the additional measures that were proposed but not passed into law was the necessity of obtaining the husband's signature to signify his agreement to the abortion procedure.

The amendment was strongly criticized, particularly for the delay to abortions. This measure was likely to increase the risk of complications during the abortion and to have an even more negative effect on the reproductive health of women undergoing the operation. Moreover, there was a clear difficulty in meeting the obligation for several medical visits due to their high costs in terms of time and money, especially in rural areas. The latter might lead to an increase in the number of illegal abortions. Other critiques mentioned the absence of a program of material support for women who changed their decision, the underdevelopment of the system of information provision and consultations on the prevention of pregnancy and contraception, and also the lack of a move from

surgical abortions to those carried out by medication (and vacuum), as recommended by the World Health Organization (the latter constituted only 29 % of abortions in Russia in 2009).

While the federal target program "Children of Russia", supervised by the government, was completed in 2010, a call for the development of a new paradigm in the sphere of childhood was announced by the Foresight Project "Childhood 2030."[88] Among the main goals of the project was to refresh the ideas and priorities of Russian society as related to childhood, parenthood, and the provision of childcare and related goods. Children are considered the main subject for investments (the only project that will bring secure profit in the future). The program put a strong emphasis on new technologies. So-called, life trajectories should be developed for children, and social services should tackle the problems when parents are "unable" to contribute to these trajectories. The project inevitably created a wave of disagreement for being distant both from reality and for its close connection to the fast developing system of juvenile justice. While the goals of the juvenile justice system include the defense of the institution of the family, including measures against aggression against children, and the defense of the rights of children, these targets are often considered very ambiguous. Voices of criticism arose, warning that in the absence of strict criteria practically any person could be blamed and potentially manipulated, with children used as a "threat."[89] On December 22, 2010, a public forum consisting of more than 3,000 people drawn from the whole of Russia was held and submitted a petition against the project to the President.

One more program was launched in 2011, but its implementation over the following three years met without much success. It was related to granting free plots to large families to enable them to build their own house. To be eligible a family must consist of citizens of the Russian Federation, who have at least three minor children; and were supposed to have lived for at least five years in the area where the request for the land plot was placed.[90] Coinciding with this program, a number of regional initiatives were undertaken to promote the birth of second and third children. Popova (2014), among others, mentions the introduction of a regional parental capital in the Republic of Komi in July 2011.

To further improve population health, deputy Mohomed Selimkhanov proposed to the Duma in September 2015, a law requesting an HIV/AIDS certificate for those who wanted to get married. A similar law had already been implemented in the Chechen Republic in 2011.

By the beginning of 2016, it was planned that: population figures would be stabilized at 142–143 million people; average life expectancy at birth would reach 70 years; the total fertility rate (TFR) would have increased by 30 % in comparison to 2006 (from 1.3 to 1.7); and to improve indicators of mortality by 30 %.

According to Rosstat, on September 1, 2015, the population of the Russian Federation was 146.4 million people.[91] However, unlike in 2014 when the population grew due to the number of births exceeding the number of deaths, a natural population decrease of 11,700 people was observed during the first eight months of 2015; the decrease was compensated for by migration figures. Similar dynamics are reflected in the population dynamics forecast on Rosstat's website.[92] According to the low version of the forecast, a natural decrease of 49,200 people can be expected in 2016. The average version of the forecast sees a decrease of 42,600 by 2018. While a TRF of 1.75, exceeding the target of 1.7, was reached by 2014, future forecasts predict a further decrease in the coefficient, primarily due to the decreasing number of women of fertile age. The target for reducing mortality was not met. However, life expectancy exceeded the goal of 70 years and it is predicted to increase further for both men and women.

3.4 Concluding Remarks

From 1917 images of the new Soviet man and woman were constructed: woman as worker, activist, mother, and caregiver; man as worker and defender of the Motherland. The reproductive function of women always remained the focus of Soviet population policies due to a persistent lack of human resources needed for military and/or labor mobilization in different periods of Soviet history.

Contemporaneously with the active participation of women in the working sphere, the image of a large family as representing normality was repeatedly promoted, starting from the 1930s, as well as the women's predestination as mothers. The list of benefits to families with children, and measures aimed at the reconciliation of work and family life, were repeatedly updated; the lack of region-specific differentiation in the policies and of measures to promote the safeguarding of reproductive health remained the main weaknesses of the period.

Modern Russia inherited from the Soviet Union a toolbox of family and fertility policies. Depopulation became evident shortly after the dissolution of the Soviet Union in 1991, but it only attracted the serious attention of politicians after 2006 when a course of action on fertility stimulation was announced. From 2007, the Demographic Concept for Development of Russia until 2025 was enacted and 2015 marked the end of the second stage of its implementation. Official sources are evaluating whether the main goals of the stage have been achieved. It is, however, too early to announce the end of the depopulation process.

At the beginning of the first stage of the implementation of Concept 2025, Russian and international experts began pointing to favorable conditions for a fertility increase in view of a demographic wave bringing a large cohort of women born in the 1980s to their most fertile age. Thus current achievements may only be a short-term success as the currently favorable age structure ages. The maternity capital scheme, though regarded as a success, is unlikely to be extended in the long-term as it has been rather burdensome for the state budget, although a two-year extension of the program was announced by President Putin in December 2015.

Other weak points that may contribute to a further fall in fertility are multiple. The system of allowances and benefits is often criticized as targeting mainly the poor. Economically active working women, from one side are welcome in the labor market for helping to support the aging population, but the nature of labor relations between women and employers is such that women, especially those with children, are discriminated against for being a relatively more expensive labor force than

men due to the number of non-monetary benefits connected with the status of mothers. As childbirths are postponed, partially due to career reasons, the average age of the first birth continues to rise. This makes some women ineligible for benefits targeting young families. In addition, contraception culture is still undeveloped and programs for safeguarding reproductive health are scarce. Importantly, the high reliance of the population on state support and stimulation may be responsible for women's lack of responsibility for their own fertility and health-related decisions. All these interdependent factors may lead to the inability to realize fertility intentions in full.

Notes

1. Other targets of population policies, such as general health and mortality, constitute a separate topic, while intra-country migration reflects labor redistribution rather than demographic processes. These processes are only marginally mentioned in the text when closely related to family and fertility policies.
2. *Dekret o vvedenii vosʹmichasovogo rabochego dnia*, issued by Council of People's Commissars (Sovnarkom) on 29.10 (11.11.)1917.
3. *Dekret o posobii po beremennosti i rodam*, issued by Sovnarkom on 14(27).11.1917 and *Dekret o strakhovanii na sluchai bolezni*, issued by All-Russian Central Executive Committee (VTsIK) on 22.12.1917 (04.01.1918).
4. *Dekret o grazhdanskom brake, o detiakh i o vedenii knig aktov sostoianiia*, issued by VTsIK and Sovnarkom on 18(31).12.1917.
5. *Dekret o rastorzhenii braka*, issued by VTsIK and Sovnarkom on 16(29).12.1917.
6. *Kodeks zakonov ob aktakh grazhdanskogo sostoianiia, brachnom, semeinom i opekunskom prave*, Code of Laws approved by VTsIK on 16.09.1918.
7. *Ob iskusstvennom preryvanii beremennosti*, decree adopted by Sovnarkom on 18.11.1920.
8. *Kodeks zakonov o trude RSFSR*, Code of Laws approved by VTsIK on 30.10.1922.

9. *Kodeks zakonov ob aktakh grazhdanskogo sostoianiia, brachnom, semeinom i opekunskom prave*, Code of Laws approved by VTsIK on 19.11.1926.
10. *O zapreshchenii abortov, uvelichenii material'noi pomoshchi pozhenitsam, ustanovlenii gosudarstvennoi pomoshchi mnogosemeinym, rasshirenii seti rodil'nykh domov, detskikh iaslei i detskikh sadov, usilenii ugolovnogo nakazaniia za neplatezh alimentov i o nekotorykh izmeneniiakh v zakonodatel'stve o razvodakh,* Resolution adopted by VTsIK and Sovnarkom on 27.06.1936.
11. *O naloge na kholostiakov, odinokikh i malosemeinykh grazhdan SSSR*, decree of the Presidium of the Supreme Soviet from 21.11.1941 and amendments from 08.07.1944. The tax existed until 01.01.1992.
12. According to the Resolution of the government of the USSR of September 29, 1967, a minimum wage of 60 rubles was fixed starting from January 1, 1968. At the twenty-fourth Communist party congress in 1971, the minimum wage was increased to 70 rubles per month (regardless of economic branch or geographical location). After July 1, 1990, the income exemption was increased to 150 rubles and since January 1, 1991, married women without children were no longer taxed.
13. Ob uvelichenii gosudarstvennoi pomoshchi beremennym zhanshchinam, mnogodetnym i odinokim materiam, usilenii okhrany materinstva i detstva, ob ustanovlenii pochetnogo zvaniia `Mat'-geroinia' i uchrezhdenii ordena `Materinskaia slava' i medali `Medal' materinstva', decree of the Presidium of the Supreme Soviet from 08.07.1944.
14. The lump sum and monthly allowances were: 400 rubles at birth of third child; 1,300 rubles at birth of fourth child and 80 rubles monthly; 1,700 and 120 rubles for fifth child; 2,000 and 140 for sixth child; 2,500 and 200 for seventh and eighth children; 3,500 and 250 for ninth and tenth children; 5,000 and 300 for eleventh and further children.
15. In 1945, the fees were adjusted to 100 rubles at the time of application, and 500 to 1,000 rubles after the dissolution of the marriage. For a comparisons with post-war fees and allowances, take note of

monetary reform in 1947 when cash was exchanged at the rate of 10:1.

16. *O razmere gosudarstvennogo posobiia mnogodetnym i odinokim materiam,* decree of the General Committee of the Supreme Council of USSR from 25.11.1947.
17. The new amounts became: third child, 200 rubles at birth and 0 rubles monthly; fourth child, 650 and 40; fifth child, 850 and 60; sixth child, 1,000 and 70; seventh and eighth children, 1,250 and 100; ninth and tenth children, 1,750 and 125; from the eleventh child, 2,500 and 150. The allowances for single mothers were also adjusted, becoming 50 rubles per month for one child, 75 rubles for two children, and 100 rubles for 3 and more children.
18. *O razmere platy roditelei za soderzhanie detei v detskikh sadakh i detskikh iasliakh*, decree of the Soviet of Ministers N 3000 from 09.08.1948.
19. Instruction developed by the Ministry of Finance of the USSR, by the Ministry of Health of the USSR, and by VTsSPS, and adopted by Resolution N 3290 of Sovmin on the 31.08.1948.
20. *Ob otmene zapreshcheniia abortov*, decree of the Presidium of the Supreme Soviet from 23.11.1955 and detailed regulation of the issue by the instruction of the Ministry of Health of USSR (*O poriadke provedeniia operatsii iskusstvennogo prepyvaniia beremennosti (aborta)*) from 29.11.1956.
21. *Polozhenie o poriadke naznacheniia i vyplaty posobii po gosudarstvennomu sotsial'nomu strakhovaniiu*, statute adopted by Presidium of All-Union Central Council of Trade Unions (VTsSPS) on 05.02.1955, and *Ob uvelichenii prodolzhitel'nosti otpuska po beremennosti i rodam,* decree of Presidium of Supreme Soviet from 26.03.1956.
22. *O vyplate posobii na detei voennosluzhashchikh srochnoi sluzhby,* Resolution of the Soviet of Ministers of the USSR N 1108 from 25.10.1963.
23. *O pensiiakh i posobiiakh chlenam kolokhozov*, Law N 2688-VI from 15.07.1964.
24. *O meropriiatiiakh po dal'neishemu povysheniiu blagosostoianiia sovetskogo naroda*, Resolution of Central Committee of the Communist

Party of the Soviet Union and of the Soviet of Ministers of USSR from 26.09.1967.

25. I. Kon. "Abortion or contraception?", Demoscope, N 123–124, 2003 at URL: http://demoscope.ru/weekly/2003/0123/analit02.php2 Accessed on: 14.10.2015.
26. *Ob uluchshenii obespecheniia posobiiami po beremennosti i rodam i po ukhodu za bol'nym rebenkom*, Resolution of the Soviet of Ministers of the USSR N 530 from 26.07.1973.
27. *O vvedenii posobii na detei maloobespechennym semiam*, decree of Presidium of the Supreme Soviet from 25.09.1974.
28. When comparing with the amounts cited in previous sections, make note of the monetary reform of 1961 which prescribed exchange of ten "old" rubles for one "new" ruble.
29. A list of production processes, professions, and work with harmful and/or heavy working conditions, where the employment of women was prohibited in 1978 can be found, for example, at URL: http://www.a-z.ru/women/texts/proftsrd.htm Accessed on: 14.10.2015.
30. It is widely noted in the literature, that these norms were not always followed in practice. e.g. Marsh 1996.
31. For example, see Amendments from September 2, 1981 and Janaury 26, 1983 (N 8723-X) to the decree from 1947; *O merakh po usileniiu gosudarstvennoi pomoshchi semiam, imeiushchim detei*, decree of the Central Committee of the Communist Party of the USSR N 235 from January 22, 1981.
32. *O vvedenii vremennykh posobii na nesovershennoletnikh detei v sluchaiiakh nevozmozhnosti vzyskaniia alimentov s ikh roditelei*, Resoultion of the Soviet of Ministers N 134 from 06.02.1984.
33. Namely, regardless of the working status of mother, a lump-sum benefit at birth and monthly allowance were paid: for the fourth child, 65 rubles at birth and 4 rubles monthly; for the fifth child, 85 and 6; for the sixth child, 100 and 7; for the seventh and eighth children, 125 and 10; for the ninth and tenth children 176 and 12.50; for the eleventh and further children, 250 and 15 rubles.
34. *O srokakh vvedeniia besptotsentnoi ssudy na uluchshenie zhilishchnykh uslovii pri obzavedenii domashnim khoziaistvom molodym sem'am,*

imeiushchim detei, Resolution N 156 of the Soviet of Ministers of USSR from 25.02.1982.
35. *O posobiiakh po gosudarstvennomu social'nomu strakhovaniiu,* Resolution of the Soviet of Ministers of the USSR N 191 from 23.02.1984.
36. I. Kon. "Abortion or contraception?", Demoscope, N 123–124, 2003. URL: http://demoscope.ru/weekly/2003/0123/analit02.php2
37. *Ob usilenii raboty po realizhatsii aktivnoi sotsial'noi politiki i povyshenii roli gosudarstvennogo komiteta SSSR po trudu i sotsial'nym voprosam*, Resolution of VTsSPS N 825 from 17.07.1987.
38. *O pervoocherednykh merakh po uluchsheniiu material'nogo blagosostoianiia maloobespechennykh pensionerov i semei, usileniiu zaboty ob odinokikh prestarelykh grazhdanakh*, Resolution N 436 of the Central Committee of the Communist Party, of Soviet of Ministers and VTsSPS from 14.05.1985.
39. See also: *Ob uvelichenii prodolzhitel'nosti oplachivaemogo perioda po ukhodu za bol'nym rebenkom*, Resolution N 1177 of the Soviet of Ministers and VTsSPS from 20.10.1987.
40. *O rasshirenii l'got rabotaiushchim beremennym zhenshchinam, imeiushchim maloletnikh detei*, decree of Presidium of Supreme Soviet of USSR N 7639-XI from 02.09.1987.
41. *O dopolnitel'nykh merakh pomoshchi maloobespechennym semiam, imeiushchim trekh i bolee detei, vospityvaemykh odnim iz roditelei*, Resolution of Soviet of Ministers and VTsSPS N 1137 from 25.09.1986.
42. *O dopolnitel'nykh l'gotakh po nalogu na kholostiakov, odinokikh i malosemeinykh grazhdan SSSR*, decree of Presidium of the Supreme Soviet of USSR from 13.01.1987.
43. I. Kon. "Abortion or contraception?", Demoscope, N 123–124, 2003. URL: http://demoscope.ru/weekly/2003/0123/analit02.php2
44. *O neotlozhnyh merah po ulutsheniju polozhenija zhenshin, ohrane materinstva i detstva*, Resolution of the Supreme Soviet of the USSR N 1420–1 from 10.04.1990, esp. Art. 7; *O dopolniteljnyh merah po obespetsheniju social'noj zashishennosti semej s detjmi v svjazi s perehodom k rynotshnoy ekonomike,* Resolution of the Council of Ministers of the USSR N 759 from 02.08.1990; see also Art. 71 of Labour

Code from 22.05.1990; Art. 165, 166, 167 of the Labor Code of the Russian Soviet Federative Socialist Republic.

45. *O razmerakh platy roditelei za soderzhanie detei v doshkol'nykh uchrezhdeniiakh*, Resolution of the Soviet of Ministers of USSR N 47 from 13.01.1990.
46. *O podokhodnom naloge s grazhdan SSSR, inostrannykh grazhdan i lits bez grazhdanstva*, law of the USSR N 1443–1 from 23.04.1990.
47. See reports from the United Nations' Committee of the Elimination of Discrimination Against Women.
48. Government of the Russian Federation developed a "Concept of state family policy" (*Koncepcija gosudarstvennoj semejnoj politiki*) (1991) that was accepted on March 12, 1993 by the National Advisory Board as preparation for the international year of family. Reinforced by decree N 712 of the President of the Russian Federation from March 14, 1996 "On the main directions of family policy" (*Ob osnovnyh napravlenijah gosudarstvennoj semejnoj politiki*).
49. *O pervoocherednykh merakh po razvitiiu obrazovaniia v RSFSR*, presidential decree N 322 from 26.12.1991.
50. *O prezidentskoi programme `Deti Rossii'*, presidential decree N 1696 from 18.08.1994.
51. *O sovershenstvovanii sistemy gosudarstvennukh sotsial'nykh posobii i kompensatsionnykh vyplat semiam imeiushchim detei, i povyshenii ikh razmerov*, presidential executive order N 2122 from 10.12.1993.
52. See, for example, Nina Krivelska "Planirovanie sem'i" - demografitsheskaja vojna v Rossii (Family planning - a demographic war in Russia), 16.10.1997, Analiticheskii vestnik 21, Federal'noe sobranie - Parlament Rossiiskoi Federatsii Gosudarstvennaia Duma.
53. *O federal'noi tselevoi programme `Bezopasnoe materinstvo' na 1995–1998 gody*, Resolution of the Government of the Russian Federation N 1173 from 14.10.1994, *O federal'nykh tselevykh programmakh po uluchsheniiu polozheniia detei v Rossiiskoi Federatsii na 1988–2000 gody*, Resolution of the Government of the Russian Federation N 1207 from 19.09.1997.
54. *O gosudarstvennoi sotsial'noi pomoshchi*, Federal Law N 178 from 17.07.1999.

55. Presidential decree N24 "Concept of national security of the Russian Federation" (*O koncepcii nacional'noi bezopasnosti Rossiiskoi Federacii*) from 10.01.2000 and Concept for demographic policy of Russian Federation for the period until 2015 (*Kontseptsiia demograficheskogo razvitiia Rossiiskoi Federatsii na period do 2015 goda*) URL: http://demoscope.ru/weekly/knigi/koncepciya/koncepciya
56. *Peretchen'sotsial'nykh pokazanii dlia iskusstvennogo preryvaniia beremennosti*, decree of the Government of the Russian Federation N 485 from 11.08.2003.
57. Low-birth Russia curbs abortions, by Nick Paton Walsh, 27.09.2003 The Guardian. URL: http://www.theguardian.com/world/2003/sep/24/russia.nickpatonwalsh Accessed on: 14.10.2015.
58. Later, the official forecasts were revised to predict 2011 being the last year of fertility growth.
59. Source: World Fertility Patterns 2009, URL: Accessed on: 14.10.2015 http://www.un.org/esa/population/publications/worldfertility2009/world
60. Presidential Address to the Federal Assembly, 10.05.2006. Text: http://archive.kremlin.ru/text/appears/2006/05/105546.shtml
61. See the official site of the National Program "Health": http://www.rost.ru/projects/health/p04/p34/a35.shtml and Warrant "Birth certificate" No. 701 from 28.11.2005 by Ministry of Healthcare and Social Development of the Russian Federation, and its recent amendments Law No. 20221 from 22.03.2011. See also: http://fss.ru/ru/fund/activity/14142/14143/index.shtml documents related to the certificate.
62. *O dopolnitel'nykh merakh podderzhki semei, imeiushchikh detei*, Federal Law No. 256 256-FZ from 29.12.2006 (latest version/edition from 01.07.2011).
63. For example, it was 408,960 rubles in 2013 and 387,640 rubles in 2012.
64. "Tax on childless couples may be reintroduced in Russia", The Guardian, http://www.guardian.co.uk/world/2006/sep/28/mainsection.international11; "Federation Council speaker opposes childlessness tax in Russia", Rianovosti, 21.09.2006 http://en.rian.ru/russia/20060921/54135819.html

65. See also the website of the Program "*Sviatost' materinstva*" http://kfcnsr.ru/, and especially the program "You are not alone (*Ty ne odna*)" - obligatory pre-abort consultations.
66. *Ob obiazatel'nom sotsial'nom strakhovanii na sluchai vremennoi netrudosposobnosti i v sviazi s materinstvom,* Federal Law N 255 from 29.12.2006.
67. *Ob utverzhdenii Kontseptsii demograficheskoi politiki Rossiiskoi Federatsii na period do 2025 goda,* presidential decree N 1351 from October 09, 2007.
68. Site of the Program: http://fcp.economy.gov.ru/cgi- bin/cis/fcp.cgi/Fcp/ViewFcp/View/2007/210; See Resolution N 172 from 21.03.2007.
69. *O poriadke i usloviiakh predostavleniia v 2007 godu finansovoi pomoshchi iz federal'nogo biudzheta v vide subsidii biudzhetam sub'ektov Rossiiskoi Federatsii na vyplatu kompensatsii chaste roditel'skoi platy za soderzhanie rebenka v gosudarstvennykh i munitsipal'nykh obrazovatel'nykh uchrezhdenii, realizhuiushchikh osnovnuiu obshcheobrazovatel'nuiu programmu doshkol'nogo obrazovaiia*, Resolution of the Government of the Russian Federation N 846 from 30.12.2006; see also amendments from 19.05.2007.
70. *O poriadke predostavleniia v 2008 godu sibventsii iz federal'nogo biudzheta biudzhetam sub'ektov Rossiiskoi Federatsii na vyplatu edinovremennogo posobiia beremennoi zhene voennosluzhashchego, prokhodiashchego voennuiu sluzhbu po prizyvu, i ezhemesiachnogo posobiia na rebenka voennosluzhashchego, prokhodiashchego voennuiu sluzhbu po prizyvu*, Resolution of the Government of the Russian Federation N 326 from 30.04.2008, and *Ob utverzhdenii Polozheniia o naznachenii i vyplate gosudarttvennykh posobii grazhdanam, imeiushchim detei*, Resolution of the Government of the Russian Federation N 865, amendments from 16.04.2008, in particular Art. VI.
71. For more information, see website of the "Year of Family" program: http://www.semya2008.ru/
72. *Ob uchrezhdenii ordena `Roditel'skaia slava'*, presidential decree N 775 from 13.05.2008.
73. *O merakh o sovershenstvovaniiu gosudarstvennoi nagradnoi sistemy Rossiiskoi Federatsii*, presidential decree N 1099 from 07.09.2010.

74. See report on the implementation of the measures of the Stage I on the website of the Ministry of the Economic Development of the Russian Federation, http://www.economy.gov.ru/minec/activity/sections/ecosocsphere/department/doc201001131124
75. Blog commenting on developments in the case-law of the European Court of Human Rights, The special social role of women: the Strasbourg Court does not buy it (Konstantin Markin vs. Russia), October 14, 2010, by Alexandra Timmer http://strasbourgobservers.com/2010/10/14/"the-special-social-role-of-women"-the-strasbourg-court-does-not-buy-it-konstantin-markin-v-russia/
76. "Modern demographic situation in the Russian Federation" published on the website of Rosstat: URL: http://www.gks.ru/free_doc/2010/demo/dem-sit-09.doc Accessed on: 15.10.2014.
77. Experts note that in 2010 net migration decreased by 30 % down to 158,000. Demoscope Weekly, N 457–458, 7–20 March 2011, URL: http://demoscope.ru/weekly/2011/0457/barom05.php
78. Decree of the Government of the Russian Federation N 367-p from 10.03.2011.
79. *Ob obiazatel'nom sotsial'nom strakhovanii na sluchai vremennoi netrudosposobnosti i v sviazi s materinstvom*, Federal Law 343 adopted on 08.12.2010.
80. Marina Rabzhaeva "*Beremennym okazalos' proshche naiti drug druga*", 01.03.2011, Sensus Novus, http://sensusnovus.ru/opinion/2011/03/01/5788.html; "*Dektetnye posobiia: perezagruzka*", RIA News, 01.02.2011: http://ria.ru/analytics/20110201/329043292.html; RIA News 18.01.2011 "Russian women protest against new maternity benefits payment system": http://en.rian.ru/russia/20110118/162191854.html http://russiaprofile.org/politics/a1294773645.html; Svetlana Kononova, Russia Profine, 11.01.2011 "Bump and protest".
81. See for example, Demoscope weekly, N477–478 12-25.09.2011, URL: http://demoscope.ru/weekly/2011.0477/gazeta02.php.
82. See the website of the Fund at URL: http://www.fondsci.ru/
83. Promoted by Svetlana Medvedeva, wife of President Dmitry Medvedev, a local day of Saints Petr and Fevroniia. URL: http://densemyi.ru/

84. See the official site of the program: http://www.fondsci.ru/projects/social/356/
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88. See the official site of the project: http://www.2010-2030.ru/ Initiated in April 2008 by the Charity Foundation My generation (*Moe pokolenie*) http://www.moe-pokolenie.ru/
89. E.g. Alexander Privalov, War with the last ally (*Vojna s poslednim sojuznikom*) Expert, N2, 17.01.2011 http://expert.ru/expert/2011/02/vojna-s-poslednim-soyuznikom/
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4

Marriage and Divorce, 1994–2014

Tatiana Karabchuk

4.1 Introduction

From the early 1980s Russia started going through a second demographic transition, following a Western European trend. The number of registered marriages reduced, the number of free unions and second marriages increased, the divorce rate soared, the fertility rate decreased while an increase in the number of non-marital births was recorded. In general, the beginning of married life has been pushed to a later age. Moreover, the time between finishing education and starting work and the birth of the first child has increased. Changes in the demographic processes of family formation are the results of profound social changes. Social solidarity has increasingly replaced family solidarity, family morals have been liberalized, and the importance of family values has declined in comparison to the values of self-realization, individualism, and achievements.

What are the current main tendencies in marriage and divorce dynamics? What are the socio-economic factors of marriage and divorce in con-

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temporary Russia? The focus of this chapter is on answering these two questions.

Despite the fact that a lot of research on family formation has been published in Western Europe and in the US (Boulier and Rosenzweig 1984; Mortensen 1988; Schoen and Wooldredge 1989; Kuijten 1996; Bergstrom 1997; Weiss 1997; Lesthaeghe and Neels 2002; Wagner and Weiss 2004; Härkönen and Dronkers 2006; Kalmijn 2007; Dronkers and Härkönen 2008; Engelen and Puschmann 2011; Puur et al. 2012), the Russian case remains understudied.

Demographers regularly address the dynamics of marriage and divorce rates and the ages of men and women at their first and second marriages (Cartwright 2000; Demograficheskaya modernizatsiya Rossii 2006; Zakharov 2006a; Zaharov 2007, 2015; Vishnevsky 2014; Artamonova and Mitrofanova 2016). These papers are rich in macro data and statistics and they explain marriage and divorce statistical indicators through changes in the composition of the population, but they neglect people's social and economic characteristics.

Russian economists also pay attention to the issues of marriage and divorce and have conducted a few studies devoted to the choice of partner, the marriage market, and the likelihood of divorce. Their papers are based on the economic theories of partner choice. The main conclusion from their studies is that Russians choose marriage partners "by similarity" rather than "by difference" (Roschina and Roschin 2006; Roschin and Roschina 2007). The empirical section of this chapter uses the same annual panel household survey data of the Russian Longitudinal Monitoring Survey (RLMS-HSE), but over a longer period and it tests some additional factors. This makes a difference and adds new value compared to previous economic research.

There is also some interdiciplinary research on marriage factors in Russia between 1985 and 2000 (Gerber T. and Danielle Berman 2010), and the beginning of the 2000s (Scherbov and van Vianen 2004). Some also analyzed the determinants of divorce (Jasilioniene 2007; Keenan et al. 2013), but there is a lack of relevant publications based on up-to-date microdata, therefore this chapter aims to fill this gap.

The chapter is structured as follows. Firstly, we present the statistics and dynamics of marriage and divorce rates over the last 60 years in Russia. Secondly, we review crucial theories and results of existing empirical studies relevant to our study. Thirdly, we describe the data used and empirical models tested. Finally, we discuss the results of our analysis. The empirical part of the work is based on the RLMS-HSE data, 1994–2014.

4.2 The Dynamics of Marriage and Divorce in Russia

Over the past 30 years, marriage behavior in Russia has changed a lot (see Table 4.1). At the end of the 1970s there were more than 1.5 million marriages per year, since 1992 this number has declined rapidly (Table 4.1). In 1996 there were only 866,600 registered marriages, a rate that reached an all time low by 1998 (4.1). In the early 2000s there was a slow rise in the number of registered marriages, with a slight fall to 979,600 in

Table 4.1 Marriages and divorces

			Per 1000 population	
Years	Marriages	Divorces	Marriages	Divorces
1960	1499581	184398	12,5	1,5
1965	1097585	231389	8,7	1,8
1970	1319227	396589	10,1	3,0
1975	1495787	483825	11,1	3,6
1980	1464579	580720	10,6	4,2
1985	1389426	573981	9,7	4,0
1990	1319928	559918	8,9	3,8
1995	1075219	665904	7,3	4,5
1996	866651	562373	5,9	3,8
1997	928411	555160	6,3	3,8
1998	848691	501654	5,8	3,4
1999	911162	532533	6,2	3,6
2000	897327	627703	6,2	4,3
2001	1001589	763493	6,9	5,3
2002	1019762	853647	7,1	5,9
2003	1091778	798824	7,5	5,5
2004	979667	635835	6,8	4,4
2005	1066366	604942	7,4	4,2
2006	1113562	640837	7,8	4,5
2007	1262500	685910	8,8	4,8
2008	1179007	703412	8,3	4,9
2009	1199446	699430	8,4	4,9
2010	1215066	639321	8,5	4,5
2011	1316011	669376	9,2	4,7
2012	1213598	644101	8,5	4,5
2013	1225501	667971	8,5	4,7
2014	1225985	693730	8,4	4,7

Source: The Demographic Yearbook of Russia 2015. http://www.gks.ru/bgd/regl/B15_16/Main.htm

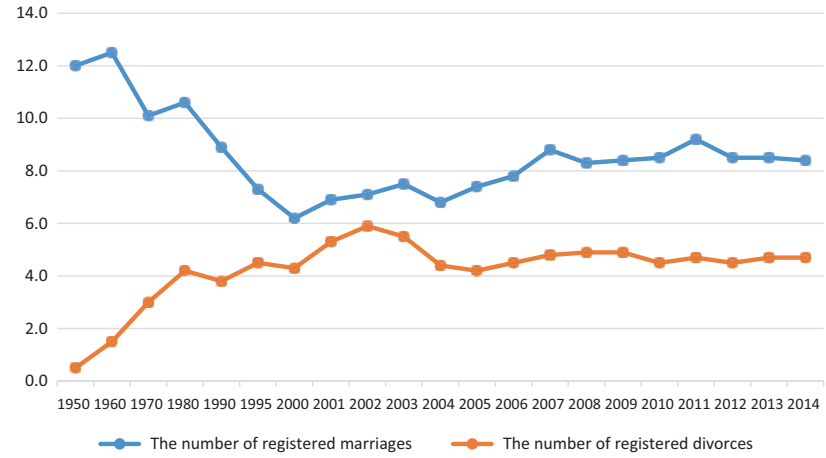

Fig. 4.1 The number of registered marriages and the number of registered divorces per 1,000 people in Russia from 1950 to 2014 (*Source*: Calculated by the authors based on Russian Federal Service of State Statistics. http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/population/demography/#)

2004 and with a maximum of 1.3 million in 2011 (Table 4.1). During 2012–2014 the marriage rate declined slightly and has still not gone over the 1.2 million mark.

Divorce rate dynamics differ a lot from marriage rate dynamics. From the 1950s to the 1980s the number of divorces grew from 50,000 to 0.5 million (Table 4.1). Since the 1980s, the number of registered divorces has not dropped below 560,000. A gradual further growth, which peaked in 2002 with 853,000 divorces. By 2005, there was a slight reduction in the divorce rate, but then the indicator went up again. The trend in divorce rates has been stable over the last five years at 0.6 million divorces, or 4.5–4.7 divorces per 1,000 people (see Fig. 4.1).

According to the Russian Census of 2002, marriages without legal arrangements and cohabitations compose 9.78 % of all marriages. Moreover, according to recent studies, cohabitation in Russia has become a more popular norm (Artamonova and Mitrofanova 2016).

The overall level of marriage and divorce in Russia varies significantly by region. In 2010 the highest marriage rate was recorded in the Chechen Republic, with quite high levels has in Khanty-Mansiiskyi Autonomni

Okrug, Chukotka Autonomni Okrug, Yamalo-Nenetskyi Autonomni Okrug, and Tyumenskaya oblast. The lowest rates of marriage were registered in Republic of Tyva, Republic of Mordovia, Chuvash Republic, and Leningradskaya oblast (Demoscope Weekly 2016).

The average age of a groom has increased by almost three years (from 23.9 in 1992 to 26.1 in 2005), and the bride's age has risen by almost two years (from 21.7 to 23.3) (Zakharov 2006b). The marriage rate for both men and women under the age of 25 years has decreased twice (see Table 4.2). Despite the fact that the age of the first marriage increased slightly, the marriage age remained relatively young in Russia, which does not correspond to trends in Western societies, where age at first marriage increased up to 30 years (Kalmijn 2007). The Eastern model of marriage rapidly lost popularity in all countries with transition economies. However, in Russia, this was not a clear trend in the 2000s. Partial preservation of the traditional norms of marriage behavior, in combination with the low level of family planning, played a major role in this process (Sixth Annual Demographic Report 1999). It is interesting to note that in rural Russia the average age at first marriage has been rising more slowly than in urban areas, and today it is lower in rural areas by approximately one year for both men and women. But the difference in the average age of grooms and brides in rural areas, conversely, is higher than in urban ones, by nearly half a year (Zakharov et al. 2013).

According to Shcherbakova, the recent slight growth in the number of registered marriages and divorces in Russia is connected to the demographic wave of the relatively large number born in the 1980s reaching marriage and childbearing age in the 2000s (Shcherbakova 2015). This favorable age structure of the population contributed to the increase in the total number of marriages since the mid-1990s, but very soon Russia will face the negative consequences of a declining number of young people (Zakharov et al. 2013). It is worth noting that the number of divorces is less susceptible to "seasonality" than marriages (Shcherbakova 2015).

What determines marriage and divorce rates besides the demographic characteristics of the population? Let us consider the existing theories and review the empirical studies on this topic.

Table 4.2 Marriages cross-classified by ages of grooms and brides

		By age of bride, years					By age of bride, years					
Years	Total number of marriages	Under 18	18–24	25–34	35 and over	Not stated	Under 18	18–24	25–34	35 and over	Not stated	Years
1960	1499581	226	798207	468734	232012	402	5015	949816	320916	223208	626	1960
1965	1097585	230	403782	472496	220927	150	11821	555911	314219	215446	188	1965
1970	1319227	2464	809466	328416	178797	84	19227	933308	201485	165041	166	1970
1975	1495787	4105	941747	351036	198830	69	27287	1064360	232690	171343	107	1975
1980	1464579	5115	902610	369768	187027	59	32591	1000767	272157	158944	120	1980
1985	1389426	5778	768872	407568	207187	21	34894	853304	324978	176233	17	1985
1990	1319928	13536	692941	389739	223628	84	72073	779437	273108	195227	83	1990
1995	1075219	8044	555859	303953	207319	44	63633	628329	205549	177655	53	1995
1996	866651	6167	430853	254362	175246	23	47481	500163	170058	148921	28	1996
1997	928411	5906	456025	279800	186531	149	43815	540549	188873	155055	119	1997
1998	848691	4851	406962	264497	172250	131	37016	493365	178447	139743	120	1998
1999	911162	3773	425864	297276	184148	101	32945	530779	202142	145226	70	1999
2000	897327	3703	403851	303216	186133	424	29889	511446	212528	143193	271	2000
2001	1001589	3576	432766	354058	210925	264	28438	561093	250614	161208	236	2001
2002	1019762	3316	421283	374513	220447	203	25795	560025	267911	165936	95	2002
2003	1091778	3415	437321	417253	233633	156	26428	596181	297448	171623	98	2003
2004	979667	2812	376343	381937	218344	231	23428	519606	276317	160167	149	2004

2005	1066366	2466	404383	430837	228522	158	21039	565910	314894	164370	153	2005
2006	1113562	2274	414163	463047	234009	69	19930	589274	339162	165113	83	2006
2007	1262500	1921	447090	538131	275288	70	18657	643038	406664	194053	88	2007
2008	1179007	1914	395318	513547	268129	99	16794	571956	399097	191053	107	2008
2009	1199446	1480	380613	539805	277507	41	14062	559805	428148	197399	32	2009
2010	1215066	1131	372782	564776	276219	158	11698	554772	451318	197162	116	2010
2011	1316011	1097	380457	633360	301045	52	11425	574707	514339	215505	35	2011
2012	1213598	952	327000	594126	291469	51	10569	496335	492239	214427	28	2012
2013	1225501	931	300195	619534	304826	15	9695	465626	521289	228879	12	2013
2014	1225985	835	273994	632025	319131	-	9180	436993	534702	245110	–	2014

Source: The Demographic Yearbook of Russia 2015. http://www.gks.ru/bgd/regl/B15_16/Main.htm
For the definition of age intervals – see methodical notes of section 1 "Population Size and Composition".

4.3 Theoretical Background

This further empirical analysis is based on two main theories of family formation: the economic theory of families by Becker; and the theory of the second demographic transition.

4.3.1 Economic Theory on Marriage and Divorce

A large number of publications by Gary Becker are devoted to the economic analysis of the family (Becker 1974, Becker et al. 1977, Becker 2003). Becker studied the gender division of labor, the dynamics of marriage and divorce, the choice between the number of children and their "quality", and many other aspects of family life. He considers marriage as the creation of a partnership firm. According to Becker, people marry if the total volume of consumer goods produced by them together exceeds what they would have produced separately (Becker 2003). Thus, from an economic point of view "marriage (as well as any other form of a union within a single household) is a partnership with the aim of co-production and consumption." (Roschin and Roschina 2007, p. 116) Marriage also performs such functions as a division of labor, extended credit and coordination of investment assets, the use of collective benefits, and risk convergence (Weiss 1997).

How can we explain partner selection from an economic perspective? A long process of searching for an appropriate partner always precedes the creation of a family. According to Becker, for a rational agent searching for a partner is similar to a job search, which stops when the expected utility of the marriage is higher than the expected utility of a bachelor life, taking into account the additional costs of further searches for a partner (Becker 2003). Neo-institutional economics compares marriage to a contract, namely, a situation where people try to create a long-term family relationship for a stable life and child-rearing (Pollak 1994). There are two prevailing principles in partner selection: (1) the probability of marriage between similar people is higher when some of their personal characteristics are mutually supportive (Winch 1955; Murstein 1970); or (2) the probability of marriage between dissimilar people is high when some of their personal characteristics are interchangeable (Becker 2003).

Russian economists confirmed these principles of economic theory in the early 2000s and proved that Russians choose similar partners (Roschin and Roschina 2007). When choosing a partner people prefer those who are similar to them in height, religion, nationality, skin color, education, and intellectual abilities, but who differ in terms of income. Men with higher income have higher chances of finding a wife. Prosperous people marry earlier and divorce less (Becker 1974; Boulier and Rosenzweig 1984; Mortensen 1988; Roschin and Roschina 2007).

In accordance with economic theory and the theory of neo-institutionalism, divorce comes when the utility of maintaining the marriage is lower than the potential benefits of its dissolution. Most marriages break up in their first years and Becker explains this trend through transaction costs coming from the imperfection of information (Becker 2003). As time goes by the likelihood of divorce reduces, because through living together partners accumulate special (for their family) social capital, which is incorporated and objectified in their habits, skills, and attitudes. Therefore, divorce would mean heavy losses (Kapelyushnikov 1993). Becker ties the increase in divorces in Europe primarily to women's high activity in the labor market. Life outside marriage for women is no longer a serious difficulty because of greater financial independence from their partners (Kapelyushnikov 1993; Becker 2003). This statement was also confirmed for Russia: the likelihood of divorce increases if a wife's income is higher than a husband's (Roschin and Roschina 2007).

4.3.2 The Theory of the Second Demographic Transition

The second demographic transition concept focuses on the transformation of the "classical" European family (Vishnevsky 2014). The theory, first proposed in the late 1980s, states the following distinctive changes in society: population birth rate falls below the rate of natural reproduction; cohabitation replaces official marriage; individual interests of partners become central to family life; intentional birth spacing is expression of parental self-realization; age of first marriage and age of first birth are older; number of out-of-marriage births increase; number of divorces

increase (Lesthaeghe 1983; Van de Kaa 1987, 1994; Oppenheimer 1988; Kirk 1996; Kalmijn 2007; Hoem and Kostova 2008; Hoem et al. 2008; Perelli-Harris and Gerber 2011).

Profound changes in peoples' values and attitudes towards family and marriage are the main reasons for the second demographic transition (Lesthaeghe 1995; Kravdal 1999; Lesthaeghe and Neels 2002; Sabotka 2008; Lesthaeghe 2010). The attitudes towards cohabitation without marriage are radically different, as are views on out-of-marriage births and single parenthood. Society no longer condemns single mothers (Lesthaeghe and Surkyn 2002). Fathers raising children alone is also a common practice. Russia is not an exception on the list of European countries that have passed or are going through this second demographic transition (Zakharov 2008; Vishnevsky 2014). A transition defined by growth in incomes, a rise in economic and political safety, which lead to greater freedom in individual sexual preferences and family life accompanied by the spread of premarital sexual relations and an increase in the number of second marriages. Parents' orientation to self-realization replaces the "child-centered" family (Vishnevsky 2014). People have become more prudent in reproduction; they carefully choose the most appropriate time for childbearing. Due to the expansion of personal freedoms, everyone has the opportunity to choose his or her own path in life (Vishnevsky 2011).

4.4 Empirical Studies on Marriage Determinants in Russia

There are many factors that affect marriage, including economic, social, and socio-cultural. First of all, let us briefly describe the cultural and social situation in the country in the 1990s and 2000s.

Low rates of contraceptive usage due to the low level of sexual education in the late 1980s and early 1990s resulted in the spread of early marriages and subsequent divorces (Bondarskaia and Darskiy 1990). The popularization of premarital sexual relations and the low number of abortions (due to the widespread advice women received not to have an abortion before the birth of their first child), in some cases encouraged early

marriage (Bondarskaia and Darskiy 1990; Avdeev and Monnier 2000; Demograficheskaya modernizatsiya Rossii 2006). Thus, the high rate of marriage in Russia can be connected to the fact that many people were simply forced to marry because of premarital pregnancy. Negative public attitudes towards unmarried single mothers with children encouraged people to get married in the 1990s (Cartwright 2000). Those rigid social norms pushing people towards marriage weakened and as a result, the number of unnecessarily early marriages, including those "stimulated" by premarital pregnancy, dramatically reduced (Zakharov et al. 2013).

By the end of the twentieth century state regulation of private and family life had declined in Russia, and factors that encouraged both the official registration of marriage and its termination gradually decreased. These factors included the whole range of material, housing, career, and educational opportunities that people could get just by changing their official marital status (Demograficheskaya modernizatsiya Rossii 2006, p. 95). Marriage or divorce do not provide any incentives or disadvantages at work and there are no social policies stimulating marriage in the country. Family formation today can be characterized by more freedom, late marriage, unregistered cohabitation, and out-of-marriage births. These features have become socially acceptable (Demograficheskaya modernizatsiya Rossii 2006, p. 249).

Education and employment seem to be the most important economic determinants of marriage. Becker argued that the difference in wages between men and women is positively related to their marital status. Consequently, women with a higher education are less likely to be married than women with less education, because their ability to make money is much higher (Becker 2003). In turn, researchers focused on the age of marriage suggest that female employment defines marriage differently in different countries. For instance, in Russia women's employment has no effect on the delay of marriage, while in Germany there is a positive relationship between women's employment and the likelihood of being married at a younger age (Kalmijn 2007).

Education and family income increases the chances of a woman marrying because her social capital provides these opportunities. For example, women from richer families are more likely to find a partner of the same

social and economic status, which is in line with Becker's theory. This trend was seen in Russia in the 1990s (Antonov and Medkov 1996), but in many European countries increased access to higher education has led to postponed marriage and childbirth (Kalmijn 2007). Gender discrimination in job promotion, a glass ceiling, and a lack of qualified childcare reinforced traditional views of the female position in society. This gender asymmetry had a significant socio-economic impact on the decision to marry in Russia in the 1990s (Cartwright 2000).

In the mid-2000s, employment status had a major impact on marital opportunities for both men and women. Being unemployed and economically inactive reduced the likelihood that a man would get married. On the one hand, it might be a sign of unwillingness to start a family without a stable income; on the other hand, economically unstable man is considered to be less attractive as a marriage partner. The opposite situation was discovered for women; their income did not affect their chances of finding a spouse (Roschina and Roschin 2006; Roschin and Roschina 2007). However, it is interesting to stress that, according to statistics in different countries there is a correlation between a higher proportion of women in paid work and lower marriage rates and higher divorce and unregistered cohabitation rates (Kalmijn 2007).

Religion is another important factor determining the probability of getting married. Numerous studies demonstrated that most religious people are more likely to get married and less likely to divorce (Kalmijn 2007, Gorenko 2007). Since the end of the 1800s the church has had a huge impact on the institution of the family in Russia. At that time churches considered marriage to be the main institution to regulate sexual relations and population reproduction (Cartwright 2000). Despite social changes in the 1900s, the basic principles of the Russian church and its views on family life did not change. And it differs a lot from Western societies, in which, according to Thornton and his colleagues, society has a mutual impact on religious institutions and the church reflects changes in social standards (Thornton et al. 1992). Religiosity is positively related to marital status in Russia (Cartwright 2000; Roschin and Roschina 2007).

To sum up this review of existing literature, the most important factors for marriage are: age, education, employment status, income, and religiosity.

4.5 Empirical Studies on Divorce Determinants in Russia

The attitude towards divorce has changed dramatically over the past decade. Many women who have experienced divorce, see it as a new phase in their life or as a kind of liberation (Voronina 2011). A divorced woman in today's society is perceived quite differently than, for example, in Soviet times, when a divorce for a woman was a kind of stigma accompanied by public condemnation. A single mother is no longer a rare phenomenon, nor is she exposed to harsh criticism from modern Russian society (Demographic Modernization of Russia, 2006). The practice of childrearing by a single father is also no longer a surprise. Such a transformation is the result of the second demographic transition. This global liberalization of family relations explains the overall increase in the divorce rate; although it is still important to understand the other factors in contemporary divorce.

The decision to divorce is influenced by various determinants, which are very specific to each individual family. However, there are common causes that account for family rupture, and they have been consistent over the past decade (Press release WCIOM 2007, 2011, 2013; Demoscope Weekly 2015). The factors of divorce can be divided into three groups (Churilov and Gutina 2014). The first group is connected to experienced events and previous conditions of life: parental or own experience of divorce; low level of welfare in the parental family. These factors explain the life cycle theory, according to which events once experienced affect future marriage and reproductive behavior patterns. But it is very difficult to test this assumption on large longitudinal household surveys, as very detailed biographical information on each respondent is needed. The second group of factors includes features of a couple: the level of education; the age of entry into marriage; living conditions (with parents/without), and socio-economic characteristics of the parental family. The third group of factors includes the values and acceptance of marriage by spouses, relatives, and friends. The discrepancy between the interests and views of the spouses leads to marriage instability.

According to the Russian Public Opinion Research Center (WCIOM), one of the main reasons for divorce is the alcohol or drug addiction of one of the spouses. From 2007 to 2011 this factor was the most decisive (Press release WCIOM 2007, 2011, 2013). In 2013 a spouse's infidelity became the most important factor in divorce, while alcohol and drug addiction was the second most frequently mentioned reason. Additionally, men are much less likely to forgive betrayal by their wives and unfaithfulness is more frequently the determining factor for divorce for them than for women. Therefore, a spouse's adultery is a primary motive for men to divorce, while alcohol or drug abuse is more significant for women (Press release WCIOM 2007, 2011, 2013).

Another dominant reason for divorce is poverty, with 21 % noting poverty and unemployment as the main determinant for divorce in 2013 (Demoscope Weekly, 2015). In general, the financial situation and material living conditions play an important role in life and affect all areas, including marital relations. It is interesting that the frequency of mentioning economic well-being as the reason for divorce depends on the age of the respondent. Thus, financial problems are an important determinant of divorce among older people, while infidelity is one of the main reasons for divorce among young people (Press release WCIOM 2007, 2011, 2013; Demoscope Weekly 2015). The lack of own house/flat is also a factor in divorce; however, studies show that its significance has slightly reduced.

Besides the factors that stimulate divorce, there are a number of factors that may prevent it. Among the most common are children, joint property, and financial dependence on the partner (Press release WCIOM, 2007, 2011, 2013). Religious beliefs also act as a barrier to divorce. It is worth mentioning that in most cases it is women who initiate the divorce, despite the fact that the probability of remarriage for them is lower than for men (Churilova and Gutina 2014).

Based on the analysis of empirical and theoretical research conducted during the last ten years, we can draw the following conclusions: alcohol abuse and infidelity are the most significant factors in divorce in Russia; while poverty and financial difficulties take second place.

4.6 Data and Methodology

4.6.1 Data Description

We based our empirical analysis on the Russian Longitudinal Monitoring Survey (RLMS- HSE)[1] for 1994–2014. RLMS-HSE[2] is a series of nationwide representative surveys, conducted on the basis of a probabilistic stratified multistage area sampling. It should be noted that this study is longitudinal, which allows us to estimate the likelihood of marriage and the likelihood of divorce over time. Longitudinal household surveys are the best method for understanding the dynamics of marriage and the risks for divorce (Karney and Breadbury 2016; Umberson et al 2016).

For the purposes of our work, we limited the sample to men and women aged from 18 to 75. The lower age limit is defined by legal adulthood in Russia, while the upper age limit is defined by the average life expectancy in the study period.

We assessed two types of model: multilevel regression on the probability of getting married; and multilevel regression on the probability of divorce. The panel data allowed us to have a time-lagged dependent variable, so we took the dependent variable for year T+1 while all the characteristics of the respondents are taken for year T. This time-lag allowed us to speak for causal links between the dependent and independent variables. To estimate the probability of first marriage we selected all individuals who had never been married but who might have been cohabitating in the year T. The total pool of all the waves of 1994–2014 provided us with the sample of 14,711 respondents who had never been married. From here on we talk about the likelihood of getting married for the first time, as second or subsequent marriages need special attention due to different behavioral mechanisms.

To assess the likelihood of divorce we selected only those respondents who were in registered marriages in the year T, and traced their marriage status in the year T+1. The total sample of pooled waves for 1994–2006 comprised 15,405 married people. All models were calculated separately for men and women, and then for the total sample (Tables 4.3, 4.4).

Table 4.3 Descriptive characteristics of the sample of never married or cohabitating, RLMS-HSE 1994–2014

	Men only					Women only				
Variable	Obsevations	Mean	Std. Dev.	Minimum	Maximum	Obsevations	Mean	Std. Dev.	Minimum	Maximum
Get married	17950	0.0788858	0.2695679	0	1	19347	0.0812529	0.2732302	0	1
Age group	25501	2.034548	1.284486	1	6	25956	2.19795	0.812	1	6
Tertiary education	20166	0.1617078	0.3681917	0	1	18571	0.280868	0.4494353	0	1
Subjective health	24023	0.5540524	0.4970801	0	1	22928	0.4655443	0.4988223	0	1
Respondent's weight	23786	73.86588	12.77036	38	250	24379	64.06131	14.14744	30	165
Respondent's height	24670	175.6767	7.475068	132	210	24980	163.8387	6.893887	52	196.5
Smoking	25476	0.6260402	0.4838626	0	1	25928	0.2455646	0.4304298	0	1
Alcohol consumption	20885	0.6223605	0.4848084	0	1	20328	0.4255214	0.494434	0	1
Number of children	23211	3.462152	1.597384	1	13	23599	3.30531	1.651382	1	13
Cohabiting last year	25501	0.3878279	0.4872645	0	1	25956	0.4196332	0.4935084	0	1
Have a job	22097	0.5678146	0.495391	0	1	22382	0.5591547	0.4964995	0	1
Casual work	21661	0.0627395	0.2424994	0	1	21975	0.0490557	0.2159894	0	1
Natural logarithm of personal income	17581	8.529912	1.76926	–4.961845	13.88317	19015	8.279901	1.68573	–4.961845	14.52601
Life satisfaction	21956	3.035753	1.149355	1	5	22259	3.03949	1.148007	1	5

Perceived economic security	19649	2.238791	1.256571	1	5	19960	2.196042	1.248595	1	5
Number of family members	23211	3.508897	1.593623	1	13	23599	3.37777	1.645057	1	13
Number of square meters in housing	21828	55.13157	25.1194	0	500	22117	53.02771	23.8282	5	320
Living in rural area	25501	0.2678326	0.4428386	0	1	25956	0.2384035	0.4261153	0	1
Year of the survey	25501	2007.205	5.207609	1994	2014	25956	2007.187	5.184809	1994	2014

Source: Authors' calculations based on RLMS-HSE data for 1994–2014 (sample restricted to those who had never been married or who were cohabitating in year T)

Table 4.4 Descriptive characteristics of only married sample, RLMS-HSE 1994–2014

	Men only					Women only				
	Obsevations	Mean	Std. Dev.	Minimum	Maximum	Obsevations	Mean	Std. Dev.	Minimum	Maximum
Get divorced	19386	0.0117095	0.1075777	0	1	21186	0.0188332	0.1359389	0	1
Age group	24814	3.504111	1.417843	1	6	26316	3.317563	1.449028	1	6
Tertiary education	20203	0.2387269	0.4263161	0	1	18065	0.3063936	0.4610079	0	1
Subjective health	21720	0.3719613	0.4833393	0	1	22121	0.2574025	0.4372129	0	1
Respondent's weight	22526	76.95384	13.379	30	200	23922	70.47122	14.46187	36	200
Respondent's height	23788	173.4346	7.18945	110	203	24843	161.7999	6.360589	115	190
Smoking	24797	0.610961	0.487542	0	1	26287	0.1080382	0.3104345	0	1
Alcohol consumption	24306	0.6099317	0.4877754	0	1	25595	0.3132252	0.4638142	0	1
Number of children aged 0–6	24814	0.2041589	0.4558327	0	4	26316	0.2067563	0.4587502	0	4
Number of children aged 7–17	24814	0.484001	0.7554567	0	7	26316	0.4827481	0.7493152	0	7
Have a job	24803	0.5290892	0.4991632	0	1	26302	0.5307961	0.4990602	0	1
Casual work										
Ln personal income	20654	7.214881	2.140569	–4.961845	12.62807	21329	6.768104	1.939444	–4.961845	11.40757
Life satisfaction	24644	2.648271	1.151602	1	5	26127	2.655031	1.161956	1	5

Perceived economic security	24534	2.050868	1.228251	1	5	26024	2.036851	1.226519	1	5
Have own house/flat	24714	0.9189933	0.272851	0	1	26206	0.918034	0.2743181	0	1
Living in rural area	24814	0.277424	0.4477366	0	1	26316	0.2679739	0.4429123	0	1
Year of the survey	24814	2000.194	4.015302	1994	2006	26316	2000.244	3.997233	1994	2006
Spouse's education (1 – tertiary, 0 – lower)	15434	0.2026046	0.4019533	0	1	16666	0.2052082	0.4038658	0	1
Spouse's age	24585	36.718	21.975	0	98	26045	37.12352	22.17366	0	100
Spouse has a job	24563	0.5285592	0.4991939	0	1	26028	0.5245121	0.4994084	0	1
Ln of spouse's personal income	15789	6.904012	2.277234	–4.961845	16.81124	16744	6.920623	2.248471	–4.961845	16.30042
Spouse is smoking	20072	0.323336	0.4677614	0	1	21367	0.3155801	0.4647574	0	1
Spouse is drinking alcohol	16695	0.294699	0.455921	0	1	15396	0.1719927	0.3773864	0	1
Spouse's weight	21592	62.07253	22.79884	2	200	22809	62.08714	22.57266	40	250

Source: Authors' calculations based on RLMS-HSE data for 1994–2006 (sample restricted to only those who were married in year T)

4.6.2 Methodology

To estimate the probability of getting married we used dummy variable "marital status" as the dependent variable (where 1 – got married, 0 – still not married).[3] We estimated multilevel regression controlling for cultural differences in the regions of Russia: region of the survey is used as a second level variable (respondents from 39 regions took part in the survey). Although we did not test any particular hypotheses here on regional differences, this multilevel technique helps to control for the cultural context of the regions and the nature of the nested data requires using this method of analysis.

Based on the previous studies and theories mentioned above we constructed our model to estimate the probability of getting married. First, we included socio-demographical characteristics of a person, such as age, education level, subjective health, height, weight, smoking habit, alcohol consumption, the number of children, and the fact of cohabitation in year T. This last differentiates our study from previous ones. We claim that cohabitation is usually followed by marriage, which is why it plays a big role in the process of getting married. For the next step, we incorporated the well-being characteristics of a respondent, such as employment status (having a job or not), casual work, personal monthly income, life satisfaction, and perceived economic security. Additionally, we controlled for such variables as the number of family members, the number of square meters a family has to live in, type of settlement (urban or rural area), and year dummy. We used regions (39) as a second level for the multilevel modeling to control for possible regional variations in cultural norms and economic development.[4] As previous studies showed the divorce rate in Russia varies greatly by region because of differences in age structure, as well as cultural and ethnic stereotypes about marriage behavior (Shcherbakova 2015).

The equation for the probability of getting married on an individual level can be put as follows:

$$\Pr\left(Y_i = 1\right) = F\left(a + X_i * b + Z_i * c + K_i * h + U_i * d + e\right),$$

a, h, b, c, d – coefficients of the independent variables.[5]
X_i – socio-demographic characteristics of the respondent

- age groups (dummy variables for ten-year age groups)
- tertiary education (dummy variable: 1 – has tertiary education, 0 – does not have a tertiary education)
- subjective health (dummy variable: 1 – good, 0 – not good)
- Respondent's weight (in kilograms)
- Respondent's height (in centimeters)
- Smoking (dummy variable: 1 – smoking, 0 – not smoking)
- Alcohol consumption (dummy variable: 1 – drinks alcohol more than twice a month, 0 – does not drink alcohol or less than once a month)
- Number of children aged 0–17
- Cohabited during the last year (1 – yes, 0 – no)

Z_i – economic characteristics and well-being of the respondent:

- Employment status (1 – respondent has a job, 0 – respondent is not working)
- Casual work (1 – respondent has casual work but no primary work, 0 – does not have casual work)
- Personal monthly income (in rubles)
- Life satisfaction (ordinal 5-point scale, 1 – totally dissatisfied, …, 5 – totally satisfied)
- Perceived economic security (ordinal 5-point scale, 1 – economically not at all secure, … , 5 – economically secure)

K_i – family characteristics

- Number of family members in the respondent's household
- Number of square meters a family has to live in

U_i – regional and time characteristics:

- Settlement type (dummy variable, rural –1, urban – 0)
- Year of the survey (dummy variables for each year of the survey).

- 39 regions as a second level for the analysis
- e – error term

To estimate the probability of divorce we used dummy variable "divorced" (where 1 – got divorced, 0 – still married) as the dependent variable. The equation for the probability of divorce on an individual level looks like this:

$$\Pr(Y_i = 1) = F(a + X_i * b + Z_i * c + K_i * h + S_i * g + U_i * d + e),$$

a, h, b, c, d, g – coefficients of the independent variables,
X_i – socio-demographic characteristics of the respondent

- age groups (dummy variables for ten-year age groups)
- tertiary education (dummy variable: 1 – has tertiary education, 0 – does not have a tertiary education)
- subjective health (dummy variable: 1 – very good and good, 0 – average, bad, and very bad)
- Respondent's weight (in kilograms)
- Respondent's height (in centimeters)
- Smoking (dummy variable: 1 – smoking, 0 – not smoking)
- Alcohol consumption (dummy variable: 1 – drinks alcohol more than twice a month, 0 – does not drink alcohol or less than once a month)
- Number of children aged 0–6
- Number of children aged 7–17

Z_i – economic characteristics and well-being of the respondent:

- Employment status (1 – respondent has a job, 0 – respondent is not working)
- Casual work (1 – respondent has casual work but no primary work, 0 – does not have casual work)
- Personal monthly income (in rubles)
- Life satisfaction (ordinal 5-point scale, 1 – totally dissatisfied, …, 5 – totally satisfied)

- Perceived economic security (ordinal 5-point scale, 1 – economically not at all secure, … , 5 – economically secure)

K_i – family characteristics

- Number of family members in the respondent's household
- Housing (dummy variable: 1 – respondent has his own house/flat, 0 – respondent rents an apartment or lives in the dormitory)

S_i – spouse characteristics

- Spouse's education (dummy variable: 1 – has tertiary education, 0 – does not have tertiary education)
- Spouse's age (in years)
- Spouse's employment status (1 – has a job, 0 – does not have a job)
- Spouse's personal total income (in rubles)
- Spouse's weight
- Spouse is smoking (dummy variable: 1 – yes, 0 – no)
- Spouse drinks alcohol (dummy variable: 1 – yes, more than twice a month, 0 – not at all or less than once a month)

U_i – regional and time characteristics:

- Settlement type (dummy variable, rural –1, urban – 0)
- Year of the survey (dummy variables for each year of the survey)
- 39 regions as a second level for the analysis

e – error term

4.7 Results and Discussion

Let us start the empirical analysis by providing some descriptive statistics of married, never married and divorced groups of the Russian population.

4.7.1 Descriptive Statistics on Marriage Status in Russia

The distribution of the Russian population by marital status, based on RLMS-HSE data, shows us that this household survey reflects the official statistics. The percentage of those who have never been married increased from 13.9 % in 1994 to 18.3 % in 2014 (Table 4.5). The share of official marriages decreased from 66.1 % to 49.7 % within the same period. However, the percentage of those who lived together without official registration rose from 6.8 % in 1998 to 11.7 % in 2014. About 8 % of the population are divorced and this number has been consistent over the last 20 years, which is in line with official divorce rate dynamics. Thus, in terms of population proportions by marital status, we declare light changes in never married, official married and cohabitating groups.

4.7.2 Probability of Getting Married and Its Determinants

To disclose the determinants of getting married we ran multilevel regressions separately for men and women, and then for the total population. The dependent variable was the probability of getting married in year T+1, while independent variables were taken for year T. The main tested assumptions we associated with cohabitation (living together without registration) prior to first marriage were employment status, well-being, and bad habits. Table 4.6 illustrates that inclusion of economic factors like employment status, personal income, life satisfaction, and perceived economic security increases the model's predictive power, however not all the variables appeared to be significant.

A very interesting fact is that the probability of getting married does not depend on gender. It means that both men and women have equal opportunities for marriage. The most likely age for women to get married is between 18 and 25 years, after that the probability of finding a partner goes down. For men, it is a bit less constrained, the significant negative effects of age on the likelihood of first marriage start at 36 years

Table 4.5 Distribution of Russian population by marital status and years, based on RLMS-HSE data, 1994–2014, (%)

Marital status	1994	1995	1996	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Never married	13,9	16,9	17,5	18,4	19,6	19,9	20,6	20,4	21,1	21,4	21,3	21,0	20,9	20,3	19,6	19,5	18,7	18,4	18,3
Officially married	66,1	63,4	62,7	56,1	54,0	52,2	50,2	49,7	49,6	49,6	48,4	48,7	49,0	49,1	50,1	49,6	49,8	49,7	49,7
Cohabiting	–	–	–	6,8	7,6	8,6	9,3	10,1	9,8	9,5	9,8	10,2	9,6	11,1	11,1	11,4	11,4	11,5	11,7
Divorced	8,0	7,5	7,6	6,7	6,7	7,2	7,4	7,8	7,7	7,8	8,2	7,7	8,0	7,6	7,2	7,6	7,9	8,0	8,0
Widowed	11,9	12,2	12,1	12,0	12,0	12,1	12,2	11,9	11,8	11,8	11,6	11,8	11,7	11,6	11,2	11,2	11,5	11,8	11,6
Married but not together	–	–	–	–	–	–	,4	–	–	–	,8	,8	,8	,3	,8	–	,7	,6	,6

Table 4.6 The determinants for marriage in Russia (coefficients of multilevel modeling for the probability of getting married the following year, based on RLMS-HSE data, 1994–2014)

	Men		Women		Total population	
Gender (1-male)					0.00321	0.00685
26–35 years old	−0.00967	**−0.0217***	**−0.0380*****	**−0.0538*****	**−0.0219*****	**−0.0374*****
36–45 years old	**−0.0222***	**−0.0332***	**−0.0752*****	**−0.0898*****	**−0.0453*****	**−0.0594*****
46–55 years old	**−0.0456*****	**−0.0471****	**−0.0751*****	**−0.0926*****	**−0.0571*****	**−0.0680*****
56–65 years old	**−0.0522****	**−0.0531***	**−0.103*****	**−0.122*****	**−0.0734*****	**−0.0849*****
66–75 years old	**−0.0798*****	**−0.0844****	**−0.109*****	**−0.127*****	**−0.0916*****	**−0.101*****
Tertiary education	**0.0448*****	**0.0339***	**0.0559*****	**0.0349***	**0.0477*****	**0.0334****
Subjective health	**0.0191****	**0.0303*****	0.00137	−0.0101	**0.0117***	0.0131
Respondent's weight	0.000661*	0.000743	0.000274	−0.000102	0.000317	0.000203
Respondent's height	−0.0000899	0.0000866	0.000226	0.000327	0.000169	0.000329
Smoking	−0.00458	−0.00887	**−0.0241****	**−0.0281****	**−0.0123***	**−0.0151***
Alcohol consumption	−0.000722	−0.00556	−0.00599	−0.00120	−0.00244	−0.00301
Number of children	−0.00277	−0.00294	−0.00848	−0.0112	−0.00399	−0.00518
Cohabiting last year	**0.117*****	**0.118*****	**0.105*****	**0.103*****	**0.114*****	**0.115*****
Number of family members	0.00244	0.00379	0.0106	0.0143	0.00446	0.00677
Number of square meters in housing	0.000111	0.000237	0.000229	0.0000419	0.000162	0.000141
Living in rural area	−0.00384	−0.00441	−0.000192	0.00863	−0.00323	−0.00223
Have a job		−0.000585		−0.00509		−0.00294
Casual work		−0.0329		−0.0123		**−0.0270***
Ln personal income		**0.00872****		**0.00898***		**0.00813*****

Life satisfaction		0.00526		0.00106		0.00354
Perceived economic security		−0.00501		0.00422		−0.000857
Constant	−0.0355	−0.117	−0.0415	−0.0581	−0.0458	−0.0986
lns1_1_1_cons	−4.592***	−4.796***	−4.711***	−4.146***	−4.277***	−4.046***
lnsig_e _cons	−1.337***	−1.269***	−1.323***	−1.307***	−1.330***	−1.284***
Number of cases	8162	4827	6549	4014	14711	8841
Number of regions	39	39	39	39	39	39
AIC	1411.9	1528.7	1335.2	989.3	2720.5	2492.1
BIC	1657.2	1775.0	1572.8	1228.6	2994.0	2768.5

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Authors' calculations based on RLMS-HSE data for 1994–2014 (sample restricted to those who had never been married or were cohabitating in year T). Year dummies were included in the models, higher probability for getting married in year T+1 was in the 1990s compared to the 2000s

old. A university diploma positively affects the probability of getting married both for men and women in Russia, as does personal income. This revealed effect from education goes against Becker's theory (Becker 2003) but is in line with empirical research on Russia (Kalmijn 2007; Roschin and Roschina 2007)

It is interesting that for men subjective health plays a positive role on the likelihood of marriage. At the same time, smoking does not have any significant effect on males getting married, which is opposite to females. If a woman smokes she is less likely to get married in the following year. The models for the total population (columns 5–6 in Table 4.6) also showed a negative effect of smoking on the probability of first marriage. The negative sign of drinking alcohol is not significant, which means that we cannot speak of any relationship between first marriage and alcohol consumption. We have to admit that these results contradict previous research, which declared smoking and alcohol consumption to be the determinants for marriage (Roschin and Roschina 2007).

As we expected, cohabitation prior to year T increases the likelihood of getting married in the year T+1 for both men and women. Children do not have any significant influence on getting married both for men and women, and this goes against our expectation as we were supposing that it would be more difficult for parents with children (especially with children out of marriage) to find a spouse than for those men and women without children. We received no significant effect of employment and life satisfaction on the probability of getting married, which again contradicts previous estimates by Roschin and Roschina (2007).

These differences from previous findings can be explained by the fact that their models were calculated for both first and subsequent marriages, and they were analyzing data for the shorter period of 1994–2003 (Roschin and Roschina 2007). Moreover, their probit models did not take into account regional differences and contained only employed people in the sample as they tested a lot of employment characteristics. We were not focusing on the employed, which is why we did not include job characteristics like professional groups, hours of work, and so on.

4.7.3 Factors for Divorce in Russian Society

Let us turn to the probability of divorce. What are the determinants here? Table 4.7 contains the results of the multilevel regression model on the likelihood of divorce separately for men and women, and for the total population for 1994–2006. Men, on average, were less likely to be divorced if they were older, like 46 and above. Women almost do not have this effect of age. A university diploma reduces the probability of getting divorced, but only for females.

Such personal characteristics as weight have almost no significant influence on divorce, only lower weight for females can lead to divorce. It is also worth mentioning that women are more likely to divorce when they report good health conditions. These two outcomes might mean that if a woman is slim and has good subjective health she is more likely to divorce, and probably to go for a second marriage. The situation becomes even riskier when her husband is overweight. For men, we do not see such dependencies from their weight or subjective health. However, the taller the man the higher the probability of them getting divorced. A bad habit like drinking alcohol does not influence the possibility of divorce, while smoking increases the chances of divorce for both men and women. This is in line with results from Roschin and Roschina (2007) who did not find any association between alcohol and probability of divorce. It is worth underlining that the results of an econometric analysis based on the household surveys contradicted the VCIOM public opinion polls on the reasons for divorce, where alcohol addiction was mentioned as one of the main causes for divorce (Press release VCIOM 2007, 2011, 2013). For males having a wife who smokes more often leads to divorce. The effect of smoking on divorce was also proven in previous studies, which declared a positive correlation between smoking and divorce for women (Roschin and Roschina 2007).

If we look at family characteristics we will see that only children are likely to prevent divorce, other factors, like number of family members, own house or flat, do not have any significant effects on the possibility of divorce.

Table 4.7 The determinants for divorce in Russia (coefficients of multilevel modeling for the probability of divorcing the following year, based on RLMS-HSE data, 1994–2006)

	Men		Women		Total population	
Gender (1-male)					**–0.0133*****	**–0.00853**
26–35 years old	–0.00231	0.00296	–0.00614	0.000302	–0.00614	0.00310
36–45 years old	–0.00657	–0.00339	–0.0118	0.00396	**–0.0129****	0.000458
46–55 years old	**–0.0183*****	–0.0115	–0.0103	0.000743	**–0.0181*****	–0.00729
56–65 years old	**–0.0261*****	**–0.0199***	–0.0187*	–0.000487	**–0.0256*****	–0.0124
66–75 years old	**–0.0242*****	–0.0154	–0.0205*	–0.00427	**–0.0246*****	–0.0123
Tertiary education	0.00192	0.00312	**–0.0217****	**–0.0304****	–0.00531	–0.00806
Subjective health	–0.00307	–0.00114	**0.0133****	**0.0169***	0.00228	0.00545
Respondent's weight	–0.0000999	–0.000162	–0.000152	**–0.000407***	–0.000106	–0.000238
Respondent's height	**0.000369***	**0.000682***	–0.000314	–0.000468	0.0000822	0.000260
Smoking	**0.00455***	0.00593	**0.0302*****	**0.0176***	**0.00907*****	0.00697
Alcohol consumption	0.00232	–0.000381	–0.00401	0.00161	0.000528	–0.00108
Number of children under 7 years old	**–0.0108*****	**–0.0112***	–0.000403	–0.00968	**–0.00762****	**–0.0110****
Number of children 7–17 years old	**–0.00865*****	**–0.00861****	–0.00194	–0.000426	**–0.00502****	**–0.00604***
Have a job	–0.0000515	–0.00104	0.000285	–0.0103	0.000182	–0.00374
Casual work	0.00490	–0.00427	–0.0106	–0.00794	–0.00110	–0.00490
Ln personal income	–0.000575	**–0.00229***	0.00214	–0.00143	0.000313	–0.00155
Life satisfaction	–0.000385	0.00127	0.00291	0.00350	0.00124	0.00210
Perceived economic security	0.000840	0.00107	–0.000759	–0.00215	0.000117	–0.0000805
Number of family members	–0.00145	–0.000199	–0.00114	–0.00444*	–0.00102	–0.00170
Having personal house/flat	0.00232	0.00727	–0.0103	–0.00564	–0.00315	0.000836
Living in rural area	0.00176	–0.00303	–0.00610	–0.00111	–0.00210	–0.00285
Spouse's education (1 -tertiary, 0 – lower)		0.00708		0.00206		0.00426
Spouse's age		0.000113		0.0000605		0.0000680

Spouse's employment (1- has a job, 0 – no job)		–0.00272		–0.00598		–0.00375
Ln of spouse's personal income		0.000267		–0.000755		–0.0000871
Spouse is smoking		**0.00572***		–0.00261		0.00278
Spouse is drinking alcohol		0.000749		–0.00412		–0.000682
Spouse's weight		0.0000308		**0.000372***		0.000138
Constant	–0.0237	–0.0881	0.102*	0.127	0.0404	–0.00113
lns1_1_1_cons	–6.005***	–24.77***	–5.042***	–4.828***	–5.672***	–6.056**
lnsig_e _cons	–2.326***	–2.272***	–2.044***	–2.150***	–2.186***	–2.211***
Number of cases	9120	3203	6782	2045	15405	5369
Number of regions	39	39	39	39	39	39
AIC	–16466.7	–5383.9	–8391.6	–2898.1	–23565.3	–8421.3
BIC	–16231.8	–5141.0	–8159.7	–2667.5	–23297.8	–8151.2

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Authors' calculations based on RLMS-HSE data for 1994–2006 (sample restricted to those who were married in year T). Year dummies were included in the models, no significant correlations with the probability of being divorced in year T+1

None of the economic factors appeared to be significant, except personal income for men. If a man has a low personal income the probability of divorce is higher, but a high income reduces this probability. It is interesting that other employment and well-being variables did not prove to have a significant impact on the divorce probability. These results are only partly in line with previous economic studies based on RLMS-HSE. On the contrary, Roschin and Roschina (2007) showed that work for women is positively associated with divorce while negatively linked for men. No influence of life satisfaction in year T on the divorce possibility in year T+1 was previously confirmed by these authors (Roschin and Roschina 2007).

4.8 Conclusions

This chapter examines marriage and divorce dynamics in Russia, discusses previous findings and theories that were applied to explain the likelihood of getting married and divorced, and provides the results of empirical tests of multilevel regression analysis based on relevant panel household survey data for 1994–2014.

Over the past 30 years, marriage and divorce behavior in Russia has changed a lot: the marriage rate decreased to 1.2 million registered cases; while the divorce rate has remained relatively high since the 1980s and comprises about 0.6 million divorces per year. The analysis of the literature and empirical data showed that cohabitation without formal registration became a norm in Russian society. While the Russian Census of 2002 declared 9.7 % marriages without registration, RLMS-HSE data evidenced that 11.7 % of the population were cohabitating in 2014. Society became more tolerant to unregistered cohabitation, out-of-marriage birth, and single parenthood; people started enjoying more freedom in family life and partner choice (Zakharov 2008; Vishnevsky 2014), which led to an increase in the divorce rate, an extension of age at first marriage, and childbirth postponement.

All in all, according to RLMS-HSE data, the Russian population in 2014 consisted of about 18 % who had never been married, 50 %

officially married, around 12 % cohabitating couples, 8 % divorced, and almost 12 % widowed (see Table 4.5). It is interesting to note that women and men have equal chances of getting married in Russia, only women are more likely to divorce, which is in line with previous studies (Churilova and Gutina 2014).

The main tested assumptions on the probability of getting married were on cohabitation prior to the first marriage, employment status, well-being, and bad habits. The results of our study showed that cohabitation is one of the key factors for official registrations of marriage in Russia. Personal income also contributes to the possibility of marriage, both for men and women. The same positive impact was discovered from education. Life satisfaction and perceived economic security do not affect the probability of getting married, either for men or women. Smoking is negatively associated with the marriage possibilities for women only, while alcohol drinking does not have any effect at all on getting married. The chances of getting married decrease with age, more severely for females than for males.

As for the divorce determinants, the most outstanding result here is that women have a higher chance of being divorced at all ages, while men are less likely to get divorced after 46 years old. Another striking result is that tertiary education reduces the probability of getting divorced only for females. At the same time, their good subjective health and lower weight encourage women to divorce in Russia. It is interesting that being a smoker increases the probability of being divorced, both for men and women, moreover having a wife who smokes raises the chance of divorce for men. Alcohol consumption did not show any significant effect on divorce in this study or in previous ones done by economists (Roschin and Roschina 2007). Finally, employment status did not affect the probability of divorce. This outcome might be evidence of a different Russian path of demographic change from European countries, where female employment and income independence play a greater role in divorce decisions. However, we received the confirmation that men with low income in Russia are more likely to be divorced, and that the presence of children in a family lowers the probability of divorce.

Notes

1. The Russia Longitudinal Monitoring Survey – Higher School of Economics (RLMS-HSE) is conducted by the National Research University Higher School of Economics and ZAO "Demoscope" together with Carolina Population Center, University of North Carolina at Chapel Hill, USA and the Institute of Sociology RAS, Russia. (The official websites of RLMS-HSE are: http://www.cpc.unc.edu/projects/rlms and http://www.hse.ru/rlms).
2. The survey has been conducted every year from 1994 to the present, with the exception of 1997 and 1999 when the project was not funded. Thus, the sample annually comprises 4000–4500 households which is about 10500–12000 people who are the members of these households. Interviews are conducted each year from October to December. Three forms of questionnaire are used in the survey: family; individual, for adults older than 13; individual for children younger than 13. The interviewer also establishes the infrastructure characteristics of the area and local food prices. The family questionnaire is filled in by the family member who has the most complete information about its resources and finances.
3. The authors acknowledge the restrictions imposed by the nature of the RLMS data, which does not allow the tracking of changes in marital status of the respondent during the year between two survey points. However, there is no other more detailed panel data in Russia, which would be more suitable for this.
4. As we do not have a particular hypothesis on regional differentiation to test here we do not have any second-level variables to introduce interaction effects with individual level variables.
5. The detailed descriptive characteristics of the variables are introduced in Tables 4.3 and 4.4.

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5

Fertility and Uncertainty in Modern Russia

Ekaterina Selezneva and Tatiana Karabchuk

5.1 Introduction

The transition period, which started after the fall of the socialist regimes in Central and Eastern Europe (CEE) and the former Soviet Union (FSU), imposed significant costs on the population in terms of health, living standards, social and societal security and stability. Abrupt socio-economic changes included the appearance of previously virtually non-existent unemployment and pronounced poverty. A steep drop in fertility accompanied these negative changes in almost all eastern European countries at the beginning of the 1990s (Sobotka 2004; Kumo 2012). From levels exceeding those in western Europe at the edge of transition, the total fertility rate (TRF) of post-communist countries dropped under 1.5 by 2000.

In 1989 Russia's TFR was close to the reproduction level and constituted 2.01 (see Fig. 5.1). However, it plummeted down to 1.2 by the

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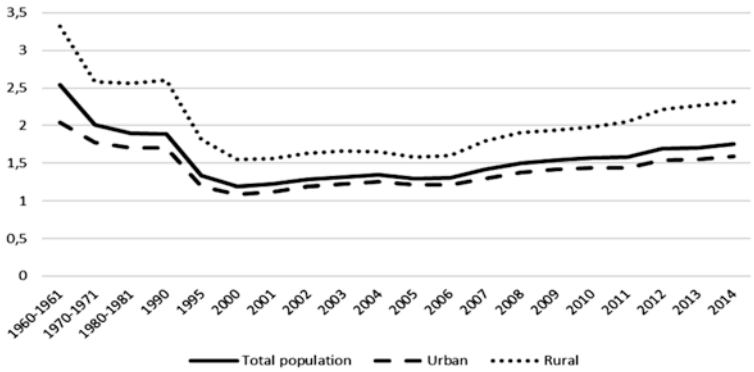

Fig. 5.1 Total fertility rate in Russia (number of children per female) (*Source*: authors' estimation based on data from Federal States Statistics Service publications on demography http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/population/demography/#)

beginning of 2000. The process of recovery was so slow that by 2014 TRF level only reached 1.75. Potential reasons for the sharp drop in fertility rates during the 1990s and the slow recovery that followed could be found in the transitional character of the period. A dramatic fall in GDP and the decline in individual incomes obviously made it more difficult for families to cover the cost of childrearing. A high proportion of mothers in the former Soviet Union were able to work because of an extended network of public facilities for assisting with childrearing, such as nurseries and kindergartens. In the 1990s, while the employment rate for women remained high (often due to the economic insufficiency of the one-breadwinner scheme), the relevant childcare facilities started charging for services. At the same time, public kindergartens began to close one after the other, causing a big lack of childcare related services (Sinyavskaya and Suhova 2009).

One of the consequences of the transformation process is a higher flexibility in the Russian labour market compared to the Soviet period. New forms of labour relationship, together with economic instability, created uncertainty in the personal incomes and working careers of both older and younger generations. While for the former the most important fertility decisions might already have been made under the (Soviet) idea of labour market stability, for the latter flexible labour market conditions could have disastrous consequences. It is proven that among the

youth, the levels of uncertainty during transition from education to work not only shaped their employment trajectories but also spilled over into partnership and parenthood domains (Blossfeld et al. 2006). High uncertainty and initially negative labor market experiences do not create a secure economic basis and hence inhibit young people from taking such pivotal life-course decisions as marriage and child birth (Oppenheimer et al. 1997; Kohler et al. 2006). Aggregate and individual-level incidence and length of unemployment, and job instability push the youth to postpone their fertility decisions and hence to depress the fertility rates (Ciganda 2015). Job insecurity and economic instability affect marriage formation and first child birth in terms of postponment until a more stable situation arises.

The issue of postponed first births has been on the emergency agenda since the mid-1990s when the TFR was at its lowest registered levels. Russian TFR has been steadily growing since its historical minimum in 1999 (see Fig. 5.1). Between the two financial crises – 1998 and 2008 – economic growth appeared to be an important stimulus for fertility growth (Antonov 2008). However, an in-depth analysis also showed that the role of economic growth in the recovery of the birth rate is not deterministic (Roshina and Boikov 2006; Roshchina 2006; Roshina and Cherkasova 2009). A range of social and cultural shocks is also responsible for the decrease in fertility rates, including the second demographic transition (see Chap. 4 for more details), which coincided with the transfer from planned to market economy and the drop in GDP. In sociological literature, the values vacuum after Soviet principles were disrupted is one of the factors diminishing reproductive intentions (Swader 2013). Very low average fertility per women in urban areas is thus a result of both economic and cultural shocks (Maleva and Sinyavskaya 2007a).

In this chapter, we build on the conclusion that income has an indirect impact and study the impact of individual job and economic insecurity on the probability of giving birth to a first child in Russia. Previous study periods ended in 2006. However, the fertility rate recovery process is ongoing. Our study is based on the longitudinal RLMS-HSE household survey, and covers a period of 15 years, 2000–2013, which includes periods of both economic growth and financial crisis, and hence various levels of exposure to uncertainty and insecurity. In addition, we close the

information gap on determinants of first births in Russia, caused by changes in the birth registration procedure in 1999. The latter abandoned information on the order of births and hence, created a lacuna in the publicly available statistical data.

The structure of the chapter is 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 step with the overall birth rate trend but changes in overall birth rate are also affected by such factors as demographic timing effects. Section 5.3 presents the theoretical background and reviews the previous literature on the topic. Section 5.4 describes the data and methodology of the empirical study. Finally, the chapter discusses the results from the perspective of previous research.

5.2 Fertility Dynamics in Russia

The difference in the average number of children born per woman in the 1960s and in the 2000s is striking. According to the Federal States Statistics Service (Rosstat), TFR decreased by 50 % over those 40 years. TRF declined from 3.320 in 1960 to 1.554 in 2000 in the rural population, while for the urban population the decline was from 2.040 to 1.089 (see Fig. 5.1). From the dissolution of the Soviet Union in 1990, urban areas led in the number of firstborn, while rural areas led in the number of births of further children. The urban TFR was already far below the replacement rate of 2.15 and was equal to 1.698, while rural TFR was still rather high at 2.6 (Maleva and Sinyavskaya 2007a). With the beginning of transition, the sheer speed of decline in the fertility rate put Russia to one side compared to other European countries in the OECD.[1] A persistently low birth rate for over 15 years is considered a characteristic feature of Russian population dynamics.

As demographers showed, the decreasing Russian fertility trend, however, represents more a regularity than an exception (Vishnevskii 2006; Zakharov 2012). Ciganda, (2015) points out that from the beginning of the twenty-first century, Russian fertility dynamics can be judged from the position of developed countries. A tendency to create families of one

or two children or families without children had started in developed countries in the 1950s, grew stronger in the 1960s, and has dominated since the beginning of the 1970s. Nowadays, while in Europe the prevalent family model is the two-child model (Goldstein et al. 2003), in Russia it is "not less than one child, but not more than two" (Avdeeva 2010: p. 67). Regardless of a gradual improvement in TFR after it reached its historical minimum of 1.16 in 1999 (see Fig. 5.1), the general desire to have children – even under satisfactory conditions – is still surprisingly low in Russia (UNDP 2008: p. 21).

Studies of the sharp decrease and gentle recovery in the TFR often relate the process to changes in macroeconomic conditions over the period. Thus, the massive transformation of the social and economic system that followed the collapse of the Soviet Union and further economic recovery are associated with changes in TRF in the same direction (Antonov 2008; Rosstat 2008). Trends in GDP and TFP followed a similar path from 1991 (Kumo 2012), however the macroeconomic growth and accompanying individual incomes growth do not translate directly into changes in the birth rate (Roshina and Boikov 2006; Roshchina 2006; Roshina and Cherkasova 2009). Non-monetary factors are worth investigating, including partner characteristics, marriage dynamics, job instability, and perceived economic uncertainty.

With regard to marriage dynamics, the marriage rate declined sharply in the early 1990s and remained low until around 2000 (see more details in Chap. 4, Fig. 4.1). Along with the marriage rate decrease the average age at first marriage and at first birth have risen gradually (Roshchin and Roshchina 2007; Roshina and Cherkasova 2009; Zakharov 2012). From 2000, however, the marriage rate trend reversed and exhibited a marked increase; the mean age at first marriage continued to grow. This suggests that the drop in birth rates over the 1990s and the following rise in the TFR since 2000 was likely amplified by the timing (of childbirth) effect, namely births that were postponed in the 1990s as their mothers had also postponed the moment of grounding a family.

Trends in the birth rate for women in different age groups illustrate this even more clearly (Kumo 2012; Zaharov 2012). Throughout the 1990s the birth rate for women aged 20–24 years, the group that regularly had the highest age-specific birth rate in Russia, exhibited a sharp and fairly

sustained decline. This occurred amid a gradual decline in the birth rate among the other age groups, which is reflected in the drop in the overall birth rate observed even in the 2000s. While no marked recovery in the birth rate was registered for the 20–24 age group, age-specific birth rates for women from 25 to 39 started to grow after the lowest point in 1999. In demographic terms, this can be seen as a result of people temporarily delaying the birth of children during the economic contraction that stemmed from the transition to a market economy. It is a reflection of the general trend in Russia, as in developed countries, to have children at older ages.

Needless to say the impact of demographic factors on fertility varies depending on birth order (Kaneko 2004). From 1999 the relevant official information is unavailable as publicly open statistical data.[2] Indeed, in 1998 ZAGS[3] changed the birth registration procedure. The birth order response field was removed from official birth registration forms,[4] making it impossible to gather data on birth order for children born in or after that year (Antonov 2008, p. 59).[5] Additional data sources, such as RLMS-HSE dataset should be used when investigating the determinants of first birth occurrences.

5.3 Theoretical Considerations and Previous Research on Job Instability and Childbirth

The relationship between socio-economic development and fertility outcomes is extensively studied in the literature. Two conclusions are particularly important for countries both with and without transition experience. First, that at a high level of human development, for example in terms of extensive women's labour force participation, the negative correlation between development and fertility becomes positive (Myrskylä et al. 2009). Second, that in these new settings the factor of uncertainty becomes one of the most relevant in shaping fertility in industrialized countries (Kreyenfeld et al. 2012).

Due to growing flexibility in the labour market and deepening globalization processes the share of permanent secure jobs is constantly declining in the world (Farber 1997, 1999; Kalleberg 2000, 2011). Instability

of employment has been solidified over the last 30 years in a variety of forms, including fixed-term contracts, agency temporary work, casual work, on-call work, and oral working arrangements. (an 2000; Houseman and Osawa 2003; Boyce et al. 2007; Giesecke 2009; Yu 2012). A big share of temporary employment increases job instability and individual income uncertainty (Sousa-Poza 2004; Erlinghagen 2006; Bergmann and Mertens 2011). Temporary jobs are not only characterized by limited or non-existent access to social security and social benefits, but also by lower remuneration and fewer career develoment opportunities (Secret and Green 1998; Schmieder et al. 2009; Kalleberg 2011; Yu 2012). In addition, temporary workers enjoy less on-the-job training than workers with permanents contracts, which results in dead-end jobs with lower current and future incomes. Unsurprisingly, workers employed on a temporary basis are less likely to create families or give birth to the children (Adsera 2005, 2011; Adsera and Menendez 2011).

In Soviet times, work was both a right and an obligation; employment was guaranteed, and unemployment virtually non-existent. Since the transition there has been a substantial transformation in employment relationships in Russia: weakened role of labor unions and legislation related to job security and stability; strengthened role of market forces (Blossfeld et al. 2006, Gimpelson and Oshchepkov 2012). As in developed countries, a share of the Russian labor market associated with temporary and short-term, part-time contracts, and self-employment has been growing while wages and benefits have tended to decrease and periods of unemployment to increase (Kapelyshnikov et al. 2006; Karabchuk 2012a, b, c; Zudina 2013). Double-earner households are widespread, but gender discrimination in the labor market still persists. According to research, Russian women generally accept a lower wage and position in the labor market than men (Ashwin and Yakubovich 2005; Ogloblin and Brock 2005; Maltseva and Roshchin 2006).

Post-Soviet legislation, while intended to protect working mothers, further increased the costs of women's labour through a number of allowances to be paid by employers, rights to flexible working hours, and similar measures. Unfortunately, such protectionism has been shown to push women out of the labour market and to create a "masculine face of the market" (Attwood 1996). "Familism", as Cerami (2010) confirms,

solidifies the unfavorable position of women in the labor force. While many women prefer to return to work shortly after the birth of a child, reintegration of mothers into the labor market is not simple under such conditions (see more details in Chap. 6 of this book). Women are shown to adapt to the situation and may decide to have a child when no labor market options are available. In fact, in post-socialist countries, unemployment status may increase the probability of giving birth to a child (Konietzka and Kreyenfeld 2004; Benardi et al. 2008). However, the validity of this finding is questionable for more recent periods. Indeed, in the aftermath of the financial crisis of 1998, Russians were noted to decrease their participation in activities/projects incurring additional risks, childbearing being on the list (Avdeeva 2010: p 69).

Our main hypothesis reflects these theoretical considerations and can be formulated as follows. H1: *unemployed, part-timers and casual female workers will be more likely to have a first child than women with permanent full-time jobs, as their labor market costs for return will be much lower*. In other words, if a woman has an unstable position in the labour market in year T, she will seek to improve her social status by investing in family in year T+1.

Job stability is not the only factor affecting the decision to have a child. Financial or economic security plays even a bigger role, especially so for the first child (Maleva and Sinjavskaja 2007b; UNDP 2008). In the Russian case, along with historical path-dependencies in the demographic processes rooted in the 1960s (Vyshnevskii 2006), we find a range of economic explanations for modern-day low fertility. In fact, especially at the beginning of the transition process, individual incomes for a significant share of the population shrank to subsistence levels, while costs of child rearing increased due to diminishing provision of childcare facilities and subsidies (Zaharov 2008; Sinyavskaya and Suhova 2009). The situation was similar to a period of industrialization when women's labor market participation often remained high because of difficulties surviving as a one-breadwinner household. Namely, human development and fertility were correlated negatively. Alongside diminishing incomes, widespread wage arrears and forced (unpaid) leave could also be mentioned as (indirect) manifestations of growing uncertainty levels in Russia. In fact, uncertainty about the future figured more and more often in public opinion

polls as an obstacle to having a desirable number of children. While in 2006 only 1 % of respondents mentioned uncertainty, by 2008 (after the financial crisis) 44.5 % of women and 42.9 % of men did (Rosstat 2009). The pivotal decision of giving birth to the first child was undertaken with regard to the financial stability of the household.

Thus we came up with our second hypothesis, which states that *economic security is one of the most relevant factors for first child birth (H2)*. The more secure the economic status of a female the more likely it is that she will have a first child the following year.

Perceived future security is likely to be connected to the status of the partner. However, one should keep in mind the changing model of family formation in Russia and the growing number of single mothers, often women who have a child following previous unregistered cohabitation (see Chap. 4 for more details). After the collapse of the Soviet Union, the tolerance towards unregistered marriages and to out-of-wedlock births has generally increased. Rosstat registered 14.6 % non-marital births in 1990 and 25 % by 2000. On the cusp of the twenty-first century more than a third of families could have been described as a "mother and child" model. The tendency, though apparently showing a convergence of the Russian experience with the western European paradigm, is ruled by different underlying processes. According to Perelli-Harris and Gerber (2011), the Russian case resembles the "pattern of disadvantage" characteristic of the USA, namely an increase in childbearing – not to financially independent partners in long-term stable partnership but to single mothers or those in unstable unregistered cohabitation. The least educated women who got pregnant during a cohabitation were the most probable candidates for either further cohabitation or union dissolution, but not for marriage.

In Russia, first births are no longer predominantly defined by the presence of a partner, while further births are most likely to happen within a registered marriage, especially for highly educated mothers (Grogan 2006; Maleva and Sinyavskaya 2007a; Karabchuk et al. 2015, see more details in Chap. 6). Nevertheless, having a partner makes a big difference to desires and actual fertility behavior, which is why we address the behavior of cohabiting couples separately. We expect that in Russia, as in other societies with a dominant image of the male as a breadwinner, security of men's jobs is placed in front of that of their female partners (Blossfeld et al. 2006).

This leads to the third hypothesis: *for cohabiting and married women, partner characteristics and, in particular, a partner's employment security, will have a greater impact on the probability of having a child than the characteristics of the woman's employment (H3).* More specifically we assume a positive effect on first childbirth from the partner's job stability, job, and economic security.

5.4 Data and Methodology

5.4.1 Data Description

The estimate are performed on a part of the nationally representative Russian Longitudinal Monitoring Survey (RLMS-HSE) for the period of 2000–2013. We chose 2000 as the starting year for several reasons. First, by the end of roughly one decade of transition the main structural changes/reforms were settled. In 2002 Russia was officially recognized as a country with a market economy. Hence the period chosen allows us to concentrate on the period when uncertainty was growing in the context of a structural market economy; this makes the results potentially comparable to those of developed countries. Second, it is only from 2000 that the data is available on an annual basis, uninterrupted for 15 years. This regularity is crucial for the modeling as the information from the period preceding the birth determines the probability of the decision.

We restricted our sample to Russian women of fertile age (15–49). In particular, the transition from not having children to having one child is of interest, hence we kept in the sample only those who either had no child in two consecutive rounds of the survey, or had no children in a round and then gave birth in the round that followed. Given the relative rarity of the event (first birth), we pooled the data for all rounds together. In the second part of the analysis we focused only on women who lived with a partner in a registered marriage or in non-registered cohabitation.

Factors influencing the birth of first and subsequent children do not coincide completely and are explained by different mechanisms. As was mentioned in the introduction to this chapter we concentrated on first

births and their determinants. Moreover, we particularly focused on the role of economic and employment uncertainty (both objective and subjective) on first childbearing. To capture employment uncertainty we concentrated on such indicators as labor market activity status (employment/unemployment/non-activity), casual work as opposed to non-casual work, part-time (30 hours or less per week) or full-time work and tenure. A better proxy of job instability, temporary contract status for dependent workers, cannot be disentangled in RLMS due to the unavailability of a question about contract type.

We also use a range of subjective economic and job security indicators, such as concerns about job loss, and confidence in finding a job if laid off, as well as the perceived financial stability status of the household.

The set of control socio-demographic variables include age (and age-square), higher education level completed, subjectively evaluated good health status, number of adults in the household, ownership of the lodging the household resides in, total household income.

5.4.2 Models and Methodology

We started with the whole population of fertile age women with no children, regardless of their marital/cohabitation status. Further on, we will look at all women living with a partner in registered or unregistered partnership and at cohabiting women. We use the logit estimation technique to estimate the impact of related characteristics on the probability of having a first child born in the following year. It is important that the decision to give birth to a child and the birth itself are two events divided by time. Hence the individual and employment characteristics in the Eq. (5.1) belong to the period previous to the birth (roughly one year, given the data limitations). The event predicted for women without children at the moment t is a birth of the first child by a given female i at the moment $t+1$ (Y_{t+1}).

$$\Pr\left(Y_{i,t+1}\right) = F\left(a_{i,t} + X_{i,t} * b_{x,i} + W_{i,t} * b_{w,t} + e_{i,t}\right), \tag{5.1}$$

Where X_i includes the set of individual and household characteristics, such as age, health, and household income. $W_i$covers a set of job characteristics, such as unemployment/part-time/full-time statuses, and e is unexplained residual.

In cases when partner information is available, the list of explanatory variables is expanded with a set of partner i characteristics at the moment t (P_i) and partner's employment characteristic s (PW_i)

$$\Pr\left(Y_{i,t+1}\right) = F\left(a_{i,t} + X_{i,t} * b_{x,i} + W_{i,t} * b_{w,t} + P_{i,t} * b_{px,i} + PW_{i,t} * b_{pw,t} + e_{i,t}\right), \quad (5.2)$$

The sets of variables include the following.

X_i – socio-demographic characteristics of a women and her household

- age and age-square
- having university diploma (dummy variable where 1 – yes, 0 – no)
- subjective health (1 – good, 0 – not good)
- registered marriage (1 – yes, 0 – no)
- cohabiting with a partner in non-registered marriage (1 – yes, 0 – no)
- (log)household income, (log)household income without women's income
- number of other adult family members
- unavailability of own housing (0 – have own flat/house, 1 – rent flat/house or place in the dorm)
- W_i – woman's labour market participation and job characteristics
- labour force non-participation (1 – non-participation, 0 – participating)
- unemployment (1 – yes, 0 – no)
- job holder indicator (1 – yes, 0 – no)
- logarithm of (monthly) wage
- tenure (months)
- part-time job (less than 30 hours per week)
- state being a (co-)owner of the enterprise of the primary occupation
- number of workers at the enterprise (in hundreds)
- secondary job indicator (1 – yes, 0 – no), and occasional job indicator (1 – yes, 0 – no)

- casual work (1 - having casual work, 0 - having regular primary job)
- concerns on getting necessities over the 12 months following the interview (1 – not at all concerned,…, 5 – very concerned)
- perceived financial stability in the next 12 months (0 – will live much worse or just worse, 1 – will live better or much better)
- concerns about loosing the current job (1 – not at all concerned, .., 5 – very concerned)
- confidence in finding a new job if laid off (1 – absolutely uncertain, .., 5 – absolutely certain)
- P_i, PW_i – respective characteristics of a partner and his job

5.5 Results and Discussion

First we explore the characteristics of women aged 15–49 who had no children at the moment of survey interviews in 2000–2013 (see Table 5.1 for descriptive statistics on the merged dataset, divided into two subgroups of cohabiting and non-cohabiting women). Our sample contains about 14,400 observations on women with a mean age of 33. About 40 % reported to have subjectively good health and about 27 % of women live in a rural area. On average, about two other adult family members live in a household. Contemporaneously, less than half the respondents lives in registered (33 %) or unregistered marriages (14 %). This indicates a, still widespread, extended family scheme with several generations living under one roof. Only 13 % of respondents rented an apartment or a room in a dormitory, while the majority owned the dwelling they resided in.

As for labour market participation, only 21.5 % of non-mothers were inactive at the moment of interview, 5.5 % were unemployed but actively looking for a job, while 73 % had a job (15-year weighted average). Over time we noticed a slightly growing percentage of women with a job, while the unemployment share slightly decreased (Table 5.2). This supports the, often mentioned in the literature, evidence of high labour market participation of Russian women, inherited from Soviet times. Regardless of the primary job, 5 % indicated they had secondary employment, while 6 % performed occasional jobs (such a sewing a dress for a friend). Around

Table 5.1 Summary statistics on the explanatory variables, for women aged 15–49 with no children, RLMS-HSE data, pooled data for 2000–2013

	Cohabiting			Non-cohabiting		
Variable	Number of obs.	Mean	Std. dev.	Number of obs.	Mean	Std. dev.
Age	6881	37.51	10.02	7480	29.19	10.41
Having good health (d)	6857	0.33	0.47	7439	0.47	0.50
Married (d)	6881	0.71	0.46	7480	0.00	0.00
Cohabiting (d)	6881	0.29	0.46	7480	0.00	0.00
Having tertiary education (d)	6881	0.24	0.43	7480	0.26	0.44
Rural area (d)	6881	0.29	0.45	7480	0.25	0.43
Number of other adults in household	6881	1.96	1.12	7480	1.72	1.24
Not owning the residence (d)	6851	0.12	0.33	7463	0.13	0.34
Inactive (d)	6863	0.16	0.37	7467	0.27	0.44
Unemployed (d)	6863	0.04	0.20	7467	0.07	0.25
Has job (d)	6863	0.80	0.40	7467	0.67	0.47
Occasional job (d)	6879	0.05	0.22	7473	0.07	0.25
Work in public sector (d)	4690	0.55	0.50	4144	0.50	0.50
Working part-time (<30 hrs/ week) (d)	5149	0.06	0.24	4574	0.06	0.24
Enterprise size, hundreds	3718	5.34	22.93	3263	5.17	18.54
Tenure, months	6690	69.60	95.82	7326	37.43	70.16
Concerns of getting necessities next year	6824	3.86	1.20	7397	3.75	1.24
Wage, last month, real	4810	5210.77	4369.30	4307	5372.43	4415.27
Confidence of finding new job	4653	2.87	1.36	4136	3.13	1.33

(*continued*)

Table 5.1 (continued)

	Cohabiting			Non-cohabiting		
Variable	Number of obs.	Mean	Std. dev.	Number of obs.	Mean	Std. dev.
Confidence of finding new job	5243	3.43	1.40	4635	3.35	1.39

Source: authors' estimation based on RLMS-HSE data, 2000–2013; weighted averages
Sample: fertile age (15–49), no children at moment of interview
Note: (d) stays for dummy variables

Table 5.2 Descriptive (weighted) statistics of key variables by year for women aged 15–49 with no children, RLMS-HSE data, 2000–2013

Year	Observations	Share, 1st child next year (%)	Married (%)	Cohabiting (%)	Has job (%)	Unemployed (%)
2000	636	4.5	41.9	10.4	71.0	7.0
2001	711	5.1	40.2	10.5	71.1	7.0
2002	706	4.7	36.7	9.4	72.6	7.1
2003	725	4.0	34.5	11.9	72.8	6.6
2004	740	3.9	32.6	12.5	73.1	5.9
2005	742	4.4	35.2	11.3	70.0	5.8
2006	870	3.6	33.9	11.9	71.3	5.6
2007	854	4.0	33.8	11.6	73.3	6.0
2008	828	3.8	31.6	12.7	72.9	6.4
2009	927	3.2	29.4	13.1	74.2	5.5
2010	1391	4.1	29.9	16.6	73.2	5.4
2011	1435	3.2	32.7	15.7	73.8	4.0
2012	1435	4.0	31.7	15.7	73.2	6.0
2013	1340	4.1	31.2	16.0	73.5	4.3

Source: authors' estimation based on RLMS-HSE data, 2000–2013; weighted averages with population averages
Sample: fertile age (15–49) with no children

53 % of women worked in public jobs (or for enterprises co-owned by the state) with average size of the enterprise being about 500 employees. The vast majority (94 %) were involved in a full-time job.

As for economic and job security concerns, most of the women were not (or only slightly) concerned about providing their family with basic

needs over the following twelve months. About 11 % believed their household would live better or much better in the 12 months following the interview. It is interesting, that there is big proportion of women worried about losing their current job (3.38 on the scale from 1 to 5), which coincides with a relatively low feeling of certainty about finding a similar job.

Over the 15 years we observed an increasing trend for cohabitation (six percentage points increase), while the share of married without children decreased (about ten percentage points). If now we divide the women into those cohabitating or married and those living without a partner, we find that the former are older (37.5 years old against 29), report lower assessments of their health (33 % against 46 %). Cohabitating or married women appear more active in the labour market: 16 % are inactive against 27 % among those not married, while 80 % report having a job against 67 % of those who do not live with a partner. At the same time, the incidence of having a secondary or an occasional job is higher among those not living with a partner. About 55 % of married women work with public enterprises, against only 50 % of the non-married. Probably due to the difference in age between the two groups, the married group on average possess six years of tenure at work, while the non-married only three. While both groups are slightly concerned with losing their jobs, the younger non-married group reports being more certain of finding a similar job if dismissed (3.13 against 2.87 on the scale from 1 to 5).

The male counterparts of the women in our sample are, on average, older (40 years old), though perceiving their health as good in 45 % of cases. There is a lower percentage of those with a higher education (17 %) than among women. Male partners report more often as inactive (20 %) and employed (77 %), while more rarely unemployed (3 %); 12 % have some additional occasional jobs. Only 17 % of those work in public companies and only 2 % work part-time. Men living in a partnership are slightly less concerned with losing their jobs and slightly more certain of finding a new one than their female counterparts.

Let us turn now to the incidence of having a first child, depending on some socio-demographic variables. About 4 % of women without children became mothers for the first time in the next year. If we divide women into groups of non-cohabiting, cohabiting, and officially mar-

ried, we observe that, respectively, 2.2 %, 5.7 % and 6.2 % of each group became mothers a year later (see Fig. 5.2a). Over the 15 years the incidence of giving birth to a first child was fairly stable in the non-cohabiting and married groups; the frequency of first childbirth among those cohabiting was volatile but demonstrated a tendency to decrease over time. If we characterize non-mothers according to their labour market status, the lowest frequency of first births was observed among unemployed non-mothers (2.8 % of non-mothers becoming mothers a year later) (Fig. 5.2b). However, the percentage of unemployed non-mothers giving birth to their first child varied significantly over the time period considered. The incidence of first births for inactive and employed is similar (3.8 % and 4.1 %, respectively). We also noticed a stability in the share of women with full-time jobs who had their first child a year following if compared to those with part-time jobs (the percentage generally decreasing) (Fig. 5.2c).

To assess the probability of giving birth to a first child in the following year, depending on the socio-demographic and economic characteristics of the mother, we estimated a number of logit model specifications. Tables 5.3, 5.4 and 5.5 present the estimated marginal effects calculated at the means of the variables.

First we ran a regression on the sample of fertile age women without children. As Table 5.3 suggests, the probability of having a first child declines with age, while self-reported good health may have a positive impact on the decision.[6] As in other previous studies we found a positive impact of residency in a rural area (about 1 p.p. increase in the probability of having a first child), the impact is stronger for non-cohabiting women. The result is in line with the evidence of the "pattern of disadvantage" suggested by Perelli-Harris and Gerber (2011), when an increase in the number of single mothers is noted especially among less educated women (incidence of higher education is lower in rural areas).

We found a 5.5 and an 8.1 percentage point increase in the probability of having a first child for those cohabiting and those officially married, respectively. As expected, women in higher income households are likely to have a higher probability of having a child, while the income of the woman herself is found to be negatively associated with the birth of a child for married and cohabiting women, and positively for those neither

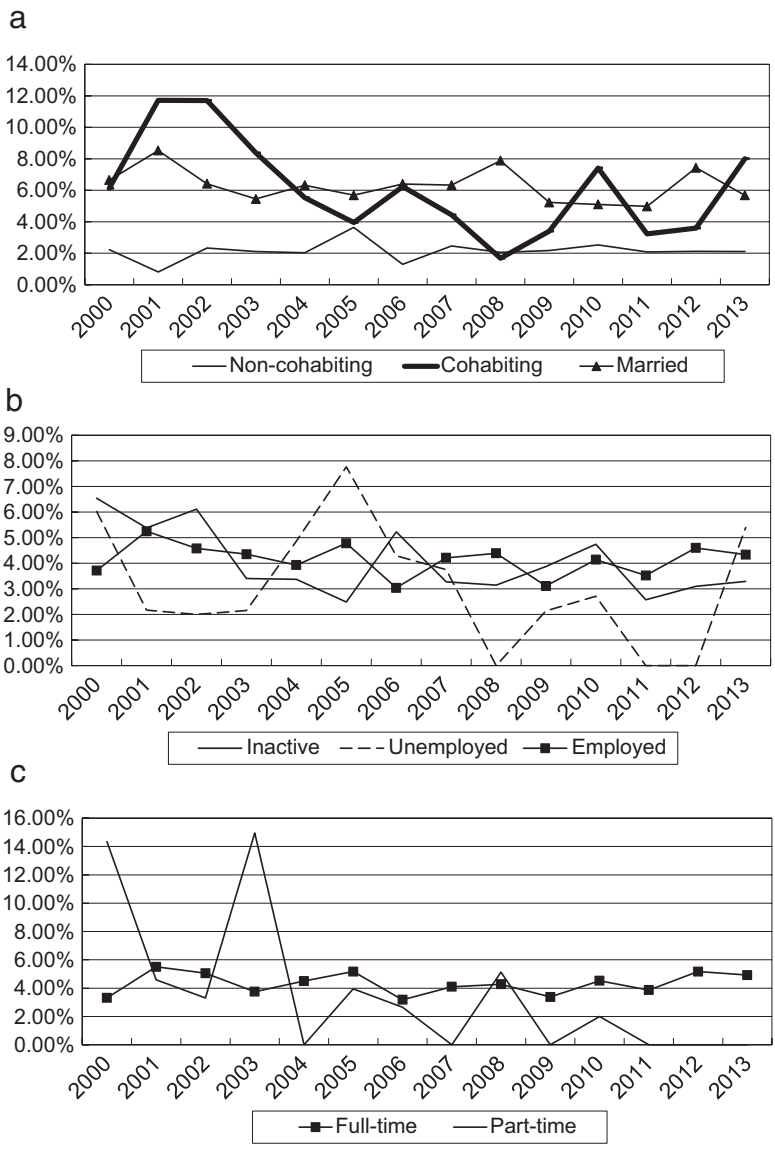

Fig. 5.2 Percentage of non-mothers who gave birth to their first child a year later within different socio-demographic groups: (**a**) Marital status and first birth occurrence; (**b**) Labour market status and first birth occurrence; (**c**) Full-time/part-time status and first birth occurrence. (*Source*: authors' estimation based on RLMS-HSE data, 2000–2013; weighted averages. *Sample:* fertile age (15–49), women who had no children at the moment of interview)

Table 5.3 Marginal effects for logit regressions on the probability of having the first child a year after the interview

	(1)	(2)	(3)	(4)	(5)
	All	All	All	Cohabiting	Non-cohabiting
Age	–0.002***	–0.003***	–0.002***	–0.004***	–0.001***
Having good health	0.005**	0.005**	0.006*	0.011**	–0.003
Having tertiary education	0.010***	0.008***	0.005	0.008	0.000
Married	0.081***	0.078***	0.072***	0.026***	
Cohabiting	0.055***	0.052***	0.052***		
Rural area	0.010***	0.011***	0.008**	0.010*	0.013***
Inactive		–0.008***	–0.012***	–0.014**	–0.009**
Unemployed		–0.011***	–0.016***	–0.021***	–0.011**
Log of family income (excluding woman's income)			0.003***	0.005***	0.003*
Log of own income last month				–0.005**	0.004**
Believes household will live better in a year			0.003***		
Do not own dwelling				–0.003	–0.002
Observations	17,795	17,762	10,506	6,872	5,822
Time dummies	YES	YES	YES	YES	YES
Pseudo R-squared	0.130	0.133	0.107	0.128	0.0382

Logit regression with robust standard errors, clustered within individual; all predictors at their mean values

Note: *** p<0.01, ** p<0.05, * p<0.1

Source: authors' estimation based on RLMS-HSE data, 2000–2014;

Sample: fertile age (15–49), women who had no children at the moment of interview

married nor cohabiting. We have to emphasize that individual perceptions of future financial insecurity in the household have a significant positive impact on the probability of a first childbirth (Table 5.3, (3)). If we turn to women's labour market activity then we find that both inactive and unemployed women are less likely to give birth to their first children than employed women.

Now let us concentrate on the sample of women who had a job at the moment of interview (Table 5.4). We ran the regressions separately for those married and cohabitating, and others. We can declare a positive significant impact of higher education on the probability of having a first child, however, it remains significant only for women living with a partner. Similarly, a positive difference in the probability due to the rural status of the household remains significant only for women who live alone or with other (non-partner) family members. The presence of other family members (and hence possible help with a child) is related to a higher probability of having a child regardless of marital status. It is worth mentioning that the income of other family members becomes insignificant when job characteristics are controlled for. We also discovered that the female's own income is negatively related to the probability of having a first child if they live with a partner. That might signal a desire to postpone the birth of a child while serving as a main breadwinner.

While we did not find a significant negative impact of occasional jobs and part-time status on the probability of giving birth to a first child, we do for positions in companies with the state (co)ownership. The public sector, while associated with higher stability of employment, is often perceived as less prestigious due to the generally low salaries. Moreover, such phenomena as wage arrears and forced unpaid leave still happen in state-owned enterprises. Thus, job stability provided by such an employment, might not be enough to have a first child when economic/financial security is considered.

Now let us consider only married or cohabitating women (Table 5.5). Here we concentrated on the demographic characteristics of the partner and his labor market participation status. As was shown before, registered marriage increases the probability of having a first child compared to not registered cohabitation. Perceived good health of each partner contributes positively to the chances of having a child in the following period;

Table 5.4 Marginal effects for logit regressions on the probability of having the first child a year after the interview for employed women

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	All	All	Cohabiting	Cohabiting	Cohabiting	Non-cohabiting
Age	–0.003***	–0.002***	–0.004***		–0.004***	–0.000
Having good health	0.005	0.007*	0.013**	0.039***	0.013**	–0.002
Having tertiary education	0.006*	0.006	0.010	0.020**	0.008	0.001
Married	0.062***	0.061***	0.021***	0.010	0.022***	
Cohabiting	0.050***	0.051***				
Rural area	0.011***	0.011**	0.013*	0.007	0.012*	0.012*
Number of other adults	0.004***	0.006***	0.008***	0.005*	0.004**	0.006***
Log of family income (excluding woman's income)	0.003**	0.003	0.006**	0.008**	0.005**	0.002
Log of own income last month	–0.000	–0.003	–0.008**	–0.011**	–0.003	0.003
Occasional job		–0.011	–0.016	–0.018		
Part-time job		–0.008	–0.005	–0.004		
Enterprise (co) owned by state		–0.009**		–0.017**		

(*continued*)

Table 5.4 (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	All	All	Cohabiting	Cohabiting	Cohabiting	Non-cohabiting
Believes household will live better in a year		0.007*		0.006		
Tenure, month				–0.000***		
Concerned with loosing job					–0.001	0.003
Confident to find job if fired					–0.003	0.002
Observations	10,803	7,443	4,399	4,286	5,331	2,885
Time dummies	YES	YES	YES	YES	YES	YES
Pseudo R-squared	0.116	0.114	0.122	0.0723	0.133	0.0618

Note: *** p<0.01, ** p<0.05, * p<0.1
Logit regression with robust standard errors, clustered within individual; all predictors at their mean values
Source: authors' estimation based on RLMS-HSE data, 2000–2014;
Sample: fertile age (15–49), women who had no children at the moment of interview

Table 5.5 Marginal effects for logit regressions on the probability of having a first child a year after interview for cohabiting women

	(1)	(2)	(3)	(4)	(5)
Variables	With partner	With partner	Partner working	Partner working	Both working
Married	0.013**	0.009	0.020***	0.020***	0.016***
Having good health	0.044***	0.044***	0.054***	0.047***	0.033***
Having tertiary education	0.017**	0.020**	0.015*	0.017*	0.016*
Inactive	0.025***	0.005	0.022**	–0.003	
Unemployed	0.008	–0.012	0.017	–0.011	
Rural area	–0.000	–0.004	0.012	0.006	0.015*
Number of other adults than couple	–0.003	–0.006*	–0.003	–0.005	–0.004
Household: ln(total expenditure)			0.005		
Log of family income (excluding woman's income)		0.006**		0.005*	0.004
Log of own income last month		–0.011***		–0.009**	–0.008*
Tenure, month					–0.000***
Occasional job					–0.020*
Enterprise (co) owned by state					–0.012*
Part-time job					–0.012
Partner: good health	0.024***	0.013**	0.025***	0.005	0.001
Partner: higher education	–0.002	–0.007	–0.001	–0.006	–0.002
Partner: inactive	–0.044***	–0.037***			
Partner: unemployed	–0.008	–0.011			

(*continued*)

Table 5.5 (continued)

	(1)	(2)	(3)	(4)	(5)
Variables	With partner	With partner	Partner working	Partner working	Both working
Partner: concerned with loosing job			–0.000		
Partner: confident to find job			0.006**		
Partner: tenure, month				–0.000***	–0.000***
Partner: part-time job				–0.036***	–0.032**
Partner: public sector				0.003	0.009
Partner: occasional job					0.021
Observations	8,243	6,259	5,903	4,302	3,522
Time dummies	YES	YES	YES	YES	YES
Pseudo R-squared	0.0503	0.0466	0.0427	0.0707	0.113

Logit regression with robust standard errors, clustered within individual; all predictors at their mean values

Note: *** p<0.01, ** p<0.05, * p<0.1

Source: authors' estimation based on RLMS-HSE data, 2000–2014;

Sample: fertile age (15–49), women who had no children at the moment of interview

however, women's health appears to have a stronger impact on the probability of a birth. Again the positive effect of higher education on the probability of a first childbirth is significant only for women. Unlike in the model specifications that included only women's characteristics, we disclosed a positive impact of economic inactivity for women living in couples on the probability of a first birth. In contrast, the impact of the male partner's inactivity diminishes the probability of a first child being born by 3.7 percentage points. No significant negative difference between employed and unemployed statuses was established. Married women were

also more prone to postpone the birth of a first child in cases of their own higher earnings (and in cases of a longer tenure). Contemporaneously, the higher income of the rest of the family may serve as a security pillow and stimulate women to give birth earlier.

We controlled separately: for female income; for the income of other family members; for the male partner fears losing his job; and concerns of employment security becoming irrelevant to the fertility decision. The instability of male partner employment, if manifested as a part-time job, does have a negative impact on the chances of a first child being born. The negative impact is similar to that of men's inactivity (being higher than three percentage points).

5.6 Conclusions

This chapter was devoted to the issue of fertility in Russia. We particularly focused on the probability of giving birth to a first child. The added value of the chapter is a special focus on the job and economic security of both women and their partners (if they have ones).

We found supportive evidence for the perceived economic/financial stability being an important factor that favors the birth of a first child. Perceptions of financial stability in the near future do have a positive significant impact and improve the chances of a child being born. As we expected, cohabitating or married women rely on family income when deciding whether to have a child. A possibility of financial support from a partner (and possibly other extended family members) stimulates childbirth. However, a female's own income is negatively associated with the probability of a first birth among married women, but has a positive impact for non-cohabitating women. In line with previous studies, we also found that women with higher education have a higher probability of giving birth to a child than women with lower education.

We could not confirm our hypothesis that a period of unemployment might be used by women in post-communist countries for the birth of a child. On the contrary, we discovered that unemployment negatively associated with a first child being born both for women and for their partners (if they have one). However, we also discovered that inactivity

status leads to more chances of first childbirth than employment, but only for women who have partners. Looking closely at women in a couple allowed us to highlight that the male partner's characteristics are strongly associated with the probability of a first child being born. Women's self-reported good health appears to be the only individual characteristic that is relatively more important than for men. As for economic and job security, men's inactivity and part-time status are found to depress the probability of childbirth.

To sum up, we have to conclude that the initial expectations of a big impact of job and income insecurity on the birth of a first child were not clearly confirmed. Financial insecurity affects fertility behavior to some extent, however, family income still plays a bigger role. It is worth making a note that the patterns of having first and high order children are different and depend on different factors. Thus Chap. 6 looks at the probability of having second and third children in Russia.

Notes

1. 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.
2. Even the survey providing usable microdata (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, making it impossible to perform a comprehensive analysis of parity.
3. ZAGS is an organization that registers births, deaths, marriages, divorces, etc. For more details, see Appendix I of Kumo, Morinaga, and Shida (2007).
4. 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).
5. 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 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.

6. In another specification that included age and age-squared, we found a reverse-U dependency between the decision to have a first child and age, while subjective health coefficient always resulted as insignificant.

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6

Factors Affecting the Birth of Second and Third Children

Tatiana Karabchuk

6.1 Introduction

This chapter gives a brief overview of high order birthrates and reveals the determinants for having second or third children for Russian women in a period of economic growth and stability in the country from 2000 to 2009.[1] The empirical part of the study is based mainly on the economic theory of work-life balance and female returns to the labor market after a first child. As we see from the previous chapter Russian population decline mostly comes from a sharp decrease in second and third childbirth. This means that Russian families still tend to have children but the current ideal or practical number of children is one instead of two or three

This chapter is based on the results of a study on mothers' employment after first childbirth. Preliminary results were published in Russian in Voprosi Economici, 2015, in the article "Second and subsequent children in Russia" (Karabchuk, T.S., Mironova, A. and Remezkova, V.P., Vtorye i posleduyushchie rozhdeniya v Rossii, Voprosy ekonomiki, 2015, NO.6. (in Russian))

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(Billingsley 2011). Thus it is very important for the Russian Government to stimulate the birth of the second and subsequent children.

Indeed, in 2007, the Russian Government implemented a special program known as maternity capital to encourage women to have more than one child by offering them a certificate to the value of $11,000 (according to exchange rates in February 2013) for the second child. The program did not give cash but offered several options: save the money for the mother's pension; spend the money on the children's education; buy a larger flat or house; or spend the money on medical care in the case of major health problems. There is little research on the effectiveness of this government initiative and few papers on second or third children in Russia (Billingsley 2011; Slonimczyk and Yurko 2014; Kulakov 2015). That is why this chapter is of particular interest to social scientists and policy makers dealing with Russia or other post-Soviet countries, as the cultural and economic contexts are very similar.

The majority of Russian studies on childbearing focused on the first childbirth in families (Zakharov 2000; Roshina 2006; Roshina and Cherkasova 2009; Zakharov 2008, 2012; Sinyavskaya and Billingsey 2013). However, the gradual decrease in the Russian population stimulates us to pay more attention to the birth of second and subsequent children in families. So far, no practical policies have been offered in Russia except for the above-mentioned program of maternity capital, which is based on the distribution of funds for specific purposes (Ovcharova 2008).

Traditionally Russian women have been very much engaged in both work and family life. The participation rate for females was always high in Russia, compared to other European and non-European countries. There is strong evidence that the decision-making process on having more than one child is linked to the female's role in the labor market, especially if she is the breadwinner in the family. Taking into account shifts in the value system towards self-realization and achievement, one might expect more return from female oriented social policies that help women successfully combine work and family roles in the way they want. In other words, it might be much more important to implement policies that open access to good jobs and positions or that encourage employers to hire women

after childbirth. Previous comparative international studies have already proved the link between family policies that support earning and caring and fertility decisions (Billingsley and Ferranini 2014). This chapter suggests some ideas to encourage women to have more than one child.

Russia is similar to North America by the fact that labor earnings from one spouse are often not enough to support a family of three or more people (FOM 2011; Maleva and Sinyavskaya 2007; Sinyavskaya et al. 2007, Kalleberg 2012). Therefore, a woman often has to return to the labor market after giving birth, and the sooner she finds a position, the less she loses her specific capital and wages (Karabchuk and Pankratova 2013).[2] However, the unfavorable situation of the labor market may push a woman to bear fewer children in order to build a career or maintain a good working position. Consequently, the decision to give birth to a second or third child may be influenced by whether a woman has faced difficulties in returning to the labor market after her first child.

There is no doubt that the labor market is not the only factor determining a woman's decision to give birth to a second child. However, a series of in-depth interviews with women from different regions of Russia has shown that one of the main and direct reasons to NOT give birth to a second child declared by mothers with low incomes is the high possibility of facing difficulties entering or returning to the labor market.[3]

At the same time, it should be stressed that, in accordance with labor legislation, Russian mothers are very well protected since every woman in Russia receives paid maternity leave to care for a child under 1.5 years old and unpaid maternity leave to care for a child up to the age of three.[4] This means that, officially, a woman is guaranteed to keep her former working position, which seems to greatly facilitate her return to the labor market. However, in reality, a woman returning to the workplace often faces a significant decrease in wages, a shift to a lower paid position, or a reduction in working hours (Karabchuk and Pankratova 2013; Karabchuk and Nagernyak 2013).

On the other hand, a woman cannot always return to her former workplace after childbirth because her priorities change. For example, the daily schedule may become busier because of such duties as taking the child to and from kindergarten, the distance from home may become

an important factor for the choice of the workplace, the chance to work from home, and so on (Zakharov 2008; Sinyavskaya and Bellingsley 2015). Therefore, many women voluntarily change workplaces and occupations after childbirth, and, what is more important, they accept downward mobility, lower wages, and reduced working hours (Karabchuk and Pankratova 2013).

Negative experiences upon return to the labor market, downward mobility, the need to adapt to a new schedule, poor opportunities for self-realization in the workplace, and wage discrimination lead to a decrease in job and life satisfaction (Pankratova 2013). For these reasons, family conflicts and disagreements may arise that may eventually lead to the abandonment of intentions to have a second or third child. An insufficient number of preschool institutions and the time-consuming search for a good nanny only aggravate the problem further (Sinyavskaya and Sukhova 2009).

In the current research, the authors employed an economic approach to the analysis of the probability of giving birth to second and subsequent children, suggesting that it depends heavily on a woman's current employment status and the job's characteristics (position, wage rate, etc.). The hypothesis proposed is based not only on a review of the theoretical literature and empirical studies but also on the results of qualitative interviews. It should be noted that, unfortunately, the topic is poorly discussed in Russian literature. The most recent relevant paper was by Sinyavskaya and Billingsley in 2015 but based on a different data source. It would be of particular use and interest to enlarge the literature and compare the results with the above-mentioned paper. The goal of this chapter is to estimate how strongly the presence of a job and its characteristics influence the desire and probability of having second or subsequent children.

6.2 Theoretical Considerations

In the beginning of the 2000s, Russia experienced a demographic crisis (Zakharov 2008; Billingsley 2011). This is commonly explained by the significant decline in the birth rate provoked not only by the economic crisis of the 1990s but also by value changes in society. The annual surveys

conducted by the Russian Public Opinion Research Centre (WCIOM) showed that the "ideal", "desirable" and "expected" number of children has decreased, regardless of the respondents' age (Bodrov 2002).[5] In the Russian context, having one child is the norm, and that is why the majority of women give birth to a first child irrespective of job characteristics and working conditions (Zakharov 2000; Sinyavskaya and Billingsey 2013). However, not every woman is determined to have a second child, and employment begins to play a bigger role, influencing a mother's choice to a great extent. Consequently, our main hypothesis is that the objective reason for the postponement or withdrawal of having a second child is strongly connected to difficulties in the labor market faced by women after their first childbirth.

Indeed, the results of many empirical studies are in line with this hypothesis. The most critical factors for a woman's career development after childbirth are the interruption of her career and the inability to work full time after the end of parental leave (Belzil and Hergel 2001; Francesconi 2002; Beblo and Wolf 2002; Gutierrez-Domenech 2005). Moreover, even if a woman has children, works full time and has sufficient human capital (education, skills, experience), her salary tends to be lower than that of a woman without children (Joshi 1999). For example, in 2001 in the United States, "the wage penalty" for having one child was 5 %–7 % of salary, and 12 % for having two children (Budig and England 2001). In 2008 in Spain, it was 9 % and 14 % respectively (Molina and Montuenga 2008). In the UK in 1991, the wage gap between women without children and mothers under the age of 33 was 39 % (without controlling for full- or part-time status). All other things being equal, maternity leave takes one year away from a woman and subtracts 17 % of her salary (Joshi 2002). In 2008 in Germany, the data showed that the "penalty" for mothers equaled 10 %–14 % of salary (Buligescu et al. 2008).

In situations where a woman experiences difficulties with returning to the labor market after her first child, she will most likely refuse to have further children (Karabchuk and Pankratova 2013). According to Becker, in situations where a woman is a second earner in the family and her salary is not essential for the family budget, it would be a quite rational decision for her to withdraw from the labor market and specialize in

the bearing and upbringing of children (Becker 1965). There is a strong link between a woman's inclination to have children and her wage (the childbearing penalty): women who put less value on having children have significantly higher salaries than women who give preference to family and childbearing (Francesconi 2002).

However, there are more and more women nowadays who designate work and self-realization at work as important parts of their lives. In the last 30 years, the increasing number of working mothers in world labor markets speaks to the importance of job satisfaction and self-realization (Hanson et al. 1992; Francesconi 2002; Gregg and Washbrook 2003; Hofferth and Curtin 2003; Dex et al. 2005; Berger et al. 2005). By the 1990s it was shown that women enjoy paid work and are better off, both economically and psychologically, if they participate at some level in the paid labor force (Hanson et al. 1992). By 2000 work had become a major source of satisfaction for women (Kiecolt 2003; Bender et al. 2005). Women who missed the opportunity to realize their career aspirations show lower levels of psychological well-being, have fewer goals in life, and are more likely to experience depression (Carr 1996). The results of Berger's study show that the inability to work has a bad effect on the level of happiness of a young woman with a child. Detachment from the labor market or the necessity to work part-time leads to lower levels of life satisfaction among mothers compared to women who can work full-time (Berger 2009).

In the Russian context, the need for self-realization comes second to economic necessity; husband's earnings are often insufficient to support a family, and women have to contribute to the family budget (Maleva and Sinyavskaya 2007; Sinjavskaya et al. 2007; FOM 2011). That is why the problem of combining family and work obligations acquires a fundamental importance for women (Sinyavskaya and Billingsey 2013. p. 4).

It is assumed that the more convenient working conditions are for women with small children, the more likely it is that those women will have additional children. Thus, the opportunity to work from home and flexible working hours significantly increase the chances of a woman having more than one child (Adsera 2005; Sinyavskaya and Billingsey 2013). The likelihood of bearing a second child is also increased by stable employment (Adsera 2011; Vignoli et al. 2012), and the availability of maternity

leave, which guarantee the stability of the former working position for a woman after her childbearing period (Sinyavskaya and Billingsey 2013).[6]

If the work is very competitive and highly profitable, such as in the financial sector, women show less desire to give birth to a second child, due to the direct and indirect costs of temporary withdrawal from the labor market (Heckman and Walker 1990; Sinyavskaya and Billingsey 2013). Negative attitudes towards mothers in the workplace also have an adverse effect on the likelihood of giving birth to second or subsequent children (Sinyavskaya and Billingsey 2013). The absence of guaranteed permanent jobs, such as in services, pressures women to resist having another child in order to maintain their current position (Sinyavskaya and Billingsey 2013). All in all, unstable employment, casual work and low-paid jobs in the secondary sector appear to be a deterrent to giving birth to subsequent children (Blossfeld et al. 2005; Modena and Sabatini 2010; Pailhé and Solaz 2011; Del Bono et al. 2011).

6.3 Review of Previous Studies on Fertility Factors

As a result of reviewing previous empirical studies, we can distinguish the following determinants for second and subsequent childbirths. The higher a woman's wage, the less likely she is to give birth to a second child (Heckman and Walker 1990). The more effort, time, and money a woman has invested in her career, the less likely she is to become a mother of a second child (Brodmann et al. 2007). Having a higher level of education increases the likelihood that she will give birth to a second child. However, if a woman is in the process of getting an education, her chances of having a second child decrease greatly (Olah 2003). If a woman is currently on leave to care for a child, her chances of having a second child increase compared to a woman who works full-time (Olah 1997). We can say the same about a housewife compared to a woman who works full-time (Hoem and Hoem 1989). If a woman has ever worked, the probability of having a second child decreases compared to a woman who has never entered the labor market (Köppen 2006). A job change after the first child also reduces the probability of giving birth to a second child (Sinyavskaya and Billingsey

2013). Thus, high wages, heavy investment in career development, and the presence of work experience reduce the probability of having a second child, while conversely, education, being on parental leave for the first child, and non-participation in the labor market increase this probability.

There is also empirical research on fertility determinants in Russia. The authors have used the same database, The Russia Longitudinal Monitoring Survey (RLMS-HSE) (Roshina 2006; Sinyavskaya and Tyndik 2009; Roshina and Cherkasova 2009). They revealed the following factors for having a child: number of children, mother's age, mother's state of health, employment status of spouse, level of satisfaction with the financial situation, number of other adults in the family, residence status (living in rural or urban area) (Roshina 2006; Sinyavskaya and Tyndik 2009; Roshina and Cherkasova 2009). However, the results obtained in those studies are unclear on how it is linked to employment status; tradition and cultural determinants appeared to be significant for Russian women, while having a workplace appeared to be insignificant (Roshina 2006). At the same time, other scientists acknowledge that the relation between these factors and the decision to have a second child is not obvious and requires further research (Sinyavskaya and Tyndik 2009).

6.4 Hypotheses of the Current Study

The analysis of existing empirical research and theoretical approaches as well as in-debth interviews allows the formulation of the following hypotheses:

H1. Female employment decreases the probability of a second child; whereas the husband's employment increases this probability.

H2. The higher the wage and position a woman has, the lower the probability of giving birth to a second child. This hypothesis is in line with Becker's rational behavior approach: if a woman holds a senior position at the workplace and receives a high salary, she would be less likely to want to bear the costs related to the birth of subsequent children, reduction of human capital, and the potential loss of work (Billingsey 2011, Sinyavskaya and Billingsey 2013)

H3. Part-time employment (low number of working hours) has a positive effect on the willingness and probability of having second and sub-

sequent children. If a woman is employed part-time she has more time for the family, although she also has access to the labor market and the opportunity to realize her personal potential in her career.

H4. Job stability also has a positive effect on the willingness to and probability of having more than one child; while job instability (for instance, casual employment and absence of regular employment) has a negative effect. In our research, the stability of employment was tested as the proxy of job characteristics, such as working in large enterprises (which usually provide more guarantees for employees), working in state companies, and having experience of working more than three years in the same company/organization. Moreover, a woman who has tried casual work and is not engaged in regular employment prefers to find a permanent job rather than give birth to another child.

6.5 Data and Methodology

6.5.1 Data Description

The annual panel representative household survey The Russia Longitudinal Monitoring Survey (RLMS-HSE) served as a database for our empirical analysis.[8] The data is taken for the period 2000 to 2009 during which there was gradual sustainable economic development on the one hand and continuous low fertility rates on the other. This choice allowed us to eliminate the effects of external shocks on the decision to have children.

RLMS-HSE is a series of nationally representative surveys conducted on the basis of a probability stratified multi-stage area sampling. The survey has been conducted every year since 1994, with the exception of 1997 and 1999, when the project was not funded. Thus, 4,000–4,500 households, comprising approximately 10,500–12,000 people are surveyed every year. The survey is usually held from October to December. Three types of questionnaires are used relating to information on households, individuals, and children. In addition, information on local infrastructure and region-specific food prices is collected. The household member

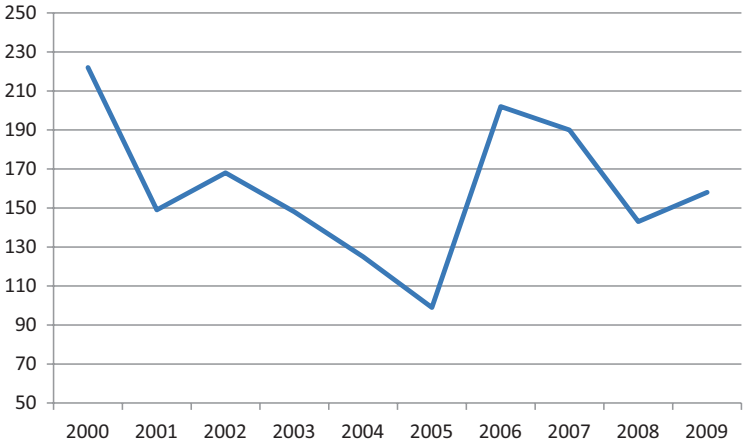

Fig. 6.1 Number of births per year according to RLMS HSE data, 2000–2009 (*Data Source*: Author's calculation by RLMS data)

who is aware of the family resources and financial flows fills out the questionnaire for the household.

We limited our sample to women aged 17–45 years old. For further regression analysis, we added the restriction of having at least one child. We observed about 110–200 births per year in the RLMS-HSE database. During the period analyzed, the total number of women who gave birth reflected official fertility statistics by decreasing until 2005, and then recovering (Fig. 6.1). Nevertheless, the share of women with one child wanting to have more children grew throughout the decade (Fig. 6.2).

6.5.2 Models and Methodology

Using a general pool of all the waves from 2000 to 2009, we constructed two sets of models for two dependent variables. First, we estimated the probability of giving birth to a second child. Second, we assessed factors that determine the desire to have additional children if a woman already has one child.

We constructed a model with a lag of one year and using the woman's characteristics, including employment characteristics, from the year

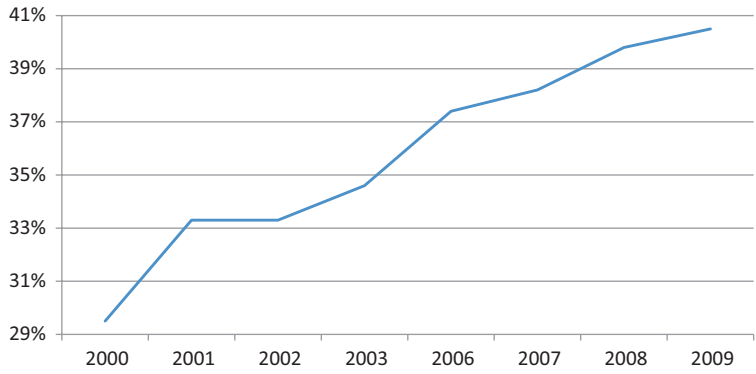

Fig. 6.2 Share of women, who wanted to have another child (having at least one already) RLMS HSE data, 2000–2009 (*Data Source*: Author's calculation by RLMS data)

before the birth of her child. Since we use the fact of second (or subsequent) childbirth for a woman in year T + 1 as a dependent variable and the independent variables are taken from year T, this allows us to discuss the causal relationship.

The estimation of the determinants of desire to have a second child allows us to predict the woman's future fertility behavior. It is worth noting that from 70 % to 90 % of women (depending on the year of the survey) who gave birth in the year of the survey had declared a desire to have children or wanting to give birth in the previous year. However, it should be stipulated that the choice of such a model does not exclude the problem of endogeneity since the decision and desire to have children is often accompanied by decisions and corresponding behavior in the labor market. For instance, it is very difficult to determine exactly what came first: whether having part-time work influences the decision to give birth to more children; or whether the birth of second and subsequent children leads to the transition to part-time employment.

The two dependent variables used in the research were:

(1) Dummy variable – a woman gave birth to a second child in T + 1 year.

(2) Dummy variable – a woman who already has a child wants to give birth to one more child.
The probit models are used to estimate the probability of giving birth to a second child or the probability of wishing to have a further child. A set of independent variables was the same for all models (see Table 6.1. for descriptive statistics). The equation can be written as follows:

$$\Pr\left(Y_i = 1\right) = F\left(a + X_i * b + K_i * h + Z_i * c + U_i * d + e\right),$$

a, h, b, c, d – the coefficients of the independent variables.[9]
X_i – socio-demographic characteristics of a woman

- age and age-square (age-square is used because we observed a non-linear dependency)
- having university diploma (dummy variable where 1 – yes, 0 – no)
- subjective health (1 – good, 0 – not good)
- K_i – characteristics of a family
- having spouse/partner (1 – have a spouse/partner, 0 – does not have spouse/partner)
- spouse's/partner's university degree (1 – yes, 0 – no)
- age of spouse/partner
- employment of spouse/partner (for married women)
- logarithm of spouse's/partner's wage
- total household income except for personal income of a woman (adjusted for regional differences in the cost of living), we took the logarithm of income and the squared logarithm of income to track non-linear dependence on income
- number of children in the family
- number of other adult family members
- availability of own housing (1 – have own flat/house, 0 – rent flat/house or place in the dorm)
- Z_i – characteristics of work, the main independent variables tested (according to job specification)
- availability of work for a woman, where 1 – respondent has a job, 0 – respondent is not working

Table 6.1 Descriptive statistics on the variables, for women aged 17–44 with at least one child, RLMS-HSE data, 2000–2009

	Number of cases	Mean	Standard error	Minimum	Maximum
Give birth to another child in T+1	13343	0.0307277	0.1725855	0	1
Have a wish to give birth to another child	12377	0.3185748	0.4659425	0	1
Age	16812	32.26368	6.435692	17	44
Age squared	16812	1082.361	416.1122	289	1936
Having good health	16780	0.3710369	0.4830967	0	1
Having tertiary education	16812	0.2422079	0.4284322	0	1
Having a husband/ partner	16777	0.8131966	0.3897652	0	1
Number of children in family	16808	1.435209	0.6981281	0	8
Log of family income (excluding woman's income)	13650	8.746044	1.222541	2.302585	12.62807
Log of family income (excluding woman's income) squared	13650	77.98779	20.43021	5.301898	159.4681
Having own house	16701	0.8580325	0.3490273	0	1
Number of adults in family	16808	2.197644	0.8896189	1	10
Living in city	16812	0.670414	0.4700768	0	1
Unemployment rate in region	16808	8.110162	3.617661	0.8	23,40
Year of survey	16812	2004.641	2.885984	2000	2009

(continued)

Table 6.1. (continued)

	Number of cases	Mean	Standard error	Minimum	Maximum
Husband has tertiary education	12612	0.1960038	0.3969872	0	1
Husband's age	12612	34.60252	6.986004	16	67
Husband has a job	12574	0.9232543	0.2661981	0	1
Husband's monthly wage	9746	8200.667	9175.447	0	150000
Log of husband's monthly wage	8749	8.67669	1.01268	4.60517	11.91839
Having a job					
Having a casual work without primary job	13186	0.0483088	0.2144261	0	1
Monthly wage	10591	5555.295	6455.47	0	150000
Log of monthly wage	10348	8.150613	1.051793	3.731699	11.91839
Professional group (9 dummies)	10124	4.230739	2.325209	1	9
Working hours per month	12162	41.65236	12.29964	1	120
Enterprise size	8895	563.5007	3011.354	1	52000
Work in public sector	11215	0.6315649	0.4824017	0	1
Tenure less than 3 years					

Data Source: Authors' calculations based on RLMS-HSE data set for the period 2000–2009, unemployment rate in the region was taken from the official statistics, produced by the Federal State Statistics Service

- casual work (1 – has casual work, 0 – does not have casual work)
- logarithm of wage
- professional group (eight categories according with ISCO-88)
- number of working hours per month
- size of enterprise/organization
- work in company/organization with state ownership

- tenure less than three years (where 1 – the respondent has worked less than three years for the same company, 0 – the respondent has worked more than three years for the same company).
- U_i – regional characteristics:
- type of residence (urban/rural)
- regional unemployment rate
- year of survey.

6.6 Results and Discussion

Before analyzing the results of the regression models it is necessary to describe the characteristics of our targeted group. If we mark out three categories of women—those without children, those with one child, and women with two or more children—we can detect the employment statuses prevailing in these categories from 2000 till 2009.

Our analysis showed that there were no significant differences in economic activity of women who gave birth to their first child and who have two or more children (Fig. 6.3). But the difference between mothers and non-mothers is quite noticeable. Women without children tended to be employed to a greater extent (the difference between them and women

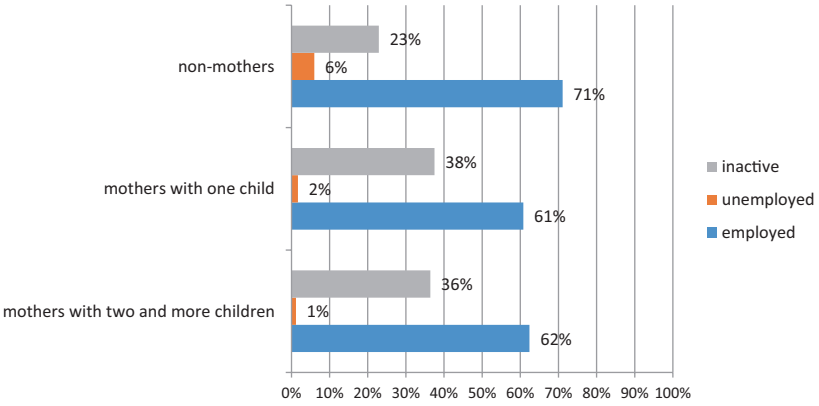

Fig. 6.3 Employment status of females with and without children, 2000–2009 (*Data Source*: Author's calculation by RLMS data)

with children equals ten percentage points). Moreover, there are more unemployed and fewer economically inactive women among those who have no children.

The majority of women who want to have a child and already have one or more tend to be employed. However, there are fewer employed and more economically inactive women among those who already have two or more children and want to give birth to another one, compared to those who have only one child and want to give birth to a second (Fig. 6.4).

To assess the probability of having a second or subsequent child the following year we built nine specifications with Pseudo R^2, ranging from 0.0724 to 0.122 (Table 6.2). The main results are the following. Russian women older than 37 do not give birth to a second child, which is different from European practices in such countries as Sweden, Norway, and France (Duvander and Andersson 2006 and others). The determining factor for subsequent children is the current number of children in the family; the more there are the less likely it is that a woman will give birth to another child. Having a partner determines the birth of a second child, while living in a city decrease the chances of having further children. It is noteworthy that the level of unemployment in a region has a positive effect on the birth of a second or subsequent child. This speaks for the high costs associated

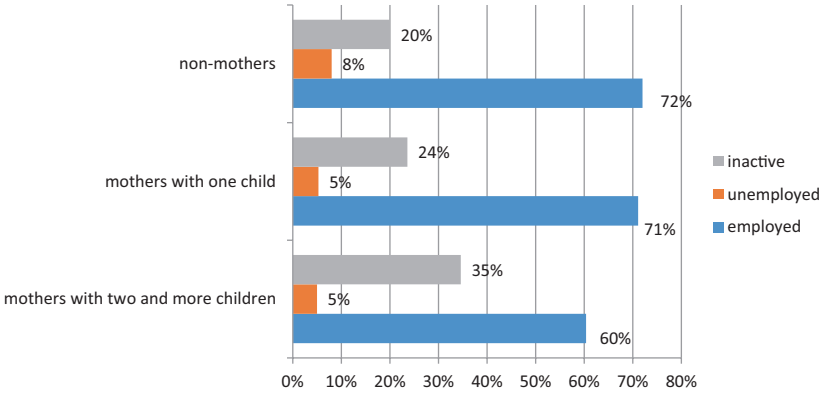

Fig. 6.4 Employment status of females, who expressed their wish to have another child in the near future, 2000–2009 (*Data Source*: Author's calculation by RLMS data)

with a return to the labor market. The high competition for good jobs where there is a high unemployment rate pushes women to stay at home and have more children rather be active in the labor market. In this context, women make choices in favor of their families.

Let us turn to the employment characteristics and their influence on the probability of having a second or subsequent children. Employment status, working hours, and wages turned out to be insignificant in our regression models (Table 6.2). Being employed in a large organization or an enterprise that provides a guarantee of stable employment and earnings motivates women to give birth to a second child (see specification 7 Table 6.2). Partner's employment status and his wages are no longer significant factors for a decision to give birth to a second child (Table 6.3). The defining characteristic of the partner here is age; the higher the age of a partner, the less likely that a woman will give birth to a second or subsequent child. Thus, the results suggest that the birth of a subsequent child is strongly determined by the current number of children in the family, the mother's and partner`s ages, place of residence (rural/urban area), and the overall level of unemployment in the region.

Real behavior is defined by people intentions and desires, which is why it is very important to estimate the probability of wishing to become a mother for a second time. We built nine more analogous specifications for probit regression models of a wish to have another child with explanatory power (Pseudo R^2) equalling 0.1940–0.2113. The results showed that this desire is strongly associated with age, tertiary education, number of children in the family, and household income (see Tables 6.3 and 6.4). The dependence on age and family income is not linear, in that the older the woman the higher the desire to give birth to another child. But at a certain point, the correlation peaks and then decreases. The dependence on income shows a different trend; the desire to have another child is higher for low- and high-income groups. This is a very important result for the social policy of the country. It means that the majority of the population, who are in the middle-income group, does not express a wish to have more children. It is important to note that the main variable that contributes to the explanatory power of dispersion is the current number of children. We observed a negative stable relationship here. This result is

Table 6.2 Marginal effects for probit regression on the probability of having another child in the next year for Russian women aged 17–44, based on RLMS-HSE data from 2000–2009

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age	**0.228*****	**0.226*****	**0.242****	**0.292*****	**0.311****	**0.327****	**0.303****	**0.319****	**0.347****
Age squared	**−0.00445*****	**−0.00441*****	**−0.00469*****	**−0.00556*****	**−0.00584*****	**−0.00607*****	**−0.00571****	**−0.00594****	**−0.00634*****
Having good health	0.0625	0.0624	0.0803	0.0701	0.00989	−0.00675	−0.0824	−0.0113	−0.00892
Having tertiary education	0.000519	0.00109	0.0310	0.0242	−0.0170	−0.00780	−0.00299	0.0116	−0.0179
Having a husband/ partner	0.154	0.155	**0.240***	**0.241***	0.188	0.152	0.283	0.133	0.151
Number of children in family	**−0.117***	**−0.117***	**−0.160***	**−0.228****	**−0.213****	**−0.228****	**−0.310*****	**−0.212***	**−0.223****
Log of family income (excluding woman's income)	−0.0694	−0.0529	−0.0589	0.239	0.772	0.791	0.837	0.725	0.777
Log of family income (excluding woman's income) squared	0.00724	0.00625	0.00854	−0.00667	−0.0368	−0.0376	−0.0396	−0.0341	−0.0370
Having own house	−0.167	−0.164	−0.122	−0.125	−0.106	−0.138	−0.0952	−0.149	−0.148
Number of adults in family	−0.0124	−0.0174	−0.0362	−0.110**	−0.0765	−0.0712	−0.186***	−0.0791*	−0.0681

Living in city	**−0.154****	**−0.157****	**−0.167****	**−0.207***	**−0.216***	**−0.212***	**−0.262***	**−0.209***	**−0.215***
Unemployment rate in region	**0.0203****	**0.0214****	**0.0324*****	**0.0443*****	**0.0431*****	**0.0436****	**0.0612*****	**0.0444****	**0.0437****
Having a job		−0.00108							
Having casual work without primary job			0.0453						
Log of monthly wage				0.0130	−0.00870	−0.00412	0.0468	−0.0211	0.00104
Working hours per month						−0.00497	−0.00332	−0.00500	−0.00500
Enterprise size							**0.0000143****		
Work in public sector								−0.0951	
Tenure less than 3 years									0.0911
Constant	−4.465**	−4.489**	−4.957**	−7.002**	−9.427***	−9.613***	−9.862***	−8.978***	−9.976***
Number of cases	10780	10678	8374	6610	5169	5074	4051	4939	5059
Number of regions	33	33	33	33	33	33	33	33	33
Pseudo R^2	0.0724	0.0726	0.0839	0.107	0.107	0.108	0.122	0.107	0.108

Note: The models also included dummy years, and dummies for professional groups, no significant interdependencies were discovered

Data Source: Authors' calculations based on RLMS-HSE data set for the period 2000–2009

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 6.3 Marginal effects for probit regression on having a wish to have another child if a woman already has at least one child, RLMS-HSE base from 2000–2009, Russian women aged 17–44

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age	**0.158*****	**0.160*****	**0.205*****	**0.185*****	**0.169****	**0.176****	**0.168***	**0.181****	**0.181****
Age squared	**−0.00414*****	**−0.00418*****	**−0.00494*****	**−0.00468*****	**−0.00436*****	**−0.00449*****	**−0.00440*****	**−0.00456*****	**−0.00455*****
Having good health	−0.0192	−0.0207	−0.0522	−0.0615	−0.0531	−0.0545	−0.0504	−0.0546	−0.0549
Having tertiary education	**0.275*****	**0.277*****	**0.284*****	**0.204****	**0.163**	**0.169**	**0.176***	**0.166**	**0.172***
Having a husband/ partner	**0.265*****	**0.263*****	**0.235*****	**0.198***	0.124	0.123	0.0774	0.130	0.122
Number of children in family	**−0.653*****	**−0.649*****	**−0.737*****	**−0.755*****	**−0.752*****	**−0.768*****	**−0.754*****	**−0.765*****	**−0.765*****
Log of family income (excluding woman's income)	−0.363*	−0.361*	−0.384*	−0.384*	−0.340	−0.366	−0.267	−0.339	−0.355
Log of family income (excluding woman's income) squared	**0.0285****	**0.0284****	**0.0301****	**0.0306****	**0.0283***	**0.0298***	**0.0230**	**0.0283***	**0.0291***
Having own house	0.0563	0.0553	0.0275	0.0152	−0.0486	−0.0474	0.0699	−0.0275	−0.0502

Number of adults in family	0.00911	0.0101	−0.00186	−0.0124	0.00323	0.00351	−0.00893	0.00425	0.00239
Living in city	0.0825	0.0820	0.114	0.0560	0.0446	0.0497	0.0714	0.0368	0.0529
Unemployment rate in region	−0.000372	−0.000297	−0.00506	−0.00339	0.000687	0.000647	0.00127	0.000435	0.000889
Having a job		0.00535							
Having a casual work without primary job			**0.214***						
Log of monthly wage				**0.170*****	**0.175*****	**0.166*****	**0.181*****	**0.165*****	**0.165*****
Working hours per month						−0.000363	0.000191	−0.000272	−0.000457
Enterprise size							−0.0000119		
Work in public sector								−0.0675	
Tenure less than 3 years									0.0306
Constant	0.259	0.220	−0.0995	−0.779	−0.760	−0.674	−1.074	−0.826	−0.790
Number of cases	9961	9880	7789	6161	4754	4661	3675	4537	4643
Number of regions	33	33	33	33	33	33	33	33	33
Pseudo R^2	0.247	0.247	0.260	0.266	0.254	0.257	0.258	0.258	0.258

Note: The models also included dummy years, and dummies for professional groups. The wish to have another child decreases with the time, but no significant interdependencies were discovered for professional groups

Data Source: Authors' calculations based on RLMS-HSE data set for the period 2000–2009

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 6.4 Marginal effects for probit regression on the probability of having another child in the following year and on the wish to have another child for Russian women aged 17–44, who are married or have a partner, based on RLMS-HSE data from 2000–2009

	Probability to give birth to another child					Probability to wish to have another child				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Age	**0.230*****	**0.408*****	**0.279*****	**0.458*****	**0.461*****	**0.162*****	**0.249*****	**0.147****	**0.220*****	**0.189***
Age squared	**−0.00432*****	**−0.00685*****	**−0.00500*****	**−0.00759*****	**−0.00759*****	**−0.00398*****	**−0.00533*****	**−0.00378*****	**−0.00494*****	**−0.00446*****
Having good health	0.0462	0.147	0.0431	0.166	−0.0478	−0.00640	−0.000937	0.00562	0.0296	−0.00712
Having tertiary education	−0.0115	0.0368	−0.0126	0.0532	−0.0642	0.182**	0.177*	0.176**	0.188*	0.0641
Number of children in family	**−0.144***	**−0.257****	−0.107	**−0.281****	**−0.350****	**−0.707*****	**−0.803*****	**−0.688*****	**−0.814*****	**−0.839*****
Log of family income (excluding woman's income)	−0.189	−0.269				−0.266	−0.272			
Log of family income (excluding woman's income) squared	0.0145	0.0197				**0.0240***	0.0244			
Having own house	−0.134	−0.0977	−0.190*	−0.0853	−0.204	0.0458	0.0321	0.0933	0.0545	0.0235
Number of adults in family	−0.0178	−0.0473	0.0300	0.0190	−0.00865	0.0276	0.00216	0.0837*	0.0629	0.127**
Living in city	**−0.161****	**−0.192****	**−0.261*****	**−0.308*****	**−0.204****	0.0990	0.118	0.105	0.152	0.132

Unemployment rate in region	**0.0271*****	**0.0428*****	**0.0402****	**0.0487*****	**0.0466***	0.00212	0.0118	−0.00783	−0.00496	−0.0103
Husband has tertiary education	0.0898	0.0542	0.144	0.0855	0.0296	0.143*	0.149*	0.0894	0.0960	0.0385
Husband's age	−0.0101	**−0.0217****	−0.0142	**−0.0276***	**−0.0395*****	**−0.0208*****	**−0.0241*****	**−0.0202****	**−0.0207***	**−0.0203***
Husband has a job	0.0617	0.153				−0.319*	−0.268			
Log of husband's monthly wage			0.0503	0.0413	0.0218			**0.155*****	**0.143*****	**0.187*****
Having a job		0.0288		0.0232			−0.0532		0.0815	
Having casual work without primary job					0.00375					**0.104***
Log of monthly wage					0.00149					0.00176
Working hours per month					0.132					−0.00911
Constant	−3.796**	−6.112**	−5.625***	−7.864***	−7.406***	0.742	−0.494	−1.212	−2.239*	−2.577*
Number of cases	8901	5724	6872	4563	3506	8196	5065	6341	4038	3184
Number of regions	33	33	33	33	33	33	33	33	33	33
Pseudo R^2	0.0715	0.0903	0.0775	0.102	0.119	0.264	0.272	0.259	0.271	0.273

Note: The models also included dummy years, and dummies for professional groups. The wish to have another child for married women is decreasing with time under the condition that the husband is working, but no significant interdependencies were discovered for professional groups

Data Source: Authors' calculations based on RLMS-HSE data set for the period 2000–2009

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

expected, logical, and is in line with previous studies conducted in other countries (Brewster and Rindfuss 2000; Brodmann et al. 2007; Adsera 2011).

It is noteworthy that the employment status of the woman has no significant effect on the desire to have more children, while casual work is positively correlated with the desire to have more children. The unexpected result is that monthly wage has a positive link with the wish to have another child. This goes against Becker's theory and other empirical studies that demonstrated the negative impact of women's wage size on planning for children. It is worth special further attention, discussion, and additional studies on how exactly female wages affect the birth of second and subsequent children. Moreover, for employed women the presence of a spouse/partner becomes insignificant if we include the woman's wage in the regression model. This also shows the importance of the female's own income, or self-assurance, for the probability of having another child. The result speaks for the high value of social policies aimed at improving a female's chances of successfully combining work and children.

The decision to give birth to another child for married women is determined by the age of her spouse (the older partner, the less desire) and his income (the higher the wage, the higher the probability of wishing to have a second child) (see Table 6.4). Furthermore, the positive effect of a partner's wage on a woman's desire to have another child is consistent across the specifications. Even the inclusion of the woman's wage in the model did not reduce the impact of the husband's wage. It means that the desire for second and subsequent children in Russia is determined more by economic factors than anything else, as income variable has a consistent influence on planning for children.

In summarizing results, we can underline that our outcomes are in line with findings from previous studies performed on RLMS-HSE and RiDMiZh data.[10] The increased number of childbirths is associated with living in rural areas, number of other adults in the family, presence of a partner and his employment status, age of potential mother and her reproductive intentions (Roshina 2006; Roshina and Cherkasova 2009; Sinyavskaya and Tyndik 2009; Sinyavskaya et al. 2009). The essentially new result relates to the evaluation of the relation between a woman's

wage and her desire to have another child. To our knowledge, there have been no studies in Russia that have employed multivariate econometric analysis on panel data for such a long period of time to assess the factors of the probability of having a further child and wishing to have another child.

6.7 Conclusions

This chapter is devoted to the factors of second or subsequent childbirth in Russia. Growth in the number of further children is crucial for Russian society because of the low fertility rates, which are still below the reproduction level. The conflict between motherhood and work is worsening the situation. The outcomes of the maternity capital program seem to be overestimated due to the coincidence with effects from the baby boomer generation (born around 1980) reaching the maternity range. It was very important to look at the determinants of childbirth of higher order in this respect.

We focused on the period of economic stabilization and growth during the period 2000–2009. Based on Becker's rational choice theory, we hypothesized that a job, high salary and high position in the labor market will reduce a woman's chances of giving birth to a second child because women in such conditions will make a choice in favor of career and earnings. We used panel RLMS-HSE data to test the hypotheses. We performed the analysis on the female sub-sample of reproductive age from 17 to 44 years.

We estimated regression models on the probability of having a second and subsequent child, as well as the probability of wishing to have another child with a time lag that allows for checking causal relations. These models did not confirm the significant interdependence between the probability of having a second (or third) child and employment status of the mother in the year before the child is born. Also, we found no relationship between reproductive intentions and the woman's work.

However, female wage increases the probability of wishing to have another child. Women take into account both their own wages and the wages of their spouses. There is a significant correlation between the hus-

band's earnings and reproductive intentions. This seems to be quite an important result. According to RLMS-HSE data from 2000–2009, about 70 %–80 % of childbirths were desired and planned. In this regard, an important conclusion from our analysis for social policy is that it is necessary to provide all conditions for the population to implement their reproductive intentions. As the important determinant for this desire is wages, it is worth improving and expanding opportunities for combining motherhood with well-paid employment.

Another important result of this study is that Russian women tend to plan another child if they have casual work (not regular employment). This might be caused by better time availability or lower costs associated with return to the labour market in comparison to a regular job. The positive impact of the regional unemployment rate on the probability of giving birth to a second child is also evidence of the high labor market costs of having children for women. Consequently, our findings show that the probability of giving birth to a subsequent child depends on the success of a woman's return to the labor market. If comparing employed and unemployed women, the second group is already squeezed out from the labor market and more likely to give birth to a second child or subsequent children. Those women who returned to the labor market after their first child might prefer to work and not give birth to a second child.

In line with previous studies we confirm that having a job and job characteristics are not the determining factors for the probability of having a second and subsequent child in Russia (Roshina 2006; Sinyavskaya and Tyndik 2009; Roshina and Cherkasova 2009). Moreover, the husband's job is not significant either. However wages appeared to be relevant for the probability of planning to have another child. Thus, we need further research on the impact of wages on high order childbirth in Russia. At this stage we have the following recommendations to increase the number of children in families for social policies at two levels, which would be highly relevant in Russia:

(1) Improve working conditions and labor market opportunities for combining motherhood and well-paid jobs. This will facilitate the desire to give birth to second and subsequent children.

(2) New measures to enhance employment incentives for women with many children since we need to increase family cohesion and family values in Russia.

Notes

1. The financial crisis of 2008 came a bit later to Russia, people started feeling the consequences only at the end of 2009, therefore it slightly affected births in 2009 (given the nine months pregnancy period).
2. Specific capital is the accumulation of skills and knowledge acquired with one employer.
3. Within the framework of the project "Women in Russian labor market after childbirth," funded by the HSE Academic Fund Program in 2011–2012, a series of 29 interviews were carried out in different towns across the Russian Federation. Interviews were conducted with women who had 1–3 children of different ages. The goal was to identify problems of combining motherhood with paid work, and the motives for giving birth to subsequent children.
4. As a comparison, paid parental leave in Switzerland lasts for only 12 weeks, and in Germany and Norway for 12 months.
5. According to Bodrov, the "ideal" number of children is the individual's notion of the most acceptable number of children in a family in general, without taking into account specific life situations and personal preferences. Commonly, this indicator is socio-stable and does not depend on economic factors. The "desirable" number of children is determined by personal proclivities to have them, and the "expected" number of children is the respondent's plan for how many children she will have by the end of her reproductive period. The last in turn depends on the first two parameters and a subjective assessment of the current socio-economic situation in the country.
6. Many international comparative studies show that woman's attachment to her work only increases if she has the opportunity to take the paid work-break (Joesh 1995; Waldfogel et al. 1999; Pylkkänen and Smith 2004).

7. The results of All-Russian population census in 2002 showed that Russia had 65 % of families with one child, 28 % with two children, and 7 % with three or more children (Rosstat 2008).
8. "The Russia Longitudinal Monitoring Survey – Higher School of Economics" (RLMS-HSE) is conducted by the National Research University Higher School of Economics and ZAO "Demoscope" together with Carolina Population Center, University of North Carolina at Chapel Hill, and the Institute of Sociology of the Russian Academy of Sciences. (URL: http://www.cpc.unc.edu/projects/rlms and http://www.hse.ru/rlms)".
9. The detailed descriptive characteristics of the variables are in the Annex, Table 1
10. Parents and children, men and women, 2004–2007.

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7

Changes in Mortality: Meta-Analysis

Kazuhiro Kumo

7.1 Introduction

The economic growth process in emerging nations described by Wilson and Purushothaman (2003) suggests that we are returning to an era in which the size of a country's population is a strong determinant of the scale of its economy (Maddison 2007). Russia, however, which is regarded as an emerging nation alongside countries such as China and India, is experiencing a population decline, which sets it apart from other emerging nations and makes Russia's population dynamics so interesting.

It is well known that Japan and Italy are experiencing a natural decline in their total populations due to low fertility rates over a long period. The

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situation with Russia's declining population, however, is different. Unlike developed nations, Russia maintained a total fertility rate (TFR) that was adequate to replenish its population up until 1989. It is widely known that since 1992 the number of deaths has exceeded the number of births, leading to a natural decline in population (Fig. 7.1).[1] Russia's natural population decline therefore differs from the normal situation in which fertility dynamics play a major role in population change. In the case of Russia, therefore, it may be better to focus on studying the dynamics of mortality.

The analysis of factors affecting births in Russia began after the collapse of the Soviet Union, and has been based on an analysis of microdata from the RLMS-HSE, as described in previous chapters of this book.[2] Fertility rates are declining in many developed nations, and it is also widely known that almost all the former Soviet republics experienced similarly sharp drops in their fertility rates following their transition to capitalism (Kumo 2010).

However, what is unique about Russia compared with developed nations, other transitional economies, and so on is that the main long-term problem it faces is its high mortality rate. Its infant mortality rate, which had been declining since World War II, stopped falling in the

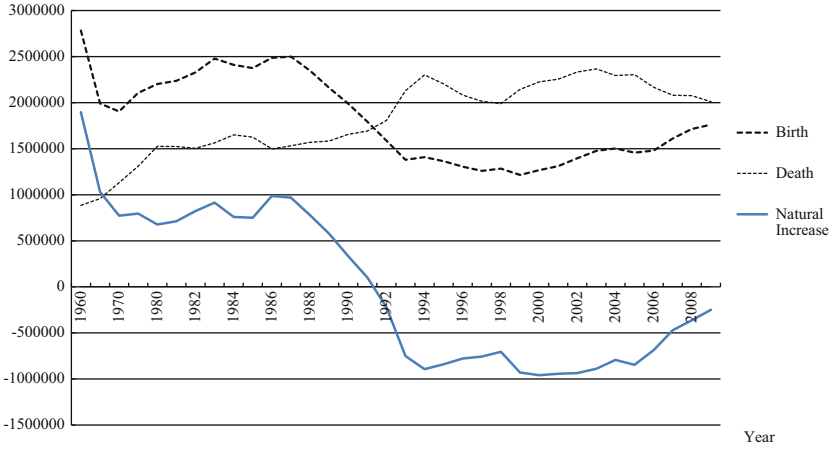


Fig. 7.1 Numbers of births and deaths in Russia (*Source*: Prepared by the author from Rosstat, *Demograficheskii ezhegodnik Rossii* (Demographic Yearbook of Russia), various years (in Russian))

1970s (Davis and Feshbach 1980; Jones and Grupp 1983; Anderson and Silver 1986a). Moreover, mean life expectancy at birth increased much more slowly during the 1960s, and then actually began to decline (Dutton 1981; Dinkel 1985; Borisov 2009). Furthermore, from the end of the 1980s, during the period of turmoil as Russia made its transition to capitalism, the mortality rate among people in the prime of life climbed rapidly, greatly accelerating the natural decline in the population.

Limitations with the data make it difficult to analyze the factors affecting mortality directly. Microdata for the Soviet era have not been accessible, making it hard to examine the background to long-term trends. Moreover, it is also necessary to take into account the likelihood that factors outside the socio-economic background have also played a role. This chapter, therefore, is not limited to studying the literature in the social science field, of which there is very little, but also reviews numerous studies in the field of medicine, selecting a portion of over 200 research papers to explore those factors that determine mortality rates in Russia.[3]

This chapter begins with descriptive statistics to examine trends in mortality rates by age group, mean life expectancy at birth, and so on in Russia. After that, there is an overview of previous research and a discussion of key points. Factors such as levels of medical care and environmental pollution are dealt with, and their impact is probably undeniable. Statistical distortions and gaps in records have had little impact, so the data can be relied on and regarded as reflecting real conditions. Although various discussions have developed, a lot of previous researches strongly suggest that alcohol consumption has been a key reason for the slowing of growth, subsequent increase, and recent high levels in mortality rates in Russia.

7.2 Russian Mortality: Descriptive Statistics

The first thing that needs to be pointed out when examining mortality dynamics in Russia is the uniqueness of its long-term trend. This section begins with looking at mean life expectancy at birth, as this is an indicator unaffected by a country's age structure. Figure 7.2 shows data from 1960 to 2009 for mean life expectancy at birth for males in several former communist countries and several Western European countries.

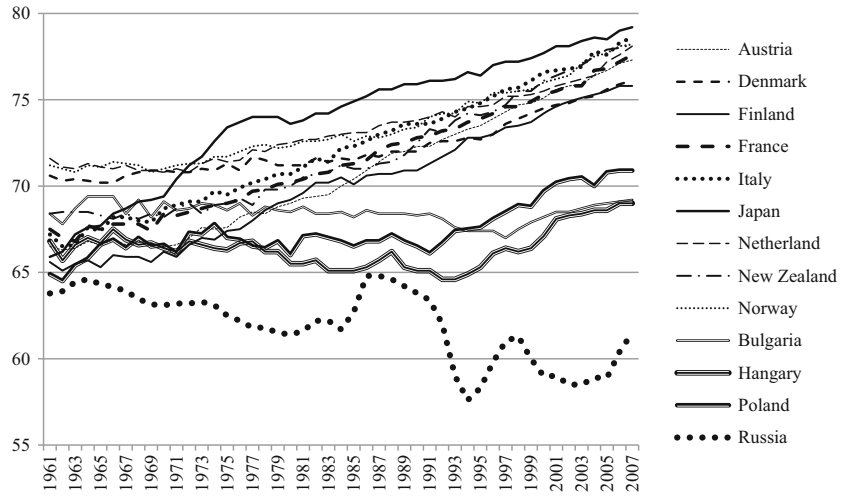


Fig. 7.2 Male life expectancy at birth (Year) (*Source*: Prepared by the author from World Bank, *World Development Indicators 2009* and Rosstat, *Demograficheskii ezhegodnik Rossii* (Demographic Yearbook of Russia), various years)

It can be seen that from the mid-1960s these communist countries (Bulgaria, Hungary, Poland, and Russia) began to exhibit a clearly different trend from that of the Western European countries. On the whole, mean life expectancy at birth in the Western countries continued to climb. In the communist countries, however, hardly any increase was seen between the mid-1960s and 1989–1991, when they were making their transition to capitalism. It can also be seen that mean life expectancy at birth in Russia followed an extremely distinctive path. In Russia, the trend could even be said to have been downward (Dutton 1981; Rapawy and Baldwin 1982; Feshbach 1985; Kingkade 1987; Blum and Monnier 1989; Anderson and Silver 1986b, 1989a, b, 1990; Andreev et al. 2006).

This was recognized as an issue even within the communist bloc at a comparatively early stage. Normally, the factor with the biggest impact on mean life expectancy at birth is the infant mortality rate (the death rate among children less than 12 months old).[4] However, in the 1970s the infant mortality rate, which had begun increasing, completely disappeared from the *Narodnoe Khozyaystvo SSSR* [Soviet National Economies], an official collection of statisticspublished annually by the Soviet Union, making it impossible to track the trend from that period onwards.

It can also be seen that mean life expectancy at birth increased temporarily in the mid-1980s. Many researchers have attributed this to the positive effects of an anti-alcohol campaign run by the Gorbachev administration (Heleniak 1995; Bloom and Malaney 1998; Shkolnikov et al. 2001; Andreev et al. 2006; Stuckler et al. 2009; Carlson and Hoffmann 2010). In just three years, between 1985 and 1987, mean life expectancy at birth for males rose by over three years, reaching a record high level for the Soviet Union. In 1987, however, the anti-alcohol campaign was cancelled, and from then until the collapse of the Soviet Union mean life expectancy at birth declined once again. It also continued to decline after the collapse, and at an even faster rate than before. Although it climbed briefly from 1995, it dipped again in 1998, the year of the Russian financial crisis. Since the mid-2000s, when proactive population policies began to be implemented, it has risen a little (Fig. 7.2).

The most striking trend seen following the collapse of the Soviet Union is the sharp rise in the mortality rate of men 30 years or over. Such a phenomenon has not been seen in developed countries in recent years, so it is unique to Russia and the former Soviet Union (Shkolnikov et al. 1998; Brainerd 1998; Anderson 2002; Khalturina and Korotaev 2006; Osipov and Ryazantsev 2009). Table 7.1 shows changes over time in mortality rates for Russian men in different age groups. Figures for Japan in 2000 are also provided for reference. A key point is that mortality rates for Russian men between the ages of 30 and 59 (i.e. men in the prime of life), have almost doubled. Obviously, rates are far higher than those in Japan for each year and each age group. However, given the fact that the infant mortality rate has dropped steadily despite showing signs of rising at one point, the rise in mortality rates among people in the prime of life from the collapse of the Soviet Union until the mid-2000s is striking (DaVanzo and Grammich 2001; Vishnevskii 2009).

With rising mortality rates, mean life expectancy at birth for males has fallen after the collapse of the Soviet Union. As Fig. 7.2 shows, in 1990 the mean lifespan of men was around 65 years. In 1993, however, it dropped below 60 years, and has remained at a low level since then. It is worth pointing out that the last time the mean lifespan of men in Japan was below 60 years was in 1950–1951 (Ministry of Health, Labor and Welfare of Japan 2007).

Table 7.1 Age-specific mortality in Russia

y.o/Year	1990		1995		2000		2005		2009		Ref.: Japan 2000	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	20.0	14.7	20.5	15.5	13.9	13.2	12.5	9.4	9.1	7.1	3.4	3.0
5–9	0.7	0.4	0.7	0.4	0.5	0.4	0.5	0.3	0.4	0.3	0.1	0.1
10–14	0.6	0.3	0.7	0.4	0.6	0.3	0.5	0.3	0.4	0.3	0.1	0.1
15–19	1.6	0.6	2.4	0.9	1.7	0.8	1.6	0.7	1.3	0.6	0.5	0.2
20–24	2.6	0.7	4.4	1.0	3.9	1.1	3.8	1.0	2.7	0.8	0.7	0.3
25–29	3.3	0.8	5.6	1.3	5.9	1.3	6.5	1.6	4.6	1.3	0.7	0.3
30–34	4.3	1.1	7.4	1.8	7.5	1.7	8.2	2.2	6.8	1.9	0.9	0.4
35–39	5.6	1.6	10.2	2.5	10.2	2.3	10.3	2.9	7.7	2.4	1.1	0.6
40–44	7.7	2.4	14.3	3.9	14.4	3.4	14.3	4.3	9.8	3.2	1.8	1.0
45–49	11.7	3.8	19.5	5.8	20.1	5.1	19.4	5.6	13.5	4.3	3.0	1.5
50–54	16.1	5.4	27.5	8.5	27.9	7.6	26.9	8.1	19.4	6.2	4.6	2.3
55–59	23.5	8.6	34.3	11.5	35.0	11.4	34.4	11.8	27.1	6.4	7.5	3.2
60–64	34.2	13.5	46.4	17.2	49.8	15.8	47.0	16.5	38.5	13.2	11.3	4.6
65–69	46.6	22.0	60.6	26.0	60.6	25.6	58.8	12.8	51.9	20.5	18.2	7.5
70–74	67.7	37.1	77.6	41.2	84.1	41.2	80.5	39.4	70.6	32.8	28.7	12.4
75–79	100.2	62.3	109.7	68.5	111.9	67.5	109.8	66.0	99.8	58.3	45.6	22.7
80–84	146.6	105.9	156.6	115.0	149.0	114.9	139.2	107.3	136.3	98.9	80.5	43.3

Source: Prepared by the author from Rosstat, *Demograficheskii ezhegodnik Rossii* (Demographic Yearbook of Russia), various years (in Russian), and Ministry of Health, Labor and Welfare of Japan 2007

What also needs to be emphasized, however, is the trend in the infant mortality rate. At the beginning of the 1970s, when infant mortality rates disappeared from the Soviet Union's official statistics, the infant mortality rate increased (Fig. 7.3). After that, however, despite short-lived rises in 1993–1994 and 1998, the overall trend seems to have been downward (Webster 2003; UN Russia 2008). The trends in mean life expectancy at birth and the infant mortality rate do not match each other. In other words, it can probably be concluded that the decline in mean life expectancy at birth following the collapse of the Soviet Union was not due to an increase in the infant mortality rate. It could even be said that this provides strong supporting evidence for refuting the commonly accepted hypothesis that the deterioration in levels of medical care following the collapse of the Soviet Union caused mortality rates in Russia to rise (Kontorovich 2001; Khalturina and Korotaev 2006).

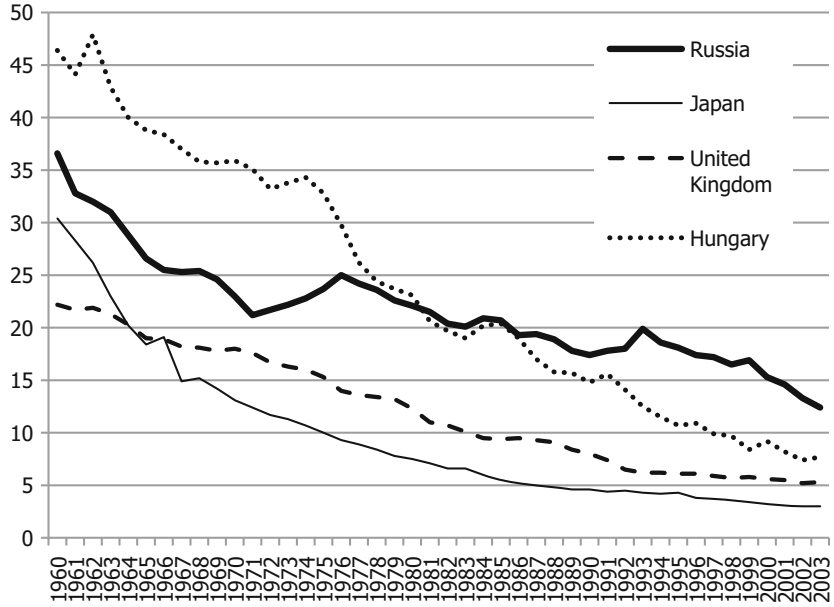


Fig. 7.3 Infant mortality rate, 1960–2003, 1/1000 (*Source*: Prepared by the author from World Bank, *World Development Indicators 2009* and Rosstat, *Demograficheskii ezhegodnik Rossii* (Demographic Yearbook of Russia), various years (in Russian))

7.3 Perspectives from Previous Research

As mentioned at the beginning of this chapter, it was difficult to study the factors that affected mortality in Russia during the Soviet era. Not only was microdata unobtainable, data on causes of death and mortality rates was extremely limited. However, this situation changed after the collapse of the Soviet Union, when vast amounts of information became available. National and regional statistics, such as numbers of deaths, began to be published regularly, and it became possible to examine microdata. Furthermore, it is no longer impossible to access mortality statistics from the Soviet era.

With these changes taking place, the number of papers being published increased from 2000 on, and a huge body of knowledge has already been accumulated. One reason for this is probably that the range of publishing media has also increased in recent years. A search for research on causes of death in Japan, whether it relates to Russia or not, reveals that the number of papers also increased sharply from the 1990s, making it difficult to deny the impact of the expansion in the range of publishing media.[5]

That microdata began to accumulate in Russia after the collapse of the Soviet Union, which became far more accessible, probably also made a huge contribution. During the Soviet era (i.e. until 1991), no microdata-based analysis of causes of death seems to have been conducted. Since the collapse, however, researchers at medical institutions have been conducting analyses using data determining causes of death through autopsy. A lot of this research has appeared in journals with fairly long histories, such as *Addiction* (published since 1903), *Alcohol and Alcoholism* (published since 1963), *Social Science and Medicine* (published since 1967), *Public Health* (published since 1888), and *Lancet* (published since 1823), suggesting that the increase in such research cannot be attributed solely to the expansion in the range of publishing media.

The debate on factors affecting mortality in Russia has generally focused on factors that are intuitively easy to understand, such as low levels of medical care, environmental pollution, and alcohol consumption. Furthermore, not just during the Soviet era but also since the emergence of the new Russia, the credibility of a lot of statistics has been

doubtful. Nevertheless, among the various factors that could be considered to have played a role, it is the impact of the volume, frequency, and the method of alcohol consumption on the mortality rate among men in the prime of life that is being studied most extensively, as it is consistent with an observed phenomenon.[6]

7.3.1 Levels of Medical Care

In the Soviet Union medical services were provided for free, and in terms of quantitative indicators such as the number of doctors, nurses, and hospital beds, the level of medical care was superior to that of developed nations. This much is widely known, and can also be seen in official statistics from the Soviet era (Levin 1979; Kotryarskaya 1990; Cromley and Craumer 1990, 1992). From the Soviet era to the present day, the number of doctors and nurses has been high compared with developed nations. In 1985, during the Soviet era, there were 3.9 doctors for every 1,000 people.[7] In the same year in the USA, the figure was 1.7, and Japan it was 1.5. Even in 2000, Russia had 4.2 doctors for every 1,000 people, a figure that was only surpassed by Greece (with 4.3) among the OECD nations.[8]

It goes without saying, however, that the key issue with medical care is quality rather than quantity. Balabanova et al. (2004) conducted an analysis using microdata from 2,000–4,000 people, and they found that Russia, even after the collapse of the Soviet Union, performed well in terms of accessibility to medical institutions. However, in terms of the key issue of the quality of medical care, McKee (2006)—who used anecdotal evidence to discuss problems with medical care in the Soviet Union—and Gil et al. (2010)—who conducted interviews concerning the handling of alcohol issues by the government and medical institutions—and Tkatchenko et al. (2000)—who stated the need for legal-system reform after conducting interviews with people from government medical care organizations concerning the problems facing them—pointed out policy problems with medical care in Russia. These included the lack of a route for relaying problems recognized by frontline organizations to organizations higher up the chain of control. In addition, the views of

Dubikaytis et al. (2010), who highlighted disparities among individuals in St. Petersburg, Russia's second largest city, in terms of the medical services they were able to receive, should not be ignored.

If levels of medical care were low for a long time, could it be that this contributed to the long-term decline in mean life expectancy at birth in Russia (and the Soviet Union)? If the situation had remained the same, it would be difficult to argue that it explained the *decline* in mean life expectancy during the Soviet era. However, if the level of medical care *deteriorated*, that could be expected to have caused a *decline* in mean life expectancy.

However, given that the Soviet Union achieved sustained economic growth until the 1980s, it is difficult to argue that the level of medical care declined. It is known that in 1961, when faced with an epidemic of polio, Japan imported enough live oral polio vaccines for 10 million people from the Soviet Union, and succeeded in getting the outbreak under control (Ministry of Health and Welfare of Japan 1962). This suggests that even in the Soviet Union, which was noted for the gap between its advanced technology and its technology for the masses, a certain level of medical care was accessible to ordinary people. In the first half of the 1970s, the infant mortality rate increased (Fig. 7.3), and although more research needs to be conducted on the causes, it returned to a sustained downward trend thereafter. The conclusion therefore must be that if medical care in the Soviet Union and Russia had been deteriorating continuously, the infant mortality rate would not have trended downward.[9]

7.3.2 Environmental Pollution

Needless to say, focusing heavily on economic growth frequently results in the destruction of natural environments, and this was identified as occurring in Russia at an early stage. A famous work by Goldman (1972) highlighted inadequacies in government environmental regulation in the Soviet Union. Laws and regulations existed, and the national government was responsible for their implementation, yet the same national government also owned and controlled the companies that produced the pollutants in the course of their production activities. These companies

had to meet production targets and were punished if they failed to meet them. Under such circumstances, it is reasonable to assume that local governments would tend to focus more on production issues than on the environment.

Since the collapse of the Soviet Union, research has been conducted, for example, on differences in lifespan between regions using figures such as the amount of pollutants in the air or water as explanatory variables. For example, Larson et al. (1999) found that mortality rates in areas around pollutant-emitting companies in Volgograd, a city of one million people in southern European Russia, were significantly higher than in other areas. However, it is probably unusual for individuals to reside next to a polluter. Kozlov (2004), for example, compared two cities in northwestern Russia with extremely high levels of harmful substances in the air, with two cities with extremely low levels of air pollution. However, he reported that he was unable to find a clear relationship between mortality rates and the quantity of pollutants, such as sulfur dioxide, for the cities as a whole.

If environmental pollution had been deteriorating continuously, it would possibly have resulted in a long-term decline in mean life expectancy at birth. Moreover, it would be reasonable to assume that as the economy of the Soviet Union grew, emissions of waste and pollutants increased. That may explain the downward trend in mean life expectancy at birth from the 1960s to the 1980s.

Nevertheless, it needs to be pointed out that the trend in industrial output after the collapse of the Soviet Union makes it difficult to explain mortality rates in terms of environmental factors. Following the collapse of the Soviet Union, Russian industrial output decreased sharply and pollutant emissions per capita have fallen steadily for over 20 years since peaking at the end of the Soviet era (Cherp et al. 2003).[10] Environmental pollution cannot therefore explain the rise in mortality rates among people in the prime of life during the 20 years since the collapse of the Soviet Union. During the period of rapid economic growth after World War II, for example, Japan showed an increase in pollutant emissions (Center for Global & Regional Environmental Research, *STEM II*, University of Iowa) and faced diseases caused by environmental pollution, nevertheless Japan's mean life expectancy at birth increased almost continuously and

the infant mortality rate declined fairly steadily during the same period (Figs. 7.2 and 7.3). Although there were several other factors that could have offset the effects of a worsening environment, the data can at least be said to show that localized environmental deterioration could not have been a decisive factor behind the decline in mean life expectancy at birth or the rise in mortality rates at the macro/national level.

7.3.3 Statistical Inaccuracies

One issue with statistics from the Soviet Union that has been widely pointed out is their lack of credibility. Treml and Hardt (1972) addressed this issue many years ago, and Chinn (1977), Clem (1986), Anderson and Silver (1985a, b, 1986a), and Jones and Grupp (1983, 1984) also need to be mentioned because they examined the quality of population statistics.

Jones and Grupp (1983) cast doubt on the credibility of Soviet fertility and mortality statistics relating to a period of over a decade after World War II. They found that with the Soviet Union's infant mortality rate in a clear downward trend between 1958 and 1968, infant mortality rates in central Asian Islamic SSRs, such as Kyrgystan, were exhibiting the opposite trend. In other words, at the beginning of the period their figures were lower than for the Russian SSR, while at the end of the period they were higher than for the Soviet Union as a whole and the Russian SSR. They argued that there were therefore problems with the collection and recording of statistics for central Asia.[11]

This argument is extremely clear-cut and persuasive. However, it needs to be kept in mind that this seems to show that the Soviet statistical authorities may not actually have been attempting to deliberately distort statistics. In fact, Kumo (2004), who examined internal documents from the Soviet cabinet, compared officially published Soviet statistics with confidential data from the Soviet cabinet, yet found little disparities. This shows, for example, that official statistics were the simple result of compiling internal figures relating to regional economic growth processes, which were completely at odds with the Soviet Union's policy goal of leveling out economic development among regions. Using internal

data relating to population census results from the Soviet central statistical bureau, Andreev et al. (1998) identified clear inconsistencies in figures for the population of males in each age group in different regions. They pointed out, however, that this might not have been the result of an attempt to idealize population distribution in the Soviet Union. Rather, it may just have been due to unintentional errors made during the statistical compilation process.

Chinn (1977), Anderson and Silver (1985a, b, 1986a), Leon and Chenet (1997), and, more recently, Tolts (2008) and Gavrilova et al. (2008), while casting doubts over the quality of data, did not reject it as unusable.[12] One problem was that causes of death were being inappropriately classified based on specific patterns,[13] but fertility and mortality statistics for the 1960s, 1970s, and thereafter were probably adequate for gauging overall trends, though the same could perhaps not be said for the period of turmoil immediately following World War II.

Regarding matters such as the identification of causes of death, another perspective needs to be taken into account. For example, deaths stemming from long-term alcohol addiction are often classified as "acute alcohol poisoning" (Blum and Monnier 1989; Pridemore 2004), while deaths caused by external factors such as homicide and accidents were sometimes classified otherwise due to ethical problems in the police force (Kim and Pridemore 2005). These issues are, however, insufficient for rejecting the usability of the data, and they could perhaps be said to be a matter of degree.

7.3.4 Alcohol

Research on the subject of Russians and alcohol consumption has a very long history (Blum and Monnier 1989; Stickley et al. 2009),[14] but recently a huge number of medical papers have been published. As was pointed out earlier, key reasons for this have probably been the fact that microlevel analyses became possible after the collapse of the Soviet Union and the fact that statistics going back to the Soviet era have come to be compiled and made public.

Treml (1982) wrote a well-known book highlighting the problem of alcohol consumption in the Soviet Union. The fact that it was inappropriate to investigate Russians' alcohol consumption using data from official statistics on the quantity of alcohol produced and sold made it difficult to debate the relationship between alcohol consumption and the deaths of Russians. This was because it was often pointed out that Russians frequently consumed illegally produced alcohol or alcohol produced for purposes other than drinking (cologne, antifreeze, etc.) (Leon et al. 2009; Perlman 2010).[15]

Treml (1982) made estimates of alcohol consumption in Russia by assuming, for example, that the maximum amount of sugar that could be consumed per person was the amount consumed by North Americans, and that the difference between that figure and the amount of sugar produced and imported in the Soviet Union at the time represented the amount of sugar used for illicit alcohol (i.e. moonshine) production. According to these estimates, total consumption of government-produced and illegally produced alcoholic beverages (i.e. total alcohol consumption), increased more or less continuously from 1955 until 1979, with a per capita consumption of alcohol among citizens 15 years or older estimated at 14.58 liters in 1978 (Treml 1982, p. 68). If this figure is correct, Russians consumed a lot more than the amount of pure alcohol consumed by, say, Japanese citizens of 15 years or older in 2003–2005 (8.03 liters, WHO 2011).

If Treml's (1982) estimate that alcohol consumption continued to increase during the latter part of the Soviet era was accurate, it may have caused the decline in the mean lifespans of Russians seen from the 1960s. The level of alcohol consumption was extremely high relative to other countries, and a great deal of the alcohol consumed was in the form of spirits. Research arguing that this, and the sustained increase in consumption, could explain the rise in mortality rates during the Soviet era has existed since this era (Blum and Monnier 1989), but conducting a detailed investigation required the collapse of the Soviet Union and an increase in the accessibility of data.

Following the collapse of the Soviet Union, remarkable progress was made in research. In particular, researchers working in the medical

field in the former Soviet Union, such as Nemtsov (2002, 2003) and Razvodovsky (2009a, b), conducted analyses based on macrodata from the Soviet era that they had uncovered, while research was also performed by quantitative sociology researchers such as Pridemore (2002, 2004, 2005, 2006). Moreover, results of microlevel analyses based on autopsy data conducted jointly with researchers from Russian medical institutions have been published in rapid succession.[16]

Although problems with making judgments about cause-and-effect relationships based on time-series data for just two variables are well known, per capita alcohol consumption and mortality rates (mean life expectancy at birth) in Russia have exhibited the same trend, and there is more than just a correlation between the increase in per capita alcohol consumption during the Soviet era and mortality rates. When the anti-alcohol campaign was being conducted, alcohol consumption declined and lifespans lengthened, while at the time of transition to capitalism alcohol consumption increased and lifespans decreased sharply. All this is consistent with the understanding that alcohol consumption has caused higher mortality. Moreover, there is no variance between studies conducted using macrodata and analyses of personal alcohol consumption and mortality rates based on microdata following the collapse of the Soviet Union. On the contrary, an extremely consistent relationship can be identified. In other words, alcohol consumption may be able to explain mortality dynamics for both the end of the Soviet era and the initial period of the transition to capitalism, which is a debate that needs to be pursued further.

7.4 Alcohol Consumption and Mortality Rates in Russia

As the sections above have shown, there seems to be a strong relationship between alcohol and mortality rates, this section explores this further by examining research conducted since the second half of the 1990s to find out whether this discussion stands up to scrutiny.

7.4.1 Estimates of Alcohol Consumption from Previous Research

Table 7.2 and Fig. 7.4 give statistics for alcohol consumption. All estimates from previous research are for pure alcohol volume, extrapolated from the percentage of alcohol assumed to be contained in each type of alcoholic beverage. Treml's (1997) and Nemtsov's (2002) estimates for illicitly produced spirits, meanwhile, are based on the method employed by Treml (1982); estimates for years included by both Treml (1997) and Nemtsov (2002) are more or less the same.

Trends seen in official statistics match those from previous research that includes estimates of illicitly produced alcohol consumption. In other words, from 1960 to around 1980, per capita consumption of pure alcohol increased, before falling sharply in the mid-1980s. However, at the end of the 1980s, just before the transition to capitalism began, consumption began rising again. Both official statistics and estimates that include illicitly produced alcohol consumption show that this trend continued until the beginning of the 1990s. In the mid-1990s consumption briefly showed signs of falling, but at the end of the 1990s it climbed once again. However, there are big quantitative differences between the estimates based on official statistics and those that include consumption of illicitly produced alcohol, and it ought to be borne in mind that these differences expanded following the collapse of the Soviet Union.[17]

However, the trend in mean life expectancy at birth of Russian men (Fig. 7.2) declined continuously from the mid-1960s until around 1980. Although it increased significantly in the mid-1980s, when the anti-alcohol campaign was implemented, it had started falling again by the late 1980s, and in 1993, following the transition to capitalism that began in 1991, it dropped to its lowest level since the Soviet era of 57.6 years. Although it quickly began rebounding, between 1998, when the financial crisis occurred, and 1999 it declined by 2.3 years. As this shows, trends in the volume of alcohol consumption and mean life expectancy at birth, which serve as a general indicator of the mortality rate, match each other.

A problem with this graph is that it does not enable a comparison to be made of the findings of Treml (1982) on the one hand and Treml (1997)

Table 7.2 Alcohol consumption per capita/per citizen 15 years old or older seen in previous studies (in pure alcohol, liters)

	Official consumption data	Treml (1982) per citizen 15 y.o. or older	Treml (1997) per capita	Nemtsov (2002) per capita	Estimation of underground alcohol beverage production (Treml, 1982) per citizen 15 y.o. or older	Estimation of underground alcohol beverage production (Treml, 1997) per capita	Estimation of underground alcohol beverage production (Nemtsov, 2002) per capita
1960	5.52[a]	8.45			2.93		
1961	5.72[a]	8.59			2.87		
1962	6.14[a]	9.32			3.18		
1963	6.41[a]	9.62			3.21		
1964	6.6[a]	9.65			3.05		
1965	7.02[a]	10.21			3.19		
1966	7.7[a]	11.15			3.45		
1967	8.18[a]	11.52			3.34		
1968	8.78[a]	12.31			3.53		
1969	9.36[a]	12.95			3.59		
1970	9.54[a]		12			2.46	
1971	9.8[a]						
1972	10.13[a]						
1973	9.84[a]						
1974	10.51[a]						
1975	11.31[a]		13.1			1.79	
1976	11.78[a]						
1977	11.5[a]						

1978	11.4[a]				
1979	11.94[a]				
1980	10.5[b]	14	13.8	3.50	3.3
1981	10.2[b]		14.1		3.9
1982	10.13[b]		13.9		3.77
1983	10.26[b]		14.1		3.84
1984	10.45[b]	14.25	14.2	3.8	3.75
1985	8.8[b]	13.3	13	4.5	4.2
1986	5.17[b]	10.57	10.5	5.4	5.33
1987	3.9[b]	10.7	10.6	6.8	6.7
1988	4.4[b]	11.2	11.4	6.8	7
1989	5.16[b]	11.66	11.9	6.5	6.74
1990	5.56[b]	11.76	12	6.2	6.44
1991	5.57[b]	12.27	12.5	6.7	6.93
1992	5.01[b]	13.81	13.5	8.8	8.49
1993	5.92[b]	14.42	14	8.5	8.08
1994	6.76[b]		14.6		7.84
1995	6.5[b]		14.5		8
1996	7.2[b]		14.4		7.2
1997	7.5[b]		14.2		6.7
1998	7.3[b]		13.9		6.6
1999	7.6[b]		14.3		6.7

Source: Prepared by the author
[a]Treml (1982), p. 68
[b]Nemtsov (2002), p. 1414

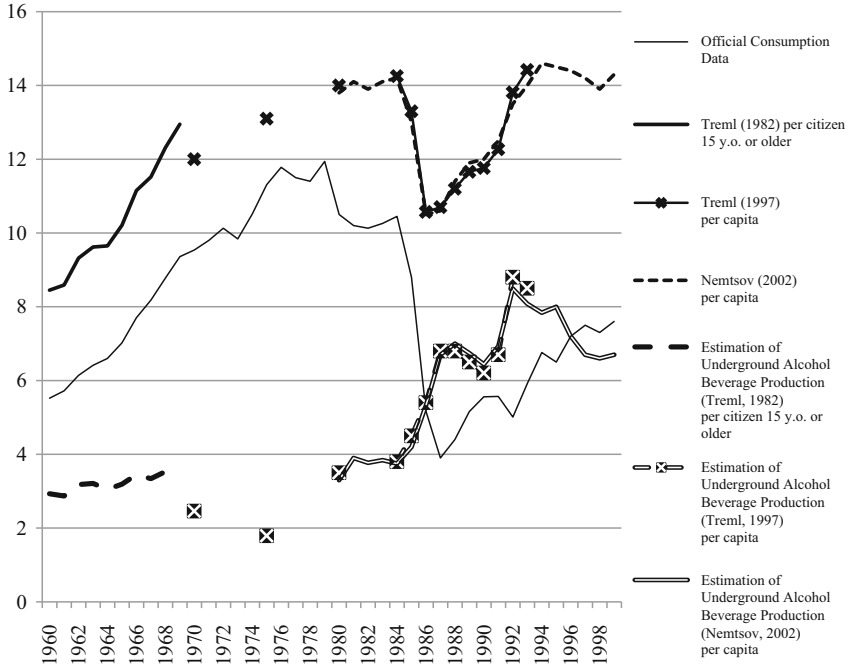


Fig. 7.4 Alcohol consumption per capita/per citizen 15 years old or older seen in previous studies (in pure alcohol, liters) (*Source*: Prepared by the author from Table 7.2)

and Nemtsov (2002) on the other. Treml (1982) employed per capita figures for citizens 15 years or older, while Treml (1997) and Nemtsov (2002) calculated the volume of alcohol consumption for each person who is younger than 15 year old. Therefore, to compare these figures, the figures for the 1980s onwards need to be revised upwards. It is only because of the inability to capture true figures that the figures for the early 1990s are lower than those for the 1970s in the official statistics. On the other hand, the reason why the estimates for the end of the 1970s and the 1990s do not appear to be all that different is the different definitions used by Treml (1982) and Nemtsov (2002). For people aged 15–59, the figures for the first half of the 1990s are higher than for 1970 and 1975, and are quantitatively much higher, as over 18 liters per citizen 15 years or older (Treml 1982; Nemtsov 2002). There is therefore probably no inconsis-

tency between the decline in mean life expectancy at birth during the early phase of the transition to capitalism and the trend in alcohol consumption.

One point to mention is that, although it is true that the quantity of alcohol consumption in Russia is comparatively large, Russia is not the only country in the world which shows a large amount of per capita alcohol consumption. Average annual consumption of alcohol per adult in the United Kingdom and France also exceed 15 liters (WHO 2011). What is different, however, are drinking patterns and the variety of alcoholic beverage consumed. Beer is favorite among UK adults, and wine in France, while more than 50 % of pure alcohol is taken in the form of spirits (vodka) in Russia. In a discussion of drinking patterns, a clear contrast emerges with UK or French people drinking a certain amount of alcohol almost daily, but not extreme, while Russian people show binge drinking patterns at the weekend (WHO 2011; Pridemore 2004). The patterns of alcohol consumption in Russian people involve severer problems than those of others.

7.4.2 Cause-and-Effect Relationship between Alcohol and Mortality Rates: Meta-Analysis

It is fair to say that quantitative, cause-and-effect analyses only really began to be conducted at the end of the 1990s and during the 2000s. Nevertheless, they have already produced numerous findings. Table 7.3 describes over 20 papers published since 2000 that examined the direct relationship between alcohol consumption and mortality. Papers that did not employ descriptive statistics all found that alcohol consumption significantly increased mortality rates.[18] Moreover, even when descriptive statistics were used, it is easy to show that significant results can be obtained when testing ratios in the case of case-control studies (authors' own calculation). Looking at these findings in conjunction with the macrodata trends described in the previous sub-section, it can be said that in Russia alcohol consumption and mortality rates are closely related.

To confirm the critical effects of alcohol consumption on mortality of Russians, a simple meta-analyses of previous studies on the relationship

Table 7.3 Previous studies on alcohol consumption and mortality in Russia

Macro-level data				
	Approach	Data, Years etc.	Dependent variable	Explaining variable
Nemtsov (2002)	OLS	1970–75, 80–91	Mortality	Alcohol consumption per capita
Pridemore (2002)	2SOLS	1995, 78 regions	Homicide rate by region	Death from alcohol poisoning
Nemtsov (2003)	ARIMA	1965–1999	Suicide rate	Alcohol consumption per capita
Kim and Pridemore (2005)	2SOLS	2000, 79 regions	Homicide rate by region	Alcohol sales per capita
Pridemore (2005)	Poisson	1995, 78 regions	Homicide rate by region	Death from alcohol poisoning
Pridemore (2006)	OLS	2000, 78 regions	Suicide rate by region	Death from alcohol poisoning
Pridemore and Chamlin (2006)	ARIMA	1956–02	Suicide/homicide rate	Death from alcohol poisoning
Razdovsky (2009a)	ARIMA	1956–05	Suicide rate	Death from alcohol poisoning
Razdovsky (2009b)	ARIMA	1970–05	Suicide rate	Sales of vodka (vodka has a more critical effect than other beverages)
Ramstedt (2009)	ARIMA	1959–98	Death from ischemic heart disease	Alcohol sales per capita
Razdovsky (2010)	ARIMA	1980–05	External causes of death	Sales of vodla (vodka has a more critical effect than other beverages)
Razvodovsky (2011)	ARIMA	1980–05	Suicide rate	Sales of vodla (vodka has a more critical effect than other beverages)

Table 7.3 (continued)

Macro-level data				
	Approach	Data, Years etc.	Dependent variable	Explaining variable
Brainerd and Cutler (2005)	Logistic Regression	1994–2002, RLMS, 17,092 cases	Death	Amount of alcohol taken
Leon et al. (2007)	Descriptive	2003–2005, Survey in Izhevsk, 1,468 cases; 1,496 controls	Death	37 % of cases took non-beverage alcohol; only 7 % among controls
	(Case-Control Study)			Cases took alcohol more frequently than controls
Perlman and Bobak (2008)	Cox Hazard	1994–2001, RLMS, 11,359 cases	Death	Frequency of taking alcohol
Pomerleau et al. (2008)	Descriptive	2001, Armenia, Belorus, Georgeam Kazakhstan, Kyrgyzia, Moldova, Ukraine and Russia, 18,428 respondents	-	Frequency of binge drinking (2 liters or more beer/750 g. Or more wine/ 250 g. Or more vodka once) is significantly higher in Russia than others
Zaridze et al. (2009a)	Descriptive	1991–2006, Barnaul city, Autopsy Data, 24,836 cases	Death from circulatory disease	During 1991–1994 and 1998–2000, when Russia faced severe circumstances, blood concentration of alcohol among cases who died from circulatory diseases was critically high

(*continued*)

Table 7.3 (continued)

Micro-level data				
	Approach	Data, Years etc.	Dependent variable	Explaining variable
Zaridze et al. (2009b)	Descriptive (Case-Control Study)	1990–2001, Tomsk, Barnaul and Vysk cities, Mortality by Causes of Death, 43,082 caes; 5,475 controls.	Mortality by causes of death	Mortality for people who took large amount of alcohol is significantly high
Leon et al. (2009)	Descriptive	2003–2005, Survey in Izhevsk, 1,750 cases	Death from circulatory disease	Blood concentration of alcohol is critically high for cases dead from circulatory diseases
Denisova (2010)	Cox Hazard	1994–2007, RLMS, 27,723 cases	Death	Amount of alcohol taken
Pridemore et al. (2010)	Descriptive (Case-Control Study)	2003–2005, Survey in Izhevsk, 1,559 cases; 1,635 controls	Death	34 % of cases took non-beverage alcohol; only 4 % for controls

Source: Prepared by authors
Note: Results for other explaining variables are omitted and only those concerning alcohol consumption are described

between mortality and alcohol in Russia was conducted for this section.[19] The steps taken are as follows:

(1) Papers with both <"Russia" or "Soviet" or "USSR"> and <"mortality"> in their titles are searched for by the Web of Knowledge (Thomson Reuters) online database, which produced a total of 192 papers;
(2) Analytical results, which used exactly the same explaining and explained variables, are chosen and grouped;
(3) Correlation coefficients or risk ratio are combined by each group of the research results.

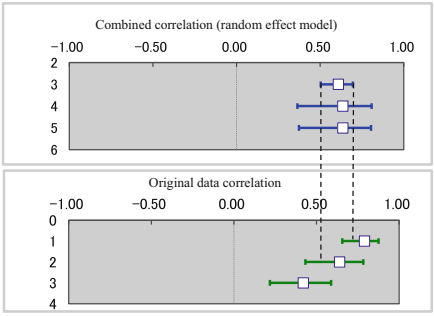
As a result, eight papers are selected. Of which three calculated correlation coefficient between alcohol consumption and suicide ratio by country level data and the other three examined correlation between alcohol poisoning death ratio and suicide ratio.[20] The remaining two investigated the relationship between inappropriate drinking patterns and mortality by using microdata, which enabled the compilation of a two-by two matrix and the calculation of a risk ratio.[21]

The results of combined correlation and combined risk ratio are presented in Tables 7.4a–c. All the combined indicators, especially those for macrodata based analyses, show much narrower 95 % confidence intervals than the original research, which means that statistical significance of the effects of alcohol consumption on Russian mortality is confirmed more strongly than the original studies. Data used in these studies involved long-term time series data, cross-sectional data by region (federal subject) and microdata of more than 2,500 individuals. The combined indicators clearly show the robustness of the analytical results of previous research on the relationship between alcohol and mortality in Russia.

Table 7.4A Meta-analysis result (1). Macro-data based studies: alcohol poisoning rate vs. suicide rate

Combining methods	No	Combined Correlation	95% confidence interval	
			min	max
general variance-based method	3	0.6085	0.5039	0.6956
DerSimonian-Laird method	4	0.6358	0.3640	0.8078
restricted maximum likelihood method	5	0.6355	0.3728	0.8039

Graphical View of 95 % Confidence Intervals: Combined and Original Correlation

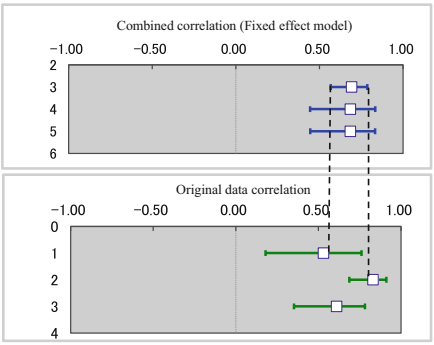


Source: Prepared by the author

Table 7.4B Meta-analysis result (2). Macro-data based studies: volume of alcohol consumption vs. suicide rate

Combining methods	No	Combined Correlation	95% confidence interval	
			min	max
general variance-based method	3	0.6922	0.5671	0.7861
DerSimonian-Laird method	4	0.6846	0.4442	0.8331
restricted maximum likelihood method	5	0.6847	0.4452	0.8328

Graphical View of 95 % Confidence Intervals: Combined and Original Correlation



Source: Prepared by the author

Table 7.4C Meta-analysis result (3). Micro-data based studies: inappropriate drinking patterns vs. probability of death

2*2 Table		
	Effective(+)	Not Effective(−)
Case(+)	a	b
Control(−)	c	d

	2*2 Table					Risk Ratio			
								95% confidence	
Studies	a	b	c	d	n	RiskRatio	LogRisk	Min	Max
Pridmore et al (2010)	690	192	732	1237	2851	2.10	0.00	1.97	2.25
Leon et al (2007)	652	167	684	1143	2646	2.13	0.00	1.99	2.28

			95% confidence interval	
Combining methods	No	Combined risk ratio	min	max
general variance-based method	3	2.1151	2.0160	2.2191
DerSimonian-Laird method	4	2.1151	2.0160	2.2191
restricted maximum likelihood method	5	2.1153	0.6957	6.4319

Source: Prepared by the author

7.4.3 Possible Factors Affecting Mortality

It cannot be concluded, however, that factors other than alcohol consumption do not need to be considered. Twigg (2008) pointed out how smoking became widespread after the breakup of the Soviet Union, and researchers such as Perlman and Bobak (2008) and Denisova (2010) showed that smoking significantly raised the probability of death. Meanwhile, Leon et al. (2007) found that deceased people with inappropriate histories of alcohol consumption had very low educational backgrounds.[22] Similarly, Malyutina et al. (2004) studied social surveys conducted between the mid-1980s and the mid-1990s, and found that the higher a person's level of education, the less alcohol they consumed. Andreev et al. (2009) unearthed mortality statistics from 1970–1989, which showed that manual laborers had relatively higher mortality rates. Pridemore et al. (2010) pointed out that a higher proportion of people whose death was caused by alcohol had

lost their spouses or partners through death or estrangement than people who had died of other causes, and suggested that mortality probability may be related not only to psychological factors but also to diet and other lifestyle aspects. If lifestyles are to be considered, it will be necessary to take into account a wide range of factors, such as a high-fat diet, the increase in obesity that stems from such a diet, and Russia's cold climate. Huffman and Rizov (2010), using data from the RLMS-HSE, demonstrated a significant relationship between fat consumption and obesity among Russians.[23] Revich and Shaposhnikov (2008) used macrodata from different regions to investigate the impact of air temperature on lifespan, and they found that low temperatures significantly reduce mean lifespan.

However, it cannot have been the case, for example, that the Soviet Union was getting continuously colder, or that air temperatures dropped during the transitional period.[24] During the Soviet era, levels of education, seen in terms of figures such as the percentage of people graduating from university, increased continuously. Moreover, the proportion of workers engaged in manual labor is also believed to have been on a downward trend. From the 1960s to the 1980s, when the economy was growing continuously, it is hard to imagine that the nutrition of people living in the Soviet Union deteriorated. It is difficult to conclude that such factors can explain: (1) the downward trend in mean life expectancy at birth from the 1960s to the 1980s; (2) its increase in the late 1980s; and (3) its sharp fall in the early 1990s following the collapse of the Soviet Union. Obviously, a single factor, alcohol consumption, cannot explain all the dynamics of mortality in Russia, and the above-mentioned factors have probably also played a role. However, it seems to be difficult to deny that alcohol consumption is a more persuasive factor for explaining the trends in mean life expectancy at birth in Russia than these other factors.

7.4.4 Clues from Statistics on the Causes of Death

To assess whether the above interpretation is reasonable, there is one more thing to confirm from descriptive statistics. Among the causes of death, those that are closely connected to alcohol consumption are "diseases of the circulatory system" and "external causes" (Pridemore 2002; Nemtsov 2002; Brainerd and Cutler 2005; Zaridze et al. 2009a). Figure 7.5 shows

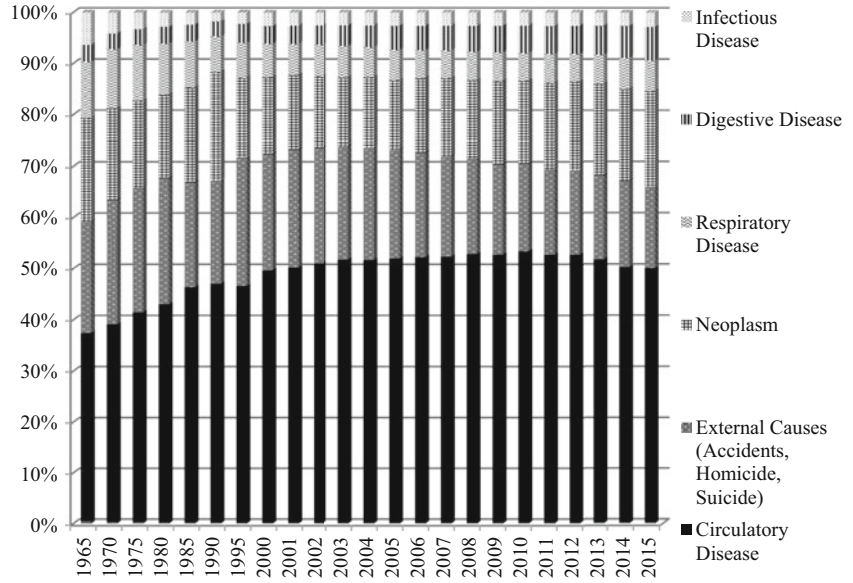


Fig. 7.5 Death by causes of death for males in Russia (*Source*: Prepared by the authors from Rosstat, *Demograficheskii ezhegodnik Rossii* (Demographic Yearbook of Russia), various years (in Russian))

the long-term trends in the proportion of deaths caused by various factors in (the current territory of) Russia. It is clear that between 1965 and 1990 the proportion of deaths attributable to diseases of the circulatory system increased continuously, and that between 1965 and 1980 the proportion of deaths due to external factors was high. This is consistent with the possibility that high mortality rates and low mean life expectancy at birth in the Soviet Union were related to alcohol consumption.

It is also clear that following the collapse of the Soviet Union at the end of 1991, the proportion of deaths resulting from external factors, which had declined between 1985 and 1990, shot up, and remained at a high level until the beginning of the 2000s, and that from 1995 onwards the proportion of deaths due to diseases of the circulatory system increased sharply and thereafter stayed at a high level.

If, during the transition to capitalism, levels of medical care and hygiene had deteriorated, the number of deaths due to contagious and infectious diseases would have increased. Moreover, such diseases would have affected mortality rates among those with weak immune systems,

such as babies and infants rather than adults. However, the proportion of deaths due to infectious diseases did not exhibit any marked increase, and the infant mortality rate was not seen to rise sharply or to remain at a high level.[25] As a result, the view that the increase in psychological stress accompanying the transition to capitalism, the resultant rise in alcohol consumption, and the subsequent increase in deaths due to diseases of the circulatory system and external factors contributed to the rise in mortality rates seems to be consistent with the facts.

7.5 Conclusion

Through a survey of the literature and an explanation of descriptive statistics, this chapter has focused on the dynamics of mortality rates, which is one of the population issues facing Russia. It concluded that factors such as a deterioration in levels of medical care or an increase in environmental pollution could not easily explain the rise in mortality rates throughout the Soviet era and the fluctuating mortality rates seen after the collapse of the Soviet Union. Previous research explored the relationship between Russians and alcohol, which had been described anecdotally in literary works, the media, and so on, and demonstrated the significance of alcohol consumption as a factor exerting a decisive influence on long-term changes in mortality rates and the probability of death in Russia since the transition to capitalism.[26]

The aim of this chapter was to use previous research to identify determinants of mortality rates, an economic variable that affects the size of Russia's population. It is impossible to explain mortality solely in terms of socio-economic factors, so the survey of medical literature conducted here was essential. Nevertheless, when thinking about the background to the problem, that is, why Russians consume so much alcohol in an inappropriate way, it is not enough to consider, for example, only cultural or ethnic aspects. Rather, it is more natural to assume that the turmoil of Russia's transition to capitalism had an impact on the socio-economic situation. This is the next issue to be explored and the relationship between (1) socio-economic environment of individuals and their alcohol consumption and (2) alcohol consumption and mortality should be examined by using microdata.

The Russian federal government is looking for ways to tackle this situation. In 2005, when Vladimir Putin was president, a series of projects, called "Priority National Projects,"[27] were launched. One of them was a health-focused project, aimed at improving levels of medical care, and it led to a massive increase in federal government spending on medical care. The project focused on improving advanced medical care by enhancing frontline standards of treatment and investing in medical equipment. Later, the list of issues it was charged with addressing was expanded to encompass better treatment in the case of accidents and diseases of the circulatory system, medical system reform, advocating lifestyle improvements, a focus on preventative medicine, and so on.[28]

In the second half of the 2000s tougher and more direct restrictions were placed on alcohol. In 2006 the law was changed to require alcohol denaturant to be added to alcohol that was not for drinking purposes, which demonstrates that there was a will to put a stop to the consumption of alternative forms of alcohol.[29] In January 2010 a minimum price was set for vodka, with the aim of curbing alcohol consumption.[30] Although more time will be needed to assess whether these policies have been effective, Fig. 7.5 shows that the proportion of deaths resulting from external factors has been falling continuously since 2005. Moreover, the "advocating of lifestyle improvements," one of the measures included in the project, is clearly important given the behavior of Russians with respect to alcohol described in this chapter. The direction the Russian government is moving in is therefore probably the right one.

A key issue in this chapter is that almost all the literature examined is in English. The papers reviewed have not only been from the fields of economics and sociology. The main reasons for this are that a huge number of those dealing with alcohol and the mortality rates of Russians were published in medical journals, and that Russian-language medical papers have not been compiled and accessibility to them is limited. The Russian-language papers dealt with in this chapter have mainly been from the fields of demographics or sociology, and most of them were published in books rather than academic journals. However, medical researchers such as Nemstov and Razvodovsky, who are the main debaters concerning the analysis of causes of death in the Soviet Union (in Russia, the Belarus, etc.) and have written numerous papers, and Andreev and Vishnevskii,

who are the leading researchers on demographics in Russia, have presented their findings both within Russia and overseas and published many English-language papers in journals.[31] This implies that problems with the scope of available literature are diminishing. Nevertheless, there is no doubt that further exploration of the Russian-language literature with analytical approaches remains a challenge.

Notes

1. The last time Italy's TFR was higher than that required to keep its population stable (population replacement level) was 1976–1977 (2.11/1.98). In the case of Japan, the last time this happened was 1973–1974 (2.14/2.05). The natural decline in population began at least 15 years and 30 years, respectively, after the TFR fell below the population replacement level in these two countries.
2. Detailed information about this survey can be found on the RLMS-HSE website: http://www.cpc.unc.edu/projects/rlms-hse.
3. A search of the *Web of Knowledge* (Thomson Reuters) online database produced a total of 192 papers with either <"Russia," "Soviet," or "USSR"> and <"mortality"> in their titles, and more than half of them had been published since 2000.
4. A serious, yet well-known problem that needs pointing out is that the Soviet and Russian definition of infant mortality rate differs from that employed by the World Health Organization (WHO). If the United Nations and WHO definition was applied, infant mortality rates in the Soviet Union and Russia would be even higher, further emphasizing the seriousness of the problem.
   The Soviet Union defined live births as cases in which the baby was born after at least 28 weeks gestation, was at least 35 cm long, weighed at least 1,000 g, and could breathe unaided, and cases in which the baby was born after 28 weeks of less gestation, was 35 cm long or less, was 1,000 g or less, but lived for at least seven days. This made the number of live births lower than they would have been under the WHO definition (which states that regardless of the period of gestation or the life period of the infant, a birth is considered live if the baby shows signs of life after birth, such as breathing, a heartbeat, or muscular movement, see United Nations 2001), which in turn made the infant mortality rate statistics lower than in other countries. In other words, if the WHO definition had been applied to the Soviet Union's infant mortality rates, they would definitely have been higher than Soviet government statistics suggested. See Davis and Feshbach (1980) and Goskomstat Rossii (2000), pp. 51–54. Although the Russian Federation

declared that they adopted the WHO definition on January 1, 1993, Russian Federation Ministry of Health Ordinance No.490 (December 4, 1992) instructed birth registry organizations to define live births using the same weight criteria as in the Soviet era (in principle, live births would be cases in which the baby weighed at least 1,000 g (or less than 1,000 g in the case of multiple births), the same weight limit employed by the Soviet Union, or less than 1,000 g if the infant survived for seven days or longer), which was obviously at odds with the WHO definition.

5. The search was conducted using the *Web of Knowledge* online database.
6. Microdata reveals that mean alcohol consumption among women is about 1/5 (estimate based on forms from the RLMS-HSE) that of men, and its impact on mean life expectancy at birth for females also differs greatly from that for men.
7. In 1985 the only countries with more than 3.3 doctors per 1,000 people were Soviet republics and Mongolia.
8. The figures were 2.2 in the USA and 1.9 in Japan. See World Bank, *World Development Indicators*.
9. However, Ivaschenko (2005), using data such as mortality rates in different regions of Russia following the collapse of the Soviet Union, found that healthcare investment had a significant, positive impact on lifespan so, needless to say, medical care can still be improved.
10. Also see Rosstat, *Rossiiskii statisticheskii ezhegodnik* (Russian Statistical Yearbook), various years (in Russian).
11. ZAGS is an organization that registers matters such as births, deaths, marriages, and divorces. See endnote 29 of Chapter 2.
12. See Endnote 4. Issues relating to infant mortality have still not been resolved.
13. For example, Gavrilova et al. (2008) studied autopsy results between 1991 and 2005 for two cities in European Russia, Kirov and Smolensk, and found that at least 89 % of inaccurate classifications were the result of decomposition of the corpse.
14. Stickley et al. (2009) compared deaths due to alcohol poisoning in Russia (the Soviet Union) in the 1860s and 1920s. The phenomenon has also been described frequently in recent years, for example in *The Times* (January 5, 2010), *New York Times* (April 16, 2011), and *Moskovskie novosti* (October 07, 2011) (in Russian).
15. Other factors that make this problem even more serious are the fact that the percentage of alcohol by volume in liquids such as cologne is far higher than that of alcoholic beverages (with a percentage of alcohol by volume of 90 %, it is much purer than alcoholic beverages, which makes it far more dangerous to consume) and the fact that the price per unit of pure ethanol in such liquids is lower than in alcoholic beverages. Note that according to returned-form data from the RLMS-HSE, at least 15

% of men of working age consumed illegally produced spirits (*samagon*) in 2004, for example (authors' own calculation).

16. A lot of this research links alcohol consumption to deaths due to external factors, such as homicide and suicide. The reason such data can be used is that an autopsy is always performed in cases such as homicide, meaning that blood alcohol levels can be obtained.
17. During the Soviet era, the government had a monopoly on the sale of vodka, and this was lifted in 1992. See <The Decree on the Abolition of the State Monopoly on Vodka in the Russian Federation>, June 7, 1992. At the very least, it is well known that official statistics failed to adequately reflect actual alcohol consumption in modern Russia.
18. Although some use the rate of death due to alcohol poisoning as the explanatory variable, this is used as a proxy variable for binge drinking.
19. For details of the analytical methods, see Borenstein et al. (2009).
20. Alchohol poisoning is treated as a proxy for frequenct binge drinking.
21. Binge drinking, too much consumption volume, and so on are taken into consideration.
22. Deceased persons who frequently engaged in binge drinking or drank alternative forms of alcohol, that is, alcohol not meant for drinking.
23. However, mean BMI (Body Mass Index) among Russians did not increase between 1995 and 2004.
24. As Hill and Gaddy (2003) have pointed out, during the Soviet era the population was heavily concentrated in the north, though it is difficult to conclude that this factor could have been powerful enough to reduce mean life expectancy at birth. Moreover, between 1960 and 1970, and then again following the collapse of the Soviet Union, their "temperature per capita" indicator increased a little, which is inconsistent with trends in mean life expectancy at birth.
25. For example, in Russia in the decade following the collapse of the Soviet Union, during which more than two million people died each year, the number of people who died from infectious diseases was only 36,214 in 2000, the year for which this figure was the highest. In that year the total number of deaths was 2.22 million. See Goskomstat Rossii, 2001. In the ten years from 1991, the annual fluctuation in the number of deaths was over 300,000 people, and figures of less than 40,000 deaths annually from infectious diseases, even during peak years, mean that such deaths cannot have been behind rising mortality rates in Russia during the 1990s.
26. It should be added, however, that it is not the case that alcohol consumption has only negative effects. Using data from the RLMS-HSE, Tekin (2004) found that people who consumed a moderate amount of alcohol (once per week) were significantly more likely to be in employment and more likely to earn higher wages than those who consumed no alcohol at all. This may be because alcohol increases opportunities for human inter-

action. Moreover, Perlman and Bobak (2008) also found that people who consumed a moderate amount of alcohol (once per week) were significantly more likely to be in employment and had lower mortality rates than those who consumed no alcohol at all.

27. Details can be found on the website of the Council for Implementation of the Priority National Projects attached to the President of the Russian Federation (http://www.rost.ru, accessed on April 1, 2016).
28. This information is also contained in the descriptions of individual projects found on the website of the Council for Implementation of the Priority National Projects attached to the President of the Russian Federation.
29. Revised version of N171-F3, a federal law governing the production and sale of ethanol, spirits, alcohol, and foods containing spirits, as well as the consumption of alcoholic beverages.
30. *RIA Novosti*, January 13, 2010. (in Russian). In this article, then-Prime Minister Putin stated an objective of halving per capita alcohol consumption by 2020.
31. Professor Nemtsov works at the Russian Federation Ministry of Health and Social Affairs' Moscow Research Institute of Psychiatry, while Professor Razvodovsky is a researcher at the Hrodna State Medical University in Belarus. Professor Andreev works at the Max Planck Institute (in Germany), while Professor Vishnevskii, who spent many years at the Russian Academy of Science's Central Economic Mathematical Institute, moved in the second half of the 2000s to the Higher School of Economics.

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8

Interregional Migration: Analysis of Origin-to-Destination Matrix

Kazuhiro Kumo

8.1 Introduction

Trends in fertility and mortality, as investigated in previous chapters, determine the total population of a country. The topic discussed in this chapter is internal population migration, which does not affect the increase or decrease of a country's total population but does determine the territorial allocation of a population within a country. In terms of territory Russia is the world's largest country, in fact, it is more than 45 times as large as Japan but with a population 1.2 times that of Japan's. Because of the limited size of population in comparison to its vast territory, population distribution has a greater importance than in the case of a small country.

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This chapter presents an analysis of the factors behind population migration between domestic regions in the area covered by the modern Russian Federation during the almost quarter-century period between 1990 and 2013. This period began with the Soviet era, during which interregional migration was restricted under the domestic passport and resident permit systems, followed by the turmoil of the government-system transition period after the collapse of the Soviet Union. The currency crisis of 1998 marked rock bottom for the Russian economy, which recovered and grew steadily throughout the rest of the period. Interregional population migration plays an economic role in evening out the supply and demand for labor between regions as it constitutes the movement of factors of production, and a great deal of research has been conducted on it in both advanced and developing countries (Greenwood 1991, 2010; Greenwood and Hunt 2003). However, interregional population migration under the former planned economy system, which was characterized by the control of population migration, has attracted little interest. It is known that the Soviet Union controlled interregional migration through a system of domestic passports and that residency in large cities required a permit, not just registration (Matthews 1993).[1] If interregional population migration is determined by government policy, the factors behind it are also politically determined. However, verifying whether this was indeed the case has been extremely difficult because data was not made public during the socialist era. Data on interregional population migration since the collapse of the Soviet Union has also been heavily restricted and, in the 1990s in particular, research in a wide range of areas saw limited progress.

The restrictions on data have begun to be eliminated and although access to internal materials at Rosstat (the Russian Federal State Statistics Service) cannot be said to be unrestricted, it is no longer impossible, and a small number of studies employing them have started to appear (Andrienko and Guriev 2004; Kumo 2007; Vakulenko et al. 2011; Guriev and Vakulenko 2015). This analysis has been influenced by this situation, and uses a population migration matrix for origins and destinations at the federal division level (i.e. regional constituents or federal subjects of Russia), recorded for each of the 24 years from 1990 to 2013, to analyse determinants of interregional population migration patterns in a period that includes the tail-end of the Soviet era.

As stated above, interregional population migration constitutes the movement of factors of production, and given Russia's vast land area and heavily

distorted spatial population distribution (Dmitrieva 1996), it is highly significant. Hill and Gaddy (2003) showed that the policy of heavily developing remote regions through distributed resource development and industrial location, the construction of military bases, and so on, caused a distortion in the distribution of population. Because of this, the collapse of the Soviet Union and the transition to capitalism must have wrought major changes to regional population distribution patterns. This phenomenon also hints at the advance of the transition process in Russia. To examine this, it is essential to perform a comparison using detailed population migration statistics, not just for the new Russia but also for the Soviet era. Interregional population migration in the Soviet Union was thought to be affected by government incentives for development. On the other hand, other researchers have stressed the limitation of policy incentives. To discuss this, it is necessary to clarify whether factors regarded as policy incentives had an impact during the Soviet era, and whether that role was lost following the Soviet collapse. Until now, however, previous research performing that kind of analysis has not existed, and the purpose of this chapter is to fill that gap.

8.2 Interregional Population Migration in the Soviet Union and Russia

It has been frequently pointed out that during the Soviet era the obligation to carry a domestic passport and the existence of a permit system rather than a registration system in urban areas affected regional population distribution (Matthews 1993). By designating the work locations of new university graduates and setting high wage rates in specific regions (Ivanova 1973), the Soviet government tried to distribute the labor force in a strategic fashion. This was fairly successful in terms of promoting resource development in the Extreme North[2] and Russia's far east regions (Perevedentsev 1966). Registration of residence is a condition of applying for various social securities, and because of that the Soviet Ministry of Internal Affairs was aware of what was happening with interregional population migration.[3] Therefore the Ministry's data is used in this chapter.

The collapse of the Soviet Union changed this situation. The constitution of the Russian Federation afforded freedom of movement, and soon after the collapse of the Soviet Union a federal law abolishing the residence permit sys-

tem was enacted.[4] This chapter begins by examining what kinds of changes this brought to interregional population migration patterns. If a situation in which the distribution of population was determined by government policy was replaced by one of freedom of movement, a clear contrast in the direction of migration can be expected to have arisen. In fact, as Fig. 8.1 shows, if interregional population migration patterns in 1985, during the final period of stability in the Soviet era, are compared with those following the collapse of the Soviet Union, the differences are clear. During the Soviet era population inflows occurred in the Russia's far east and the regions in the Extreme North, most of which are located in the Arctic, which demonstrates to a great extent the impact of policy incentives (Fig. 8.1A). Immediately after the collapse of the Soviet Union, however, there was a massive population outflow from the Russia's far east and northern regions and a population inflow to the southern part of European Russia, which had experienced population outflows during the Soviet era (Fig. 8.1B). In addition, during the 2000s, when the new Russia exhibited sustained economic growth, inflows into regions

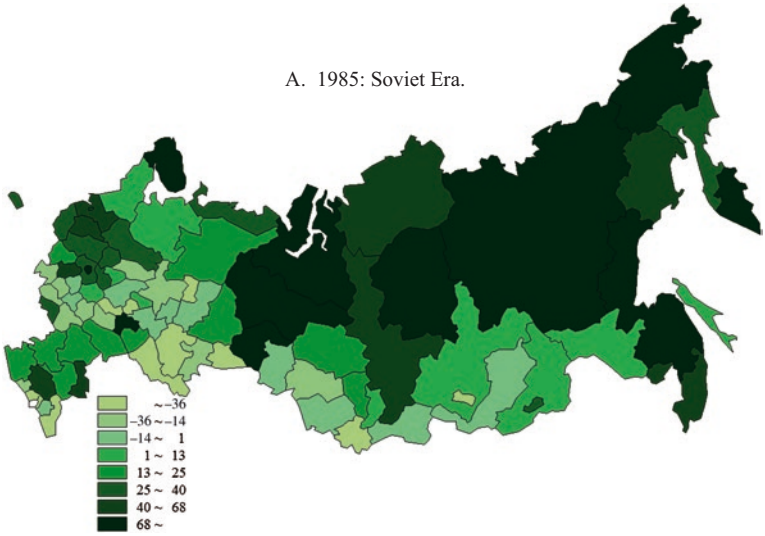
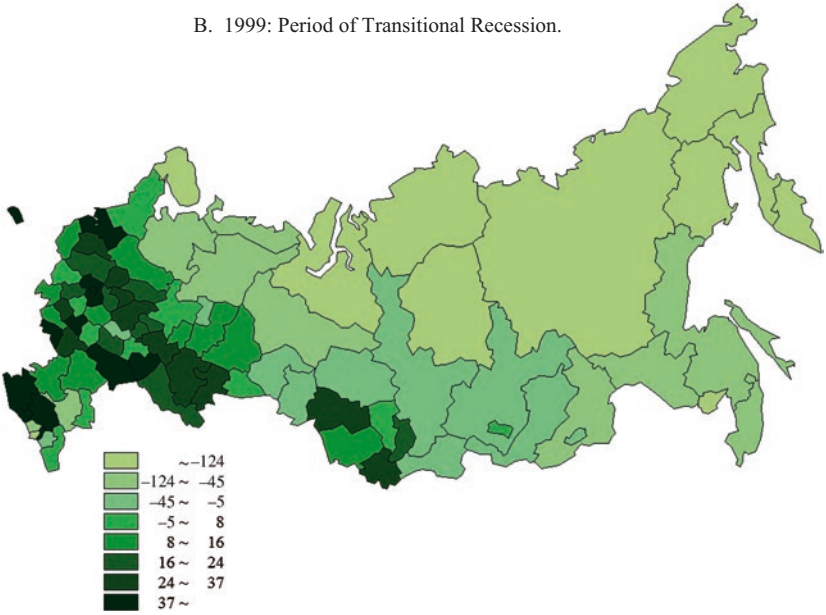


Fig. 8.1 Interregional population migration in Russia: net migration rate (/10000 person) (**A**) 1985: Soviet Era. (**B**) 1999: Period of Transitional Recession. (**C**) 2010: Period of Economic Growth (*Source*: Prepared by the author from Goskomstat/Rosstat, *Regiony Rossii* (Regions of Russia), various years.)

B. 1999: Period of Transitional Recession.



C. 2010: Period of Economic Growth.

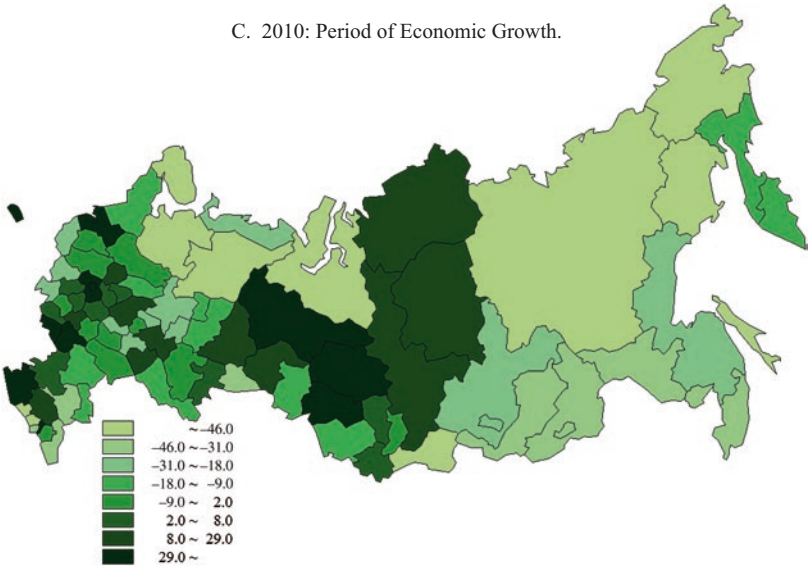


Fig. 8.1 cont.

that are located relatively far north but produce oil, gas, and non-ferrous metals (Tyumen Oblast, Khanty-Mansi Autonomous Okrug, Krasnoyarsk Krai, and so on) were once again observed (Fig. 8.1C).

To examine this more closely, the chapter looks at the distribution of birthplaces (origins) and current places of residence (destinations) using federal districts, which are the administrative divisions in modern Russia, at the times of the 1989 (nearly the end of the Soviet era), 2002, and 2010 censuses. This is not ordinary population migration data, which is used for the later analysis, but data that shows the results of life movement at each point in time. According to this data, in 1989, during the final phase of the Soviet era, there were more than 760,000 people living in the Central Federal District (the region centred on Moscow) who had been born in Siberia or the Far East. Conversely, 1.2 million people had been born in the Central Federal District but were now living in Siberia or the Far East (Table 8.1 Panel A). In other words, the number of "people born in Siberia or the Far East but living in European Russia" was far lower than the number of "people born in European Russia but living in Siberia or the Far East." By the time of the 2002 population census, the number of people born in Siberia or the Far East but living in the Central Federal District had reached one million, while the number of people born in the Central Federal District but living in Siberia or the Far East had shrunk to 600,000 (Table 8.1 Panel B). In the 2010 census, meanwhile, the number of people born in Siberia or the Far East but living in the Central Federal District was 950,000, while the number of people born in the Central Federal District but living in Siberia or the Far East was less than 420,000, meaning that the former figure had reached more than double the latter (Table 8.1 Panel C).[5] In other words, it can be surmised that the opposite to what happened during the Soviet era occurred. People from Siberia and the Far East began moving to European Russia, while a significant proportion of people from European Russia who had been living in Siberia or the Far East returned to European Russia. A comparison of origin-to-destination tables for federal districts reveals that, between 1989 and 2002 and between 2002 and 2010, only the Central Federal District was accepting people from all regions at a higher rate than the average rate of change for all regions or was keeping that decline lower than the average for all regions (Table 8.1 Panel D and Panel E). This indicates that the Central Federal District was attracting relatively large numbers of people, not only from Siberia and the Far East, but from all over Russia.

Table 8.1 Distribution of the place of birth and the place of residence by population census data (in thousand)

A. Census in 1989		Place of residence							
		Central	North-West	South	Caucasus	Volga	Ural	Siberia	Far East
Place of birth	Central Federal District	31,623	1,565	769	161	978	555	***686***	***492***
	North-West Federal District	628	10,436	169	46	283	165	195	117
	South Federal District	426	206	10,153	231	245	232	173	199
	North-Caucasus Federal District	154	80	306	6,258	82	123	68	71
	Volga Federal District	1,473	759	635	146	27,447	1,872	943	493
	Ural Federal District	266	158	171	49	443	9,180	365	162
	Siberia Federal District	***496***	252	354	101	390	505	18,819	742
	Far East Federal District	***268***	124	144	45	187	116	387	5,116

(*continued*)

Table 8.1 (continued)

B. Census in 2002		Place of residence							
		Central	North-West	South	Caucasus	Volga	Ural	Siberia	Far East
Place of birth	Central Federal District	29,818	1,038	578	112	721	322	***397***	***232***
	North-West Federal District	662	9,768	163	43	249	102	123	64
	South Federal District	431	166	9,930	192	208	130	116	93
	North-Caucasus Federal District	283	90	367	7,529	110	96	66	43
	Volga Federal District	1,358	565	524	119	27,163	1,182	580	254
	Ural Federal District	316	142	180	47	378	8,873	260	91
	Siberia Federal District	***620***	241	346	95	369	363	16,707	480
	Far East Federal District	***384***	133	183	45	199	98	316	4,758

C. Census in 2010		Place of residence							
		Central	North-West	South	Caucasus	Volga	Ural	Siberia	Far East
Place of birth	Central Federal District	29,575	801	443	87	563	231	***266***	***150***
	North-West Federal District	627	9,387	140	30	208	80	89	40
	South Federal District	465	154	10,131	177	177	107	88	69
	North-Caucasus Federal District	280	90	341	8,221	84	97	47	32
	Volga Federal District	1,346	487	432	82	25,859	996	425	181
	Ural Federal District	322	132	168	38	350	8,682	217	71
	Siberia Federal District	***587***	207	297	68	292	319	16,061	391
	Far East Federal District	***364***	122	169	35	170	82	273	4,613

(*continued*)

Table 8.1 (continued)

D. Growth rate (in percent) between 1989–2002 (Average: –12.14 %)		Place of residence							
		Central	North-West	South	Caucasus	Volga	Ural	Siberia	Far East
Place of birth	Central Federal District	***–5.71***	–33.72	–24.88	–30.00	–26.35	–42.04	–42.12	–52.97
	North-West Federal District	***5.45***	–6.40	–3.49	–6.53	–12.11	–38.30	–36.72	–45.80
	South Federal District	***1.07***	–19.54	–2.20	–16.89	–15.11	–44.18	–32.92	–53.15
	North-Caucasus Federal District	***83.83***	12.79	19.90	20.31	33.67	–21.76	–2.43	–39.41
	Volga Federal District	***–7.79***	–25.56	–17.47	–18.49	–1.03	–36.87	–38.51	–48.61
	Ural Federal District	***18.85***	–10.10	5.38	–4.36	–14.67	–3.34	–28.91	–43.62
	Siberia Federal District	***25.11***	–4.16	–2.13	–6.51	–5.44	–28.16	–11.22	–35.29
	Far East Federal District	***43.09***	7.52	26.54	1.00	6.34	–15.38	–18.45	–7.00

E. Growth rate between 2002–2010) (Average: –14.64 %)		Place of residence							
		Central	North-West	South	Caucasus	Volga	Ural	Siberia	Far East
Place of birth	Central Federal District	***–0.81***	–22.78	–23.25	–22.97	–21.81	–28.14	–33.07	–35.20
	North-West Federal District	***–5.28***	–3.90	–14.24	–28.50	–16.48	–21.40	–27.75	–37.85
	South Federal District	***7.83***	–7.24	2.03	–7.87	–14.72	–17.38	–24.31	–26.27
	North-Caucasus Federal District	***–0.92***	–0.50	–7.00	9.19	–23.57	1.17	–28.64	–26.40
	Volga Federal District	***–0.91***	–13.79	–17.64	–30.75	–4.80	–15.70	–26.75	–28.43
	Ural Federal District	***2.01***	–7.25	–6.57	–20.11	–7.34	–2.16	–16.51	–22.59
	Siberia Federal District	***–5.37***	–14.23	–14.15	–28.64	–20.74	–12.14	–3.87	–18.58
	Far East Federal District	***–5.01***	–8.42	–7.79	–22.72	–14.43	–16.77	–13.45	–3.04

Source: Prepared by the author from TsSU SSSR, *Itogi vsesoyuznoi perepisi naseleniya 1989 goda*, tom 12 (Results of All-Union Population Census in 1989, Vol.12), Moscow, TsSU SSSR; Rosstat, *Itogi vserossiiskoi perepisi naseleniya 2002 goda*, tom 10 (Results of All-Russian Population Census in 2002, Vol.10), Statistika Rossii, 2005; Rosstat, *Itogi vserossiiskoi perepisi naseleniya 2010 goda*, tom 8 (Results of All-Russian Population Census in 2010, Vol.8), Statistika Rossii, 2013. Recalculated based on the definition of regional units in 2010 by the author.

These tables are not difficult to interpret. Throughout the Soviet era, Russia's population and economy were concentrated in the European portion of the country (Fig. 8.2; Dmitrieva 1996). During the Soviet era, the socialist government was able, through its development policies, to encourage the flow of labor to remote regions, such as the Russia's far east and Siberia (Hill and Gaddy 2003). However, after the collapse of the Soviet Union it can be inferred that the direction of the flow reversed, with people moving to the Central Federal District, which contains Moscow, and surrounding parts of European Russia, which was already a very densely populated region. During the Soviet era, regional economic disparities were curtailed through investment policies focused on income redistribution and surrounding regions, but after the beginning of transition to capitalism, a rapid increase in disparities occurred. Figure 8.3 shows that at the same time as the Soviet collapse (in 1991) there was a dramatic increase in regional disparities.

It is possible to describe such inferences as the above. However, the question of what kinds of changes were seen in the determinants of interregional population migration during the Soviet era and in the new Russia following the collapse of the Soviet Union has yet to be studied. Therefore, the analysis in this chapter focuses on that aspect.

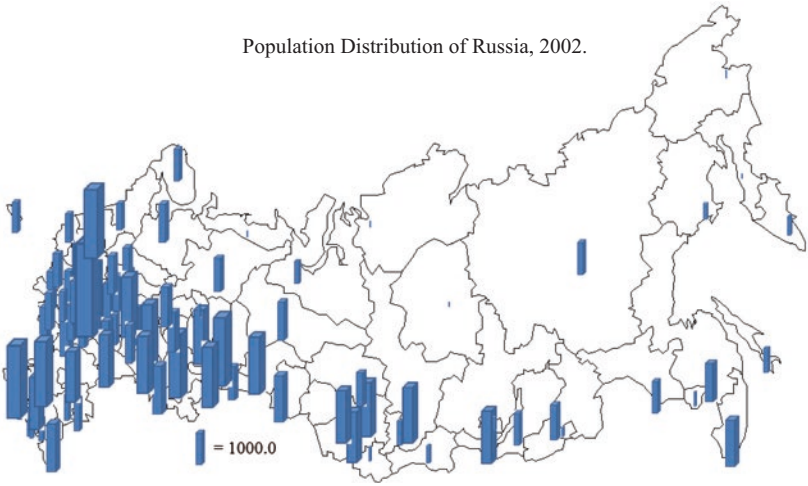


Fig. 8.2 Population distribution in Russia, 2002, in thousands (Prepared by the author from Rosstat, *Regiony Rossii* (Regions of Russia) 2004, 2005, Moscow)

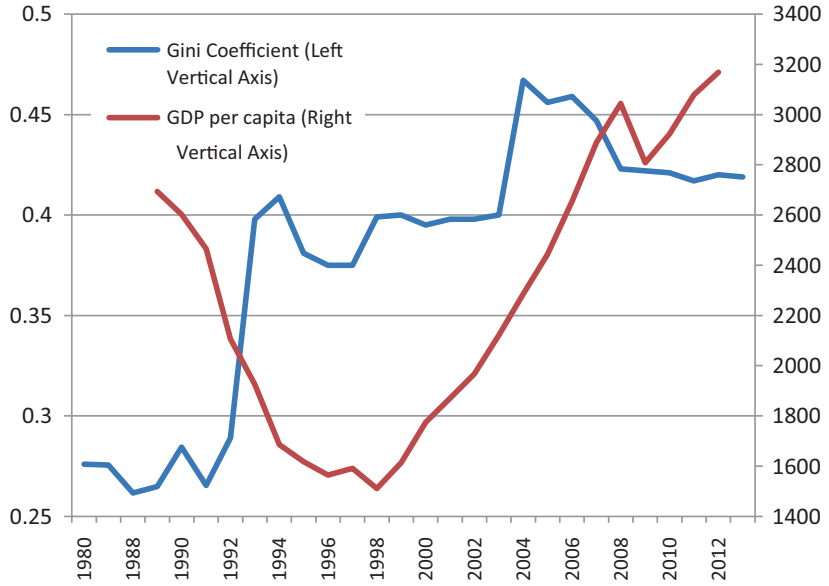
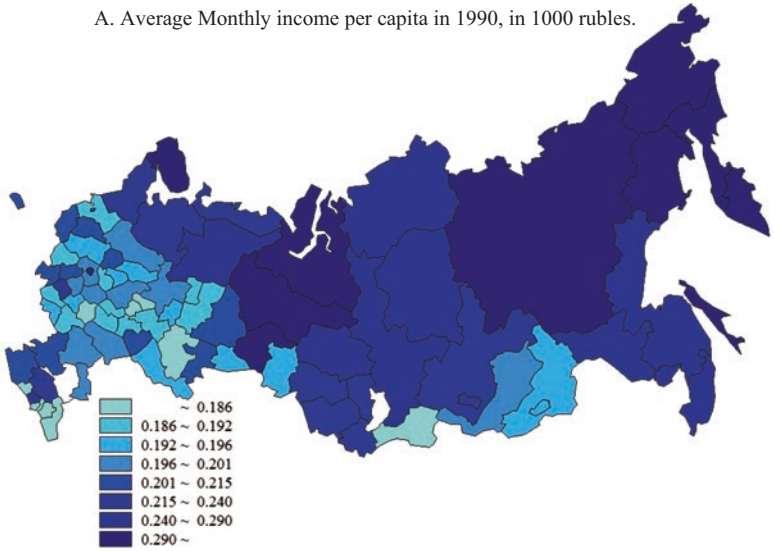


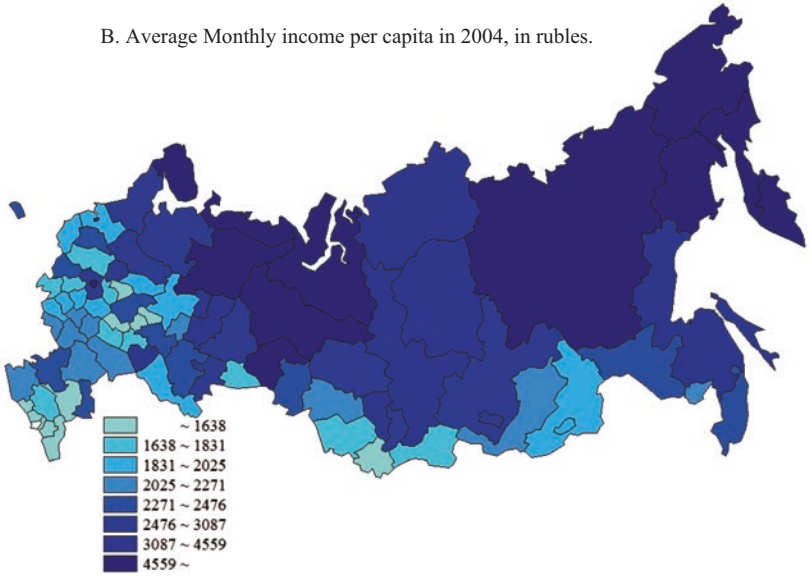
Fig. 8.3 Income disparity and gross domestic products per capita in Russia, 1980–2013 (*Source*: Prepared by the author from Braithwaite (1995); Rosstat, *Sotsial'noe polozhenie i uroven zhisni naseleniya Rossii* (Social Situations and Living Standard of Population in Russia), various years; Rosstat, *Regiony Rossii* (Regions of Russia), various years)

It must be added that high-income regions are not concentrated in European Russia. With the exception of the two largest cities in European Russia, namely Moscow and Saint Petersburg, the Extreme North and the Russia's far east/Siberia actually contain regions with higher incomes. In fact, the distribution of high-income regions has not changed significantly since the Soviet era (Fig. 8.4). Apart from Moscow and Saint Petersburg, all such regions are ones that produce a lot of energy resources, such as oil and natural gas, or non-ferrous metals, such as precious metals (Tyumen Oblast, Yamalo-Nenets Autonomous Okrug, Khanty-Mansi Autonomous Okrug, Krasnoyarsk Krai, Sakhalin Oblast, and Sakha Republic) or ones with extremely small populations (Magadan Oblast, Chukot Autonomous Okrug, Kamchatka Krai, Komi Republic, and Murmansk Oblast).

A. Average Monthly income per capita in 1990, in 1000 rubles.



B. Average Monthly income per capita in 2004, in rubles.



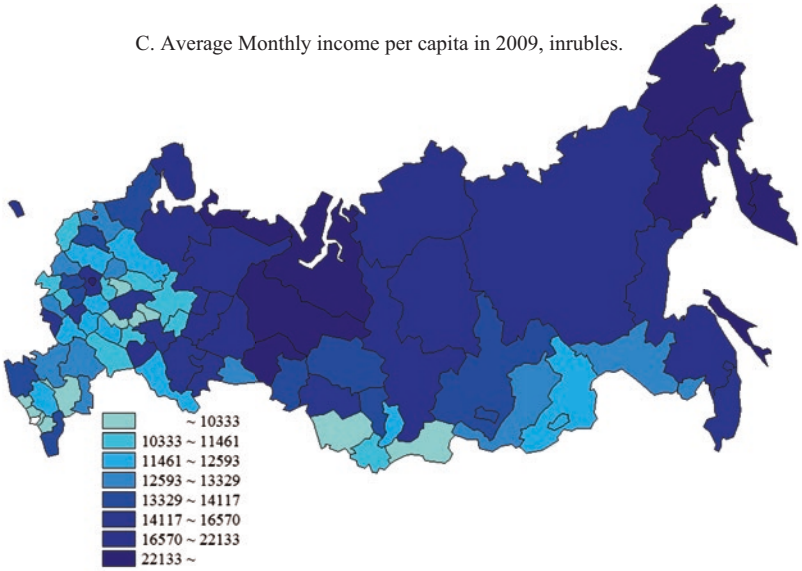


Fig. 8.4 Income per capita by region (*Source*: Prepared by the author from Rosstat, *Regiony Rossii* (Regions of Russia) in 2010, 2011, Moscow)

Because it is not simply the case that incomes are higher in large cities, the explanation may become vague. However, a comparison of Fig. 8.1C with Fig. 8.3C, which illustrates population flows in modern Russia and recent income levels, shows that the population centres of Moscow and Saint Petersburg and resource-producing areas such as Tyumen and Krasnoyarsk are attracting people, whereas the Extreme Northern oblasts, which have traditionally had high nominal per capita incomes but are situated in remote regions, have seen population outflows. The latter saw population inflows during the Soviet era (Fig. 8.1A), but their high incomes were not indicative of the degree of economic development. Instead, it is more appropriate to view the high incomes as meaning that the government targeted them for development and took commensurate measures to attract workers (Perevedentsev 1966; Hill and Gaddy 2003). In modern Russia the government no longer manages population migration, so it is natural that Extreme North regions without resources see population outflows.

However, things are not that simple. One point is the distribution of resources. Khanty-Mansi and Yamalo-Nenets autonomous okrugs in

Tyumen Oblast, which produce more than 50 % of Russia's crude oil and over 80 % of its natural gas, are classified as Extreme North regions. At the same time, there are large labor outflows and inflows in such regions, so caution needs to be exercised when conducting an analysis.

8.3 Previous Research

As stated at the beginning, the aim of this chapter is to shed light on the determinants of interregional population migration in the modern Russian Federation, and to compare them with those during the Soviet era. Because not many previous studies have adopted such a perspective, it is possible to discuss them all and to mention general research on population migration in modern Russia.[6]

Given that materials that would allow origins and destinations to be specified at the oblast level have not been widely available in the 1990s, research in Russia itself has been conducted based on descriptive statistics in the early stages. Many studies have attempted to explain interregional migration as being due to: the labor market environment; the concentration of economic activity; the accessibility of regions; differences in the degree of infrastructure development; and the impact on the migration rate of the age structure, which results from differences in the propensity to migrate (Moiseenko 2004; Eliseeva 2006; Vishnevskii 2014). However, research has been hindered by a lack of statistics, and very few studies in which quantitative analyses were performed in the period until 2000.[7] Even these studies have had to explain the net migration rate of each region amid an absence of data, and it has been impossible to classify factors in population migration as either push or pull factors.

Brown (1997) showed that factors such as population size and average wage have a positive impact on net inflow, but that factors such as the average temperature in January have a negative impact net outflow. Wages, however, were observed to have a positive impact on net population outflow. This was because, although financial support for the Extreme North in the form of high wages was maintained after the collapse of the Soviet Union, it was insufficient to compensate for the inferior living conditions, resulting in a population outflow from this region. Gerber (2006) also studied net population migration rates, and showed

that the population of the region and the average wage have a positive impact, while the rate of unemployment and the average temperature in January have a negative impact. Gerber (2005) used microdata to analyse the determinants of the probability of deciding to migrate, and found that in Russia also a high level of education and a young age increased the migration rate.

Andrienko and Guriev (2004) were the first researchers to analyse both origins and destinations at the oblast level. They obtained origin-to-destination (OD) tables from Goskomstat Russia for 89 regions for the period 1992–1999, and performed a panel analysis with the units being the 78 regions with complete data. Their analysis found that a region's unemployment rate, population, and level of infrastructure affected population outflows and inflows as intuitively expected. Regarding incomes, Russia was in a recession stemming from the transition to capitalism, and if income levels were extremely low, people got caught in a poverty trap, and a population outflow did not occur. They pointed out that a population outflow from that region occurred as incomes rose; and that if an analysis is performed on all samples, the results become vague, but that if income is divided into bands and an analysis is conducted for each, income gives results that match what would be intuitively assumed. In addition, a distance variable obtained negative and significant coefficients.

Kumo (2007) conducted an analysis using oblast-level OD tables for 89 regions for the year 2003. These tables were obtained directly from an employee at Rosstat, the successor to Goskomstat and Russia's current statistical organization. Although it is a cross-sectional analysis for a single year, it showed that with the economy growing, the concentration of economic activity in resource-producing areas, the environs of Moscow, and so on, as well as regional factors, such as the location of Extreme Northern areas, all had a conspicuous impact on population fluidity. And, like Andrienko and Guriev (2004), it confirms that the distance variable has a stable and negative impact on the scale of population migration. It seems likely that Vakulenko et al. (2011) made use of oblast-level OD tables from Rosstat for the period 2001–2008.[8] The key finding from their analysis was that the socio-economic variables were significant for migration between regions that were relatively close to each other, but that if the distance between regions was extreme, these variables lost their explanatory power.

Oshchepkov (2007) obtained oblast-level OD tables from Rosstat from the period 1990, at the end of the Soviet era, to 2006, and analysed the causes of migration for 78 regions with complete data. The distance between regions takes a stable and significant negative coefficient for the scale of migration. It was also shown that factors such as the labor market environment (unemployment rate), climate conditions (average January temperature), and the degree of infrastructure development (paved road density) produced results that matched intuitive expectations concerning both outflows and inflows. It was also pointed out that the absolute value of these coefficients becomes larger with the passage of time and that the impact of socioeconomic variables becomes stronger. Guriev and Vakulenko (2015) advanced the analysis conducted by Andrienko and Guriev (2004). They used oblast-level OD tables from Rosstat for the period from 1996 to 2010. Regarding the relationship between income and population migration, they showed that while high-income regions indeed saw population inflows, in the poorest regions increases in income resulted in population outflows. They showed that it is likely that in regions with an income level of less than USD 3,000, those classes that wished to move out did not have the capability to do so. In other words, like Andrienko and Guriev (2004), they showed that a geographical poverty trap existed.

Andrienko and Guriev (2004), Kumo (2007), and Oshchepkov (2007) showed that the distance variable had a significant negative impact on the scale of population migration. This is intuitively obvious and a stylized finding from population migration research in advanced countries (Greenwood 2010). In the Soviet Union, however, there have been places that do not fit this description. In other words, as Mitchneck (1991) and Cole and Filatotchev (1992) have pointed out, in the Soviet Union distance did not exhibit a detrimental impact on population migration. Population migration on a larger scale than would be expected was observed, even between areas that were far apart from each other. The fact that the distance variable was stably negative and significant can be said to indicate that compared with the Soviet era, population migration patterns in Russia have changed.

However, it has to be said that a comparative study with the Soviet era has not been performed. In almost all the studies, data on the Soviet era has not been used and cannot be analysed. The only exception is Oshchepkov (2007), but in that study population migration data for 1990 to 2006 is pooled and the year to which the data relates is not specified. As a result, even though migration data for 1990 and 1991, which were during the Soviet era, is used, the analysis cannot interpret it. Although some statistics, such as the unemployment rate and the poverty rate, cannot be obtained for the Soviet era, given that complete time series data that includes the Soviet era exists, an analysis is possible. The factor of whether the region is resource-producing, which was used only by Kumo (2007), will also need to be subject to diachronic verification, not a cross-sectional analysis for a single year. In addition, none of the previous studies, apart from Kumo (2007), have taken into account the scale of migration. In other words, regardless of whether there is only one interregional migrant or tens of thousands of them, an analysis has been performed with this as a single observation. As explained later, this is unusual in the field of population migration research, so the next section expands the analysis period, data observation years, and the explanatory variables to take account of the scale of migration, and so on.

8.4 Empirical Analysis

The insights provided by the accumulation of general population migration research (Greenwood and Hut 2003; Greenwood 2010) and previous research on interregional population migration in Russia can provide hints on what variables should be used. In other words, the size of the population of the origin/destination probably has a positive impact on population flow. Furthermore, unlike in the Soviet era, the distance between regions probably has a stable and significant negative impact. It is also likely that various other socio-economic variables are determinants of the scale of population migration. Therefore, like Andrienko and Guriev (2004), Kumo (2007), and Oshchepokov (2007), this chapter employs the expanded gravity model, which is widely used in the field of population migration research. The formula for this model is:

$$M_{ij} = g^{*} \frac{P_i^{\alpha} P_j^{\beta}}{D_{ij}^{\delta}} * \left(\frac{Y_j}{Y_i} \right)^{y}$$

where M_{ij} denotes the scale of population migration (number of people) from region i to region j, P_i denotes the population of region i, P_j denotes the population of region j, and D_{ij} denotes the distance between region i and region j. In addition, Y_i denotes an attribute of the origin region i, while Y_j denotes an attribute of the destination region j.

8.4.1 Data

This analysis employs: regional data derived from official Soviet and Russian statistics; and origin-to-destination (OD) tables for 1990 to 2013, which are internal materials from Rosstat. The regional data uses statistics that can be accessed by anybody, and are either available online or have been published in paper form by Rosstat or its predecessor organization. The OD tables require a little more explanation, as they have only been used by Russian researchers and the authors of this chapter.

Rosstat publishes "Population and Population Migration in the year of **", which constitutes widely available population migration data. Until 1999, these statistics contained OD tables for the 11 economic regions in use at the time. From 2000 onwards they contained OD tables for the seven, newly established, federal districts, which were then increased to eight from 2009. However, if one takes account of the diversity seen within the vast area of each region, this regional division is not adequate for analysis, so it was not used for research. Therefore, oblast-level OD tables are used, which are internal materials to Rosstat and were obtained by the author. These materials can be obtained directly from Rosstat employees, probably for a fee. For this analysis, however, the data was received from Rosstat.[9]

Kumo (2007) analysed the year 2003 based on a table that related to that year alone, which had been obtained directly from Rosstat. The OD tables used in this analysis are for each year in the 24-year period between 1990 and 2013. Russia's regional divisions have changed frequently, but

the data has been adapted to match each of the 83 federal subject divisions that existed as of 2013—83 × 83 regions -83 (intraregional migration) = 6,806 origins/destination pairs constitute the units of analysis. However, for the Yamalo-Nenets Autonomous Okrug, Khanty-Mansi Autonomous Okrug, Nenets Autonomous Okrug, Chukot Autonomous Okrug, and the Jewish Autonomous Oblast, data is often missing for certain years, particularly for the first half of the period of analysis, which includes the Soviet Union era, so it is often excluded from analysis. In addition, the Chechen Republic and the Republic of Ingushetia were heavily affected by a war that lasted from 1991 to 1997 and which then broke out again in 1999, before finally ending in 2009. There are also numerous gaps in the data for these republics. For these reasons, the authors will exclude them from the analysis. The authors should therefore mention that the number of observations is not as many as 6,806 × 24 years = 163,344. But even if this data is lacking, at the time of writing no other studies exist that have employed such long-term data on interregional migration in Russia. The significance of the fact that these materials can be used to perform a comprehensive analysis of interregional population migration in Russia for a period of approximately a quarter of a century from 1990, before the collapse of the Soviet Union, to 2013, should be emphasized.

The purpose of the analysis is to identify determinants of interregional population migration in Russia. However, that does not mean that it simply backs up the insights confirmed from previous research. It identifies changes in factors behind population migration that occurred between the Soviet era and the emergence of the new Russia, which is only possible with the data obtained. As one can see from Fig. 8.1 population migration patterns in Russia have changed a great deal. It can be expected that during the Soviet era controls and incentives implemented by the central government had an impact, but this ceased to function after the collapse of the Soviet Union. This is identified by using the amount of government investment as an explanatory variable, which indirectly shows the government's intentions concerning regional development priorities under the socialist regime. The fact that during the Soviet era interregional population migration occurred in line with the development intentions of the government are shown in the population inflow that occurred in Siberia and the Russia's far east in the 1960s and 1970s. However, it is difficult

to imagine that the same thing occurred in the new Russia. Until 1991, therefore, government investment had a positive impact on population migration in Russia, but after the collapse of the Soviet Union, that impact can be expected to have declined. To specify this a cross term for year dummies and the amount of government investment are used. This government investment is described as "basic investment" in the Russian language, and is capital used for production activities. It is not investment in non-production activities, such as healthcare, so it can be expected to serve as one of the development incentives assumed here.

In addition, a factor that is unique to Russia needs to be taken into account. That is the peculiarity of the regions that produce resources such as crude oil and natural gas, but only Kumo (2007) studied its impact on population migration patterns. In Russia mineral resources account for between 50 % and over 60 % of exports,[10] and half of the country's tax revenue comes from taxes on energy resources.[11] Apart from urban areas such as Moscow, many high-income regions are resource-producing regions, and that probably has an effect on the flow of population migration. This analysis therefore uses a dummy variable to specify regions that produce crude oil or natural gas. This takes account of the fact that regions that produce energy resources tend to attract people. The analysis also explores the impact of Russia's frigid climate. In Kumo (2007), the dummy variable for "Extreme North region" obtained a significant positive coefficient for both the origin and the destination, and the analysis in this chapter verifies this, and also uses the average temperature in January and investigates its coefficient. It is normal for people to move from places with harsh climates to places with mild climates (Greenwood 1991), and this chapter examines whether this is also a reasonable assumption for Russia. In addition, Russia experienced huge changes in the period from 1990 to 2013, so the ananlysis employed the year fixed effect to control for this.

To confirm the effectiveness of variables that have been used in previous research, they are also used in this analysis. To show economic conditions, average income per capita, average expenditure on charged services per capita, average expenditure on services for living per capita, and the consumer price index are all used.[12] The authors expect migration to occur from regions with lower incomes and expenditures to regions with higher ones. Migration can also be expected to occur from regions with

a high price index to regions with a low one. The level of infrastructure is also expected to have an effect on population migration patterns. As measures of the level of infrastructure, the total length of railways, the total length of paved roads per unit of land area, and the number of buses per resident are used. In addition, this analysis uses the number of doctors per resident and the number of hospital beds per resident as indicators of social infrastructure. The analysis also takes account of population density. It can be assumed that regions with better infrastructure or regions that are more densely populated will attract people from regions with poorer infrastructure or regions that are less densely populated. Furthermore, previous research has pointed out the fact that population structure affects interregional population migration patterns, so the proportion of people who live in cities, the proportion of people who have not yet reached working age, and the proportion of people who have reached the age at which they are eligible to receive a pension are used to confirm the effect of these variables.

Just as Andrienko and Guriev (2004), Gerber (2006), and Vakulenko et al. (2011) did, this analysis avoids the problem of endogeneity by giving all the explanatory variables the values of one period (one year) before the interregional population migration. The variables are ratios between origins and destinations of each indicator basically.[13] Regarding the population of regions, the population of origin and the population of destination are employed separately. At the same time, the analysis looks at the dummy for Extreme North regions and the dummy for regions that produce oil or natural gas separately for origin and destination. Variables other than dummy variables are converted into logarithms. Therefore, regional pairs between which no population migration occurred, will not be included in the sample.[14] Definitions of, sources of, and the quantities of descriptive statistics for all the variables are shown in Table 8.2.

8.4.2 Results

The results of the analysis are shown in Tables 8.3A and 8.3B. Table 8.3A uses all observations (total migration: at least one person migrated), while in Table 8.3B regional pairs between which migration on a certain scale

Table 8.2 Descriptive statistics

Variable	No. of observations	Mean	Standard deviation	Minimum	Maximum	Source of and remarks concerning data
Population migration (persons)	159290	191.61	673.4	0	47464	Material provided by Rosstat
Distance (km)	159408	2429.83	1907.59	18	7683	Using Federalnaya sluzhba geodezii i kartografii Rossii (1998), INGIT (2002), the authors specified the latitude and longitude of the main city in each region and calculated the distance (as the crow flies) between regions
Population (persons)	159327	1790504	1595602	40896	11856578	Rosstat/Goskomstat, Regiony Rossii (Regions of Russia)/ Rossiiskii ststisticheskii edzegodnik (Statistical Yearbook of Russia), various years; TsSU, Narodnoe Khozyaystvo RSFSR (National Economy of the Russian Soviet Socialist Republic), various years; Unified Interdepartmental Statistical Information System of the Russian Federation, https://www.fedstat.ru/indicators/start.do

Proportion of population who live in cities (%)	159327	69.44	12.95	23.63	100	Same as above
Proportion of population who have not reached working age (%)	159408	21.07	5.03	11.34	38	Same as population. 15 years or younger
Proportion of population who are of an age eligible to receive a pension (%)	159408	19.05	5.32	1.9	28.16	Same as population. 60 years or older for men and 55 years or older for women
Average expenditure on charged services per capita (roubles)	159327	9.88	13.85	0.00012	93.19	Same as population
Average expenditure on services for living per capita (roubles)	159327	1.02	1.32	0.000047	8.82	Same as above
Consumer price index (%)	154143	211.82	285.51	101.4	1997.1	Same as above. 1990 figure substituted for 1989
Average income per capita (roubles)	155925	29838.94	118879.9	123.2	1836500	Same as above. 1990 figure substituted for 1989
No. of doctors per 10,000 people (persons)	156492	44.81	10.26	5.7	105.9	Same as population

(*continued*)

Table 8.2 (continued)

Variable	No. of observations	Mean	Standard deviation	Minimum	Maximum	Source of and remarks concerning data
No. of hospital beds per 10,000 people (beds)	156816	120.09	124.96	29.8	586	Same as above
Total length of railways per km^2 of land area (km/km^2)	159165	154.46	124.96	0	586	Same as above. Figure for 1989 extrapolated from figures for 1985 and 1990
Total length of paved roads per km^2 of land area (km/km^2)	159084	116.24	103.82	0.01	695	Same as population. However, figures for the cities of Moscow and Saint Petersburg are included in those for the oblasts of Moscow and Leningrad, so the figures for the oblasts of Moscow and Leningrad are used instead. As a result, the figures for these two cities are excessively small
No. of buses per 100,000 people (buses)	157221	69.81	32.39	0	276	Same as above. Figure for 1989 extrapolated from figures for 1985 and 1990

Extreme North region dummy	159408	0.159	0.365	0	1	Administrative districts (federal subjects) in the area defined as being in the "Extreme North" are given a value of 1, while other districts are given a value of 0. Determined using Goskomstat Rossii (2004)
Oil/gas-producing region dummy	159408	0.079	0.27	0	1	Same as population. If a region is one of the top five crude-oil producing regions or one of the top five natural-gas producing regions in each year (many regions are both), it is given a value of 1. Otherwise it is given a value of 0. 1990 data substituted for 1989. 2010 data substituted for 2011 and 2012
Average January temperature (Celsius)	159408	–14.17	7.32	-39	-0.5	Sevruka (2006)

(*continued*)

Table 8.2 (continued)

Variable	No. of observations	Mean	Standard deviation	Minimum	Maximum	Source of and remarks concerning data
Population density per 1,000 km^2 of land area (persons/1,000 km^2)	157464	181370.4	1074067	69.78	10800000	Same as population. Does not take account of the expansion of the city of Moscow and the reduction in the size of the Moscow Oblast that took place on 1 July 2012
Government investment per capita (roubles)	159327	475038.5	1104293	52.8	159089	Same as population. Figure for 1989 extrapolated from figures for 1990 and 1991

Source: Prepared by the author

Table 8.3 Results based on all observations

	All the samples								
	Pooled OLS			Fixed effect model			Random effect model		
Panel A	Coefficient	SD	t	Coefficient	SD	t	Coefficient	SD	z
Distance	−0.47	0.0033	**	(omitted)			−0.45	0.016	**
Population (origin)	0.43	0.0021	**	(omitted)			0.52	0.0089	**
Population (destination)	0.42	0.002	**	1.33	0.033	**	0.502	0.0096	**
Population in cities	−0.12	0.0087	**	0.11	0.032	**	0.046	0.025	+
Population not reached working age	−0.33	0.016	**	0.02	0.031		−0.031	0.028	
Population eligible to receive a pension	−0.02	0.011	+	−0.049	0.016	**	−0.036	0.014	*
Expenditure on charged services	−0.0033	0.0052		0.0058	0.0047		0.0058	0.0047	
Expenditure on services for living	0.0076	0.0026	**	0.016	0.0023	**	0.016	0.0023	**
Price index	−0.036	0.013	**	−0.014	0.064	*	−0.014	0.0064	**
Average income	0.061	0.0058	**	0.047	0.0063	**	0.045	0.0062	**
No. of doctors	−0.054	0.0046	**	−0.038	0.0086	**	−0.048	0.0086	**
No. of hospital beds	−0.078	0.0079	**	0.048	0.083	**	0.046	0.0082	**
Total length of railways	0.0067	0.0019	**	0.0023	0.0079		0.018	0.0057	**
Total length of paved roads	0.021	0.0024	**	−0.028	0.0044	**	−0.014	0.004	**
No. of buses	0.016	0.0021	**	0.0038	0.0024	+	0.004	0.0024	+

(*continued*)

Table 8.3 (continued)

	All the samples								
	Pooled OLS			Fixed effect model			Random effect model		
Panel A	Coefficient	SD	t	Coefficient	SD	t	Coefficient	SD	z
Extreme North (origin)	0.32	0.0059	**	(omitted)			0.46	0.025	**
Extreme North (destination)	0.3	0.0054	**	(omitted)			0.31	0.022	**
Oil/gas (origin)	0.038	0.0048	**	−0.031	0.0083	**	−0.028	0.0079	**
Oil/gas (destination)	0.11	0.0051	**	0.035	0.008	**	0.039	0.0074	**
January temperature	0.0064	0.00026	**	(omitted)			0.0016	0.0012	
Population density	0.016	0.0014	**	−0.61	0.022	**	0.042	0.0042	**
Government investment	0.072	0.0093	**	0.046	0.0061	**	0.052	0.0059	**
(baseline for interaction terms: Government investment * 1989 year dummy)									
Government investment*1990	−0.017	0.014		−0.022	0.0042	**	−0.019	0.0041	**
Government investment*1991	−0.036	0.013	**	−0.039	0.0054	**	−0.038	0.0053	
Government investment*1992	−0.062	0.012	**	−0.058	0.0054	**	−0.058	0.0053	**
Government investment*1993	−0.091	0.011	**	−0.083	0.006	**	−0.086	0.0059	**
Government investment*1994	−0.074	0.012	**	−0.075	0.0065	**	−0.079	0.0064	**
Government investment*1995	−0.068	0.012	**	−0.061	0.0067	**	−0.065	0.0066	**

Government investment*1996	−0.086	0.011	**	−0.061	0.0066	**	−0.066	0.0065	**
Government investment*1997	−0.091	0.011	**	−0.061	0.0065	**	−0.066	0.0064	**
Government investment*1998	−0.083	0.011	**	−0.061	0.0064	**	−0.068	0.0063	**
Government investment*1999	−0.058	0.011	**	−0.036	0.0065	**	−0.043	0.0064	**
Government investment*2000	−0.035	0.011	**	−0.021	0.0065	**	−0.028	0.0064	**
Government investment*2001	−0.046	0.011	**	−0.024	0.0065	**	−0.03	0.0064	**
Government investment*2002	−0.046	0.011	**	−0.026	0.0064	**	−0.032	0.0063	**
Government investment*2003	−0.039	0.011	**	−0.021	0.0065	**	−0.027	0.0064	**
Government investment*2004	−0.046	0.011	**	−0.22	0.0066	**	−0.028	0.0065	**
Government investment*2005	−0.042	0.011	**	−0.014	0.0067	*	0.02	0.0066	**
Government investment*2006	−0.051	0.011	**	−0.025	0.0068	**	−0.032	0.0066	**
Government investment*2007	−0.045	0.012	**	−0.0096	0.0069		−0.018	0.0068	**
Government investment*2008	−0.032	0.012	**	−0.0045	0.007		−0.014	0.0069	*
Government investment*2009	−0.041	0.011	**	−0.012	0.0069	+	−0.019	0.0068	**

(*continued*)

Table 8.3 (continued)

	All the samples								
	Pooled OLS			Fixed effect model			Random effect model		
Panel A	Coefficient	SD	t	Coefficient	SD	t	Coefficient	SD	z
Government investment*2010	−0.021	0.011	+	0.0028	0.0069		−0.0052	0.0067	
Government investment*2011	−0.034	0.011	**	−0.0066	0.0069		−0.014	0.00068	*
Government investment*2012	−0.039	0.011	**	−0.01	0.0071		−0.019	0.0069	**
Year fixed effect (base: 1989)	Yes. All were negative and significant			Yes. All were negative and significant			Yes. All were negative and significant		
Constant	−8.56	0.039	**	−16.85	0.48	**	−10.98	0.2	**
	Observations: 126,987			Observations: 126,987			Observations: 126,987		
	F(68,126918) = 3025.25			Samples: 5,700			Samples: 5,700		
	Prob > F = 0.0000			F(63,5699) = 636.56			Wald chi2(68) = 50100.97		
	R-sq.: 0.62			Prob > F = 0.0000			Prob > chi2 = 0.0000		
				R-sq.:			R-sq.		
				Within = 0.48			Within = 0.487		
				Between = 0.055			Between = 0.64		
				Overall = 0.053			Overall = 0.61		
				Sargan Test statistic = 865.96; P-value = 0.0000					

	I. 90 % of total migraion: Region pairs with more than 91 migrants						II. 80 % of total migraion: Region pairs with more than 178 migrants					
	FE			RE			FE			RE		
Panel B	Coefficient	SD	t	Coefficient	SD	z	Coefficient	SD	t	Coefficient	SD	z
Distance	(omitted)			−0.39	0.015	**	(omitted)			−0.38	0.015	**
Population (origin)	1.19	0.047	**	0.3	0.011	**	(omitted)			0.21	0.012	**
Population (destination)	(omitted)			0.65	0.011	**	1.19	0.058	**	0.29	0.012	**
Population in cities	0.039	0.049		−0.092	0.029	**	−0.013	0.062		−0.16	0.033	**
Population not reached working age	−0.0017	0.043		−0.026	0.037		0.0048	0.05		−0.0069	0.042	
Population eligible to receive a pension	0.032	0.022		0.032	0.018	+	0.062	0.028	*	0.056	0.021	+
Expenditure on charged services	−0.02	0.0059	**	−0.022	0.0059	**	−0.016	0.008	+	−0.021	0.0078	**
Expenditure on services for living	0.019	0.0031	**	0.018	0.0031	**	0.018	0.041	**	0.017	0.0041	**
Price index	−0.016	0.006	**	−0.018	0.0061	**	−0.021	0.0079	**	−0.022	0.0081	**
Average income	0.085	0.008	**	0.081	0.008	**	0.01	0.0098	**	0.099	0.0099	**
No. of doctors	−0.056	0.013	**	−0.069	0.012	**	−0.034	0.016	*	−0.062	0.016	**
No. of hospital beds	0.031	0.011	**	0.021	0.011	+	0.011	0.016		0.0041	0.016	
Total length of railways	0.023	0.012	+	0.019	0.0071	**	0.035	0.015		0.025	0.0077	**
Total length of paved roads	−0.031	0.0063	**	−0.011	0.0054	*	−0.03	0.0081	**	−0.0071	0.0066	
No. of buses	0.021	0.0039	**	0.02	0.0039	**	0.025	0.0049	**	0.028	0.0049	**
Extreme North (origin)	(omitted)			0.36	0.025	**	(omitted)			0.28	0.026	**
Extreme North (destination)	(omitted)			0.31	0.024	**	(omitted)			0.29	0.028	**

(*continued*)

Table 8.3 (continued)

	I. 90 % of total migraion: Region pairs with more than 91 migrants						II. 80 % of total migraion: Region pairs with more than 178 migrants					
	FE			RE			FE			RE		
Panel B	Coefficient	SD	t	Coefficient	SD	z	Coefficient	SD	t	Coefficient	SD	z
Oil/gas (origin)	–0.045	0.013	**	–0.029	0.012	*	–0.053	0.016	**	–0.019	0.014	
Oil/gas (destination)	0.033	0.013	**	0.043	0.011	**	0.031	0.015	*	0.043	0.012	*
January temperature	(omitted)			0.0041	0.001	**	(omitted)			0.0042	0.00097	**
Population density	0.74	0.036	**	0.028	0.0046	**	–0.39	0.038	**	0.015	0.005	**
Government investment	0.054	0.0064	**	0.052	0.0062	**	0.061	0.0074	**	0.054	0.0072	**
(baseline for interaction terms: Government investment * 1989 year dummy)												
Government investment*1990	–0.023	0.0039	**	–0.019	0.0037	**	–0.027	0.0044	**	–0.021	0.0042	**
Government investment*1991	–0.031	0.0048	**	–0.026	0.0047	**	–0.033	0.0055	**	–0.024	0.0054	**
Government investment*1992	–0.063	0.0054	**	–0.059	0.0052	**	–0.071	0.0061	**	–0.064	0.0059	**
Government investment*1993	–0.085	0.0063	**	–0.082	0.0061	**	–0.089	0.007	**	–0.082	0.0069	**
Government investment*1994	–0.085	0.0068	**	–0.084	0.0066	**	–0.089	0.0077	**	–0.086	0.0075	**
Government investment*1995	–0.059	0.0068	**	–0.061	0.0067	**	–0.065	0.0079	**	–0.066	0.0078	**
Government investment*1996	–0.062	0.0068	**	–0.064	0.0066	**	–0.064	0.0078	**	–0.065	0.0077	**
Government investment*1997	–0.063	0.0067	**	–0.064	0.0065	**	–0.065	0.0078	**	–0.066	0.0077	**
Government investment*1998	–0.065	0.0066	**	–0.066	0.0064	**	–0.071	0.0077	**	–0.07	0.0075	**
Government investment*1999	–0.034	0.0068	**	–0.034	0.0066	**	–0.042	0.008	**	–0.039	0.0078	**

Government investment*2000	−0.019	0.0068	**	−0.02	0.0066	**	−0.025	0.008	**	−0.023	0.0078	**
Government investment*2001	−0.028	0.0069	**	−0.028	0.0067	**	−0.037	0.0083	**	−0.034	0.0081	**
Government investment*2002	−0.026	0.0067	**	−0.026	0.0066	**	−0.036	0.0079	**	−0.031	0.0078	**
Government investment*2003	−0.021	0.0068	**	−0.019	0.0066	**	−0.036	0.0082	**	−0.029	0.0079	**
Government investment*2004	−0.025	0.0069	**	−0.024	0.0067	**	−0.04	0.0082	**	−0.034	0.0079	**
Government investment*2005	−0.016	0.0072	**	−0.015	0.0069	*	−0.032	0.0085	**	−0.025	0.0082	**
Government investment*2006	−0.015	0.0075	+	−0.012	0.0072	+	−0.031	0.009	**	−0.023	0.0087	**
Government investment*2007	−0.007	0.0078		−0.0041	0.0074		−0.022	0.0094	*	−0.013	0.0087	
Government investment*2008	0.00032	0.0078		0.0034	0.0074		−0.014	0.0095		−0.0055	0.0089	
Government investment*2009	−0.00062	0.0077		0.0023	0.0073		−0.0057	0.0094		0.003	0.0089	
Government investment*2010	0.0098	0.0076		0.014	0.0073	+	0.0041	0.0091		0.014	0.0086	
Government investment*2011	−0.014	0.0078	+	−0.0093	0.0075		−0.022	0.0092	+	−0.0093	0.0088	
Government investment*2012	−0.022	0.0081	**	−0.019	0.0077		−0.03	0.0096	**	−0.021	0.009	*
Year fixed effect (base: 1989)	Yes. Negative and significant in 1990–2010; Positive and significant in 2011–12			Yes. Negative and significant in 1990–2011. Not significant in 2012			Yes. Negative and significant in 1990–2010; Positive and significant in 2011–12			Yes. Negative and significant in 1990–2010; Positive and significant in 2011–12		
Constant	−15.03	0.69	**	−5.77	0.25	**	−14.55	0.84	**	−3.54	0.26	**
	Observation: 49,862			Observation: 49,862			Observation: 29,237			Observation: 29,237		
	Sample: 3,701			Sample: 3,701			Sample: 2,553			Sample: 2,553		

(*continued*)

Table 8.3 (continued)

Panel B	I. 90 % of total migraion: Region pairs with more than 91 migrants						II. 80 % of total migraion: Region pairs with more than 178 migrants					
	FE			RE			FE			RE		
	Coefficient	SD	t	Coefficient	SD	z	Coefficient	SD	t	Coefficient	SD	z
	F(63,3700) = 309.94			Wald chi2(68) = 20719.96			F(63,2552) = 219.04			Wald chi2(68) = 13476.38		
	Prob > F = 0.0000			Prob > chi2 = 0.0000			Prob > F = 0.0000			Prob > chi2 = 0.0000		
	R-sq.:			R-sq.			R-sq.:			R-sq.		
	Within = 0.55			Within = 0.53			Within = 0.55			Within = 0.53		
	Between = 0.045			Between = 0.24			Between = 0.003			Between = 0.16		
	Overall = 0.037			Overall = 0.29			Overall = 0.013			Overall = 0.24		
	Sargan Test statistic = 3773.3; P-value = 0.0000						Sargan Test statistic = 2817.98; P-value = 0.0000					

	III. 70 % of total population: Region pairs with more than 305 migrants						IV. 60 % of total population: Region pairs with more than 484 migrants					
	FE			RE			FE			RE		
	Coefficient	SD	t	Coefficient	SD	z	Coefficient	SD	t	Coefficient	SD	z
Distance	(omitted)			–0.37	0.017	**	(omitted)			–0.35	0.02	**
Population (origin)	(omitted)			0.17	0.014	**	(omitted)			0.13	0.016	**
Population (destination)	1.14	0.07	**	0.23	0.013	**	1.01	0.079	**	0.19	0.015	**
Population in cities	0.0035	0.079		–0.12	0.039	**	–0.12	0.083		–0.17	0.044	**
Population not reached working age	–0.039	0.056		–0.029	0.047		0.013	0.059		0.012	0.051	

Population eligible to receive a pension	0.039	0.034		0.025	0.026		0.056	0.042		0.053	0.031	+
Expenditure on charged services	−0.014	0.01		−0.019	0.0098	*	−0.013	0.013		−0.021	0.012	+
Expenditure on services for living	0.016	0.0052	**	0.014	0.0053	**	0.015	0.0064	*	0.014	0.0065	*
Price index	−0.0063	0.0096		−0.012	0.0099		−0.023	0.01	*	−0.032	0.011	**
Average income	0.102	0.012	**	0.098	0.012	**	0.12	0.014	**	0.11	0.014	**
No. of doctors	−0.024	0.018		−0.055	0.019	**	−0.0095	0.019		−0.039	0.021	+
No. of hospital beds	0.0091	0.02		0.0018	0.021		−0.013	0.023		−0.013	0.024	
Total length of railways	0.056	0.021	*	0.025	0.0089	**	0.063	0.029	*	0.028	0.011	**
Total length of paved roads	−0.019	0.01	+	0.0042	0.0084		−0.022	0.011	+	−0.0042	0.0097	
No. of buses	0.026	0.0059	**	0.028	0.0063	**	0.029	0.0067	**	0.029	0.007	**
Extreme North (origin)	(omitted)			0.23	0.029	**	(omitted)			0.19	0.034	**
Extreme North (destination)	(omitted)			0.24	0.034	**	(omitted)			0.22	0.041	**
Oil/gas (origin)	−0.046	0.017	**	−0.01	0.016		−0.046	0.016	**	−0.0059	0.015	
Oil/gas (destination)	0.049	0.018	**	0.065	0.014	**	0.043	0.022	*	0.053	0.016	**
January temperature	(omitted)			0.0032	0.00097	**	(omitted)			0.0033	0.001	**
Population density	−0.36	0.048	**	0.0033	0.0056		−0.29	0.057	**	0.0021	0.0062	
Government investment	0.055	0.0087	**	0.042	0.0084	**	0.042	0.011	**	0.03	0.01	**
(baseline for interaction terms: Government investment * 1989 year dummy)												
Government investment*1990	−0.033	0.0052	**	−0.023	0.0049	**	−0.032	0.0061	**	−0.023	0.0058	**
Government investment*1991	−0.038	0.0063	**	−0.023	0.0063	**	−0.027	0.0071	**	−0.017	0.0073	*
Government investment*1992	−0.065	0.0069	**	−0.052	0.0068	**	−0.059	0.0081	**	−0.048	0.0078	**

(*continued*)

Table 8.3 (continued)

	III. 70 % of total population: Region pairs with more than 305 migrants						IV. 60 % of total population: Region pairs with more than 484 migrants					
	FE			RE			FE			RE		
	Coefficient	SD	t	Coefficient	SD	z	Coefficient	SD	t	Coefficient	SD	z
Government investment*1993	−0.083	0.008	**	−0.07	0.0079	**	−0.066	0.0091	**	−0.055	0.0089	**
Government investment*1994	−0.082	0.0088	**	−0.073	0.0087	**	−0.065	0.01	**	−0.057	0.01	**
Government investment*1995	−0.059	0.0091	**	−0.054	0.0091	**	−0.046	0.011	**	−0.043	0.011	**
Government investment*1996	−0.055	0.0089	**	−0.05	0.0088	**	−0.044	0.011	**	−0.04	0.011	**
Government investment*1997	−0.057	0.009	**	−0.052	0.0088	**	−0.049	0.011	**	−0.045	0.011	**
Government investment*1998	−0.068	0.0091	**	−0.061	0.0087	**	−0.064	0.011	**	−0.059	0.011	**
Government investment*1999	−0.044	0.0095	**	−0.036	0.0091	**	−0.041	0.012	**	−0.035	0.011	**
Government investment*2000	−0.027	0.0096	**	−0.018	0.0092	*	−0.022	0.012	+	−0.015	0.011	
Government investment*2001	−0.037	0.01	**	−0.028	0.0096	**	−0.033	0.012	**	−0.023	0.011	*
Government investment*2002	−0.039	0.0095	**	−0.027	0.0091	**	−0.033	0.012	**	−0.021	0.011	*
Government investment*2003	−0.042	0.0098	**	−0.028	0.0093	**	−0.035	0.012	**	−0.021	0.011	+
Government investment*2004	−0.042	0.0099	**	−0.028	0.0094	**	−0.035	0.012	**	−0.022	0.011	*
Government investment*2005	−0.041	0.01	**	−0.026	0.0096	**	−0.032	0.013	*	−0.018	0.011	
Government investment*2006	−0.04	0.011	**	−0.024	0.01	*	−0.033	0.014	*	−0.018	0.013	

Government investment*2007	−0.031	0.011	**	−0.013	0.01		−0.027	0.014	*	−0.01	0.012	
Government investment*2008	−0.017	0.012		−0.00007	0.011		−0.018	0.014		−0.0021	0.013	
Government investment*2009	−0.0062	0.012		0.01	0.011		−0.0066	0.014		0.0077	0.013	
Government investment*2010	−0.0018	0.011		0.017	0.01		0.00092	0.014		0.017	0.012	
Government investment*2011	−0.018	0.011	+	0.0019	0.01		−0.014	0.013		0.008	0.012	
Government investment*2012	−0.024	0.011	*	−0.0057	0.011		−0.016	0.014		0.0045	0.013	
Year fixed effect (base: 1989)	Yes. Negative and significant in 1990–2010; Positive and significant in 2011–12			Yes. Negative and significant in 1990–2010; Positive and significant in 2011–12			Yes. Negative and significant in 1990–2010; Positive and significant in 2011–12			Yes. Negative and significant in 1990–2010; Positive and significant in 2011–12		
Constant	−13.71	1.02	**	−1.87	0.27	**	−11.64	1.16	**	−0.73	0.29	*
	Observation: 17,953			Observation: 17,953			Observation: 11,143			Observation: 11,143		
	Samples: 1,670			Samples: 1,670			Samples: 1,084			Samples: 1,084		
	F(63,3700) = 155.76			Wald chi2(68) = 9228.77			F(63,2552) = 125.57			Wald chi2(68) = 7352.83		
	Prob > F = 0.0000			Prob > chi2 = 0.0000			Prob > F = 0.0000			Prob > chi2 = 0.0000		
	R-sq.: Within = 0.56			R-sq. Within = 0.52			R-sq.: Within = 0.59			R-sq. Within = 0.57		

(*continued*)

Table 8.3 (continued)

	III. 70 % of total population: Region pairs with more than 305 migrants						IV. 60 % of total population: Region pairs with more than 484 migrants					
	FE			RE			FE			RE		
	Coefficient	SD	t	Coefficient	SD	z	Coefficient	SD	t	Coefficient	SD	z
	Between = 0.033 Overall = 0.018 Sargan Test statistic = 2173.47; P-value = 0.0000			Between = 0.12 Overall = 0.22			Between = 0.0009 Overall = 0.022 Sargan Test statistic = 1495.59; P-value = 0.0000			Between = 0.071 Overall = 0.19		

Source: Prepared by the author

occurred have been extracted.[15] In other words, in the latter, the analysis used interregional migration that accounts for 90 %, 80 %, 70 %, and 60 % of the total flow, extracting regions in the order of the scale of migration, and analysed each data set. This is significant because of the following reasons. The data used here is regional level data, and the analysis is attempting to explain the scale of population migration using macro indicators. Therefore, supposing one or two people migrated between two regions, it would probably not be appropriate to explain that using macro data. If interregional migration arises due to differences in the level of economic development, it is difficult to imagine that the volume of migration would be on such a small scale, so it can be said that it is likely that such migration is due to factors that cannot be identified using macro variables. Such migration therefore needs to be excluded, with the analysis only being performed for the main types of migration. However, regardless of the criteria that are applied, there is a risk of criticism that they are arbitrary; therefore a number of criteria were set and an analysis performed for each with the intention of identifying variables that will yield more stable results. The analysis therefore focuses more on Table 8.3B than Table 8.3A, which focuses more on cases in which the sample size is smaller (an analysis that specializes in regional pairs with large-scale migration).

Regardless of what criteria for the scale of migration are used to make the partitions, it is shown that fixed-effect models should be chosen. However, to view the impact of factors that do not change over time, such as the distance between regions, reference is made to the results of random-effect models. The distance variable stably obtains a significant negative coefficient, and population size stably obtains a significant positive coefficient for both origin and destination. These match the findings of Andrienko and Guriev (2004), Kumo (2007), and Oshchepkov (2007), and the impact of these variables on population migration patterns could be confirmed. Differences are therefore shown with the results that were observed throughout the Soviet era (Mitchneck 1991; Cole and Filatotchev 1992). Income and expenditure on services for living obtain significant positive coefficients throughout the period, while the price index obtains a significant negative coefficient. These findings are also in line with expectations. The former may indicate that the poverty trap

pointed out by Andrienko and Guriev (2004) has been eliminated. The results for the value of consumption of charged services were unstable or obtained a negative coefficient, and this may mean that the price of services is high in regions that are sparsely populated.

Stable results for the number of doctors and hospital beds could not be obtained in the case of Table 8.3B. Attention probably needs to be paid to the fact that the highest numbers for both the number of doctors per capita and the number of beds per capita were observed in regions with extremely small populations.[16]

Although these indicators have been used as variables in the economic analysis of the Soviet Union and Russia for many years (Andrienko and Guriev 2004; Oshchepkov 2007; Guriev and Vakulenko 2015), it may be worth re-examining their usefulness as explanatory variables.

Regarding railway density and the number of buses per resident, though not the case in Table 8.3A, in most cases in Table 8.3B a significant positive coefficient was obtained, which is what was expected. The density of paved roads was strongly correlated with the density of railways ($r = 0.73$), and this may be the reason that results could not be obtained. The Extreme North dummy obtained a positive and significant coefficient for both origins and destinations, which is the same finding as in Kumo (2007). The fact that it is not significant for the origin alone may mean that resource-producing regions in the Extreme North play a certain role not only in sending people but also in receiving them. This may be a coincidence with the fact that the coefficient for the average temperature in January was significant and positive. In other words, it may match the fact that people migrate to colder places.[17] The same explanation may be used for the fact that similar results were found for population density.

Regarding population structure, stable results could not be obtained for the proportion of people living in cities, the proportion of the population who were children, or the proportion of the population of an age eligible to receive a pension. Moiseenko (2004) pointed out the effect of age structure on population migration, namely that in Russia also the propensity to migrate is higher the younger the people are. This could be a factor that ought to be taken account of at the individual level. Alternatively, because resource-producing regions, many of which are situated in the Extreme North, attract people, the proportion of the population that is of working age

and the proportion of the population that are children is high. On the other hand, remote regions in the Extreme North, such as Magadan Oblast and the Chukot Autonomous Okrug, have experienced large population outflows. Such diversity among regions lead to ambiguous findings such as these.

The analysis employed the dummy for oil/gas-producing regions to find out about conditions unique to Russia, and per capita government investment, which takes account of changes that have occurred since the collapse of the Soviet Union. The dummy for oil/gas-producing regions, obtains a significant and positive coefficient for the destination with every sample. For the origin, meanwhile, although it is insignificant in some cases, in cases where it is significant, it always obtained a negative coefficient. This matches the predictions made before the analysis, and demonstrate a result that is even clearer than Kumo (2007), the only previous study to have employed similar indicators. As the authors mentioned earlier, from the 1990s to 2010, minerals accounted for between 40 % and over 60 % of the value of exports. In addition, 50 % of federal government revenue came from oil and natural gas. As a result, there is no question that mineral and resource production affects the Russian economy as a whole (Kuboniwa 2014). Furthermore, these results show that it also affects the direction of interregional population migration.

Per capita government investment exhibited clear results. With the explanatory variable for 1989 (which is supposed to explain interregional migration patterns in 1990) as the base, it can be seen that the coefficient was significantly smaller, or that it was negative, throughout the 1990s. This means that interregional population migration patterns at the end of the Soviet era were significantly different from those following the collapse of the Soviet Union. During the Soviet era, the main targets of government investment and the direction of migration matched each other, and this probably indicates that government investment was effective as an incentive for regional development. At the same time, although Sonin (1980) and Milovanov (1994) have pointed out that during the Soviet era people were seen to migrate in a manner unrelated to government policy, this can also be said to suggest that the regional allocation of population through policy incentives was effective to a certain extent. It also shows that during the 1990s, after the collapse of the Soviet Union, government policy was no longer significant as policy incentive in the context of regional development.[18]

The changes that occurred during the 2000s need to be mentioned here. Whichever results are used, in the middle of the 2000s at the at the earliest, the interaction term of the amount of government investment with 1989 as the base and the year dummy ceased to be significant. In other words, as was the case in the Soviet era, regions that were intensively targeted for government investment and the direction of population migration tended to match each other. However, it should be borne in mind that this does not mean that the same phenomena that occurred during the Soviet era had re-emerged. This is because there was a big difference between the regional distribution of per capita government investment in the Soviet era and in the new Russia (see Table 8.4). In other words, even if government investment in the Soviet era was implemented as a development incentive for remote areas in regions such as the Extreme North, it is likely that the regional allocation of government investment in the new Russia was conducted in such a way that a conclusion like that cannot be drawn. If, from the 2000s onwards, money was allocated with more of a focus on resource development, such a change would obviously have occurred. Note that government investment as used here refers to basic investment, which generally denotes capital for production purposes. It should therefore be borne in mind that the above interpretation is consistent with the nature of that investment.

8.5 Conclusions

As had been confirmed in previous research (Andrienko and Guriev 2004; Oshchepkov 2007), the analysis in this chapter showed that to analyze interregional population migration patterns in Russia, standardized techniques can be adequately applied. Regions with higher populations and income levels attract people. This is obvious, but it needs to be stressed that during the Soviet era it was not the case (Mitchneck 1991). Outflows from remote regions and inflows into resource-producing regions situated in the Extreme North occurred simultaneously. Therefore the results are not straightforward, but the overall trends are generally understandable. It could be assumed that because Russia possesses a wealth of mineral and energy resources, oil/gas-producing regions attract people from other

Table 8.4 Changes in regional distribution of governmental investment per capita (based on 84 regions)

	Correlation coefficients												
	1989	**1990**	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**
1989	1												
1990	0.97	1											
1991	0.86	0.95	1										
1993	0.88	0.93	0.89	1									
1995	0.77	0.8	0.76	0.8	1								
1997	0.77	0.77	0.7	0.78	0.85	1							
1999	0.5	0.49	0.44	0.45	0.57	0.59	1						
2001	0.41	0.44	0.43	0.34	0.46	0.47	0.54	1					
2003	0.26	0.28	0.28	0.2	0.27	0.34	0.33	0.86	1				
2005	0.3	0.33	0.32	0.24	0.32	0.39	0.38	0.88	0.99	1			
2007	0.37	0.38	0.35	0.28	0.39	0.49	0.5	0.86	0.89	0.92	1		
2009	0.33	0.34	0.32	0.24	0.38	0.38	0.52	0.86	0.85	0.87	0.89	1	
2011	0.35	0.37	0.35	0.25	0.35	0.33	0.41	0.73	0.71	0.74	0.74	0.84	1
	Spearman's rank correlation coefficients												
	1989	**1990**	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**
1989	1												
1990	0.92	1											
1991	0.69	0.91	1										
1993	0.65	0.71	0.67	1									
1995	0.59	0.57	0.48	0.71	1								
1997	0.56	0.54	0.43	0.64	0.69	1							
1999	0.55	0.48	0.35	0.51	0.56	0.64	1						
2001	0.56	0.57	0.51	0.51	0.59	0.6	0.75	1					
2003	0.48	0.45	0.36	0.45	0.53	0.57	0.66	0.77	1				
2005	0.51	0.48	0.42	0.44	0.44	0.55	0.66	0.71	0.78	1			
2007	0.31	0.27	0.25	0.24	0.28	0.39	0.54	0.59	0.66	0.66	1		
2009	0.37	0.33	0.28	0.3	0.41	0.37	0.59	0.69	0.66	0.66	0.67	1	
2011	0.43	0.42	0.39	0.4	0.51	0.39	0.51	0.62	0.68	0.7	0.58	0.72	1

Source: Prepared by the author from Rosstat official data

regions. Kumo (2007) also pointed out that interregional migration patterns in Russia are partially shaped by such regions, as confirmed in this chapter by using a much broader set of data. On the other hand, it can be said that the fact that climatic conditions yield ambiguous results is indicative of a phenomenon unique to Russia, namely that resources are located in regions with harsh climate conditions. Government investment affected population migration patterns in the Soviet era, but its impact waned conspicuously after the collapse of the Soviet Union. Either that or it ceased to function as an explanatory variable. That phenomenon was in itself predictable, but the analysis conducted in this chapter was the first to employ data from the Soviet era to show that change clearly.

Nevertheless, the analysis in this chapter remains insufficient. Materials relating to economic variables in the Soviet era are still impossible to obtain fully, so some of the analysis is based on estimates. Furthermore, it was in 1987 that the Gorbachev administration, the final government of the Soviet era, implemented the perestroika (restructuring) reforms. Turmoil followed, and the Soviet Union was dissolved on December 25, 1991. In light of that, in order to compare the Soviet era with modern Russia it is necessary to use interregional migration statistics dating back to before 1990. Efforts need to be made to secure additional data. In addition, when analysing Soviet and Russian economic dynamics diachronically, it is usual to come up against inconsistent definitions of indicators, so it will be necessary to try to identify convincing variables.

The introduction to the chapter pointed out that one of the issues with interregional population migration would be whether it would result in a narrowing of disparities between regions in terms of the level of economic development. Vakulenko (2014) studied the relationship between population migration and the narrowing of disparities but did not obtain clear results. In light of the findings of this chapter, namely that population migration patterns in Russia have become similar to those seen in other countries, long-term inflows into regions with higher levels of economic development could serve to narrow regional economic disparities. However, if the concentration of population in Moscow continues it may result in a short-term increase in disparities, and this confusing situation may have led to the unclear results. The usability of the data has been confirmed to some extent, and from now on it would be desirable if efforts are made to deepen the analysis.

8.6 Appendix

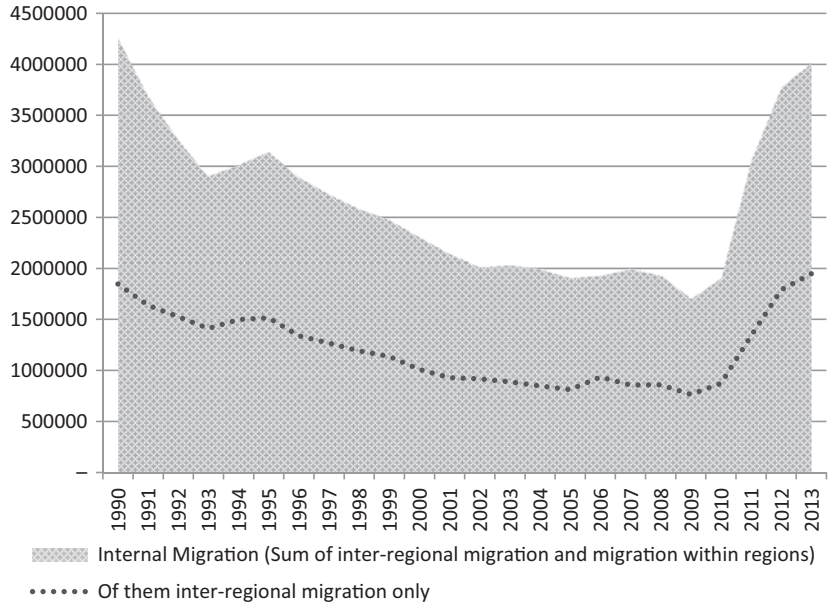


Fig. 8.A Interregional migration and migration within regions in Russia, 1990–2013 (*Source*: Prepared by the author from the Internal Material offered by Rosstat.)

Notes

1. On December 27, 1932, the Central Executive Committee and the People's Commissar of the Soviet Union formalized "the establishment of a unified system of passports and the obligation to obtain residence permits" (Postanovlenie VtsIK i SNK ot 27.12.1932, «Ob ustanovlenie edinoi pasportnoi systemy po Soyuzu SSR i obyazatelnoi propiske pasportov»). Initially, the residence permit system was applied on a priority basis to the major cities of Moscow, Leningrad, Rostov, Kiev, Kharkov, and Minsk, but later it was introduced in almost every medium-sized and large city.
2. Refers to regions situated in the Arctic and other regions with similarly harsh living conditions. They were designated for the preferen-

tial allocation of resources and higher wages. Since the collapse of the Soviet Union the government has continued to provide assistance to Extreme North regions, but it is not of the type that would encourage the inflow of labor into these regions. In fact, the government has adopted policies that encourage the outflow of population from these regions (Thompson 2005). There are many laws and regulations, but see the Russian Federal Law "National Social Security and Subsidy Programs for Workers/Residents in Extreme North Regions and Similar Regions" (December 31, 2014) («O gosudarstvennykh garantiyakh i kompensatsiyakh dlya lits, rabotayushchikh i prozhivayushchikh v rayonakh Kraynego Severa i priravnennykh k nim mestnostyakh (s izmeneniyami na 31 dekabrya 2014 goda) »).

3. However, it was only in 1974 that passports began to be issued to residents of farming villages. Until then such residents were basically not allowed to move to cities ("Approval of Rules Concerning the Passport System in the Soviet Union", Soviet Cabinet Decision No. 677, 28 August 1974) (Postanovlenie Sovmina SSSR ot 28 avgusta 1974 goda No.677 «Ob utverzhdenii polozheniya o pasportnoi sisteme v SSSR»). A look at the interregional population migration matrix (paper version) for the 1950s and 1960s from the Russian State Archive of the Economy (RGAE) shows that information about city-to-city migration was obtained, but adequate information about city-to-village, village-to-city, or village-village migration may not have been. In 2007–2008 the authors studied archived materials at the RGAE, but only documents on city-to-city migration had been filed, and there were not even any statistics recording origins/destinations for other types of migration.
4. With the passage of "Freedom of Movement and Rights Concerning the Selection of Resident Location within the Russian Federation by Citizens of the Russian Federation," Russian Federal Law, October 1, 1993 (Zakon RF ot 1 oktyabrya 1993 «O prave grazhdan Rossiiskoi Federatsii na svobodu peredvizheniya, vybor mesta prebyvaniya i zhitelstva v predelakh Rossiiskoi Federatsii»), the residence permit system was formally abolished. This has been cited as a problem because authorities such as the city and oblast of Moscow have continued to require the residence permission (*Moskovskie novosti*, March 25, 2005; *The Moscow Times*, January 17, 2013). At the same time,

however, there are apparently numerous ways to avoid registration, and this chapter does not consider the impact of the residence permit system in Russia after the breakup of the Soviet Union.

5. Given that Russia's total population declined continuously from 1992 onwards, the fact that the number of people from Siberia and the Far East residing in the Central Federal District dropped between 2002 and 2010 is not in itself surprising. Given that the total number of people who left a federal district and moved from their birthplace to their current place of residence declined by an average of 14 % during this eight-year period (Table 8.1 Panel E), the key point must be that this number fell by a much lower rate than the trend for the population as a whole.
6. Refer to Lewis (1969), and chapter 3 of Kumo (2003), a survey relating to population migration research in the Soviet era.
7. Quite a few studies have also pointed out problems with the statistical record. This shows that the change in systems has had a major impact on migration statistics (Eliseeva 2006; Vishnevskii 2014; Shcherbakova 2015). Refer to Fig. 8.A. It shows total interregional population migration from the end of the Soviet era in 1990 to 2013, with figures based on data from Rosstat. It appears that total population migration declined continuously following the Soviet collapse. In addition, from 2011 onwards this trend seems to have increased rapidly. However, the change in systems has played a role. The residence permit system in the Soviet Union made it easy to grasp what was happening with interregional migration. However, after the collapse of the Soviet Union, its formal abolition inevitably reduced the proportion of identifiable cases of migration (Vishnevskii 2014). Another point is that definitions used in migration statistics changed in 2011. Until then, a migrant was defined as someone who changed their permanent domicile (i.e. a place in which they had resided for one year or more), but from 2011 the period was changed to nine months or more (Shcherbakova 2015), because of this it is impossible to discuss the scale of total population migration in the later period.
8. Scant explanation concerning the data was provided, making it difficult to know what sort of materials had been used. Because their analysis could not be conducted without the distance between regions, there can be no doubt that they used OD tables.

9. It was confirmed that the 2003 figures obtained from it matched the figures used in Kumo (2007).
10. Rosstat, *Rossiiskii statisticheskii ezhegodnik* (Russian Statistical Yearbook), Moscow, various years. (in Russian)
11. Ministerstvo finansov rossiyskoy Federatsii (2014), *«Byudzhet dlya grazhdan», k Federal'nomu zakonu o federal'nom byudzhete na 2015 god i na planovyy period 2016 i 2017 godov* (Ministry of Finance of the Russian Federation, Budget for the Citizens by the Federal Law on the Federal Budget for 2015 and the planned period for 2016 and 2017), Moscow. (in Russian)
12. Average expenditure on charged services per capita and average expenditure on services for living per capita are Soviet/post-Soviet categories of expenditure. The former involves expenditure on transport, communication, education, travel, healthcare, cultural activities (museums, theatres, and so on); the latter is expenditure on shoes, clothing, machine repairs, cleaning, home renovations, saunas, and so on. Variables that denote monetary amounts such as incomes and expenditure result in serious problems. Refer to Note 13 for more information on this.
13. This is to avoid problems that could be generated by monetary indicators. In 1992–1995 hyperinflation occurred, and no reliable deflator exists. In addition, a redenomination was carried out in 1998. To avoid such problems, Andrienko and Guriev (2004), for example, used the ratio of nominal income to minimum living expenses as the income variable. This chapter employs the ratio of incomes in the origin and the destination and the ratio of the amount of government investment in the two regions directly as explanatory variables. This should eliminate problems stemming from the units of measurement.
14. As methods for dealing with these missing figures, previous research has set the population migration figure as 1 or 0.5 (Guriev and Vakulenko 2015). This cannot escape criticism as being arbitrary. Regardless of whether 1 or 0.5 is set for the number of migrations for calculation purposes for the regional pairs with zero migrations (a total of 8,824), the results of analysis for the entire sample were qualitatively the same as when zero migrations was

treated as a missing value (when excluded from the sample; as shown in Table 8.3A).

15. Total interregional migration (excludes migration within regions) was more than 30.53 million persons in 159,290 regional pairs over the 24 years; 58,308 regional pairs saw migration of 91 people or more, and these regional pairs accounted for migration of 27.47 million people (90 % of the total). Similarly, a total of 34,477 regional pairs saw migration of 178 people or more, and these regional pairs accounted for migration of 24.43 million people (80 %); 21,207 pairs saw migration of 305 people or more, and these regional pairs accounted for 21.37 million people (70 %). Finally, 13,202 regional pairs saw migration of 484 people or more, and these accounted for 18.32 million people (60 %). These were the sub-sets of each analysis. However, even if migration of at least one person occurred, there were cases in which the other data was missing, so the actual number of observations used in the analysis was smaller than this. Refer to Table 8.3B.
16. For example, in 2008 the regions with the most hospital beds per capita were the Chukot Autonomous Okrug, Magadan Oblast, Tyva Republic, Sakhalin Oblast, Jewish Autonomous Oblast, and Murmansk Oblast. Regarding the number of doctors, the city of Saint Petersburg was at the top throughout the period, followed by the Chukot Autonomous Okrug and the city of Moscow. These were followed by regions that are far away from European Russia, namely the Republic of North Ossetia, Tomsk Oblast, Astrakhan Oblast, and Amur Oblast.
17. No region had an average January temperature of more than zero degrees Celsius.
18. There are a number of problems with the data used here. First, some of the explanatory variables for 1989 are estimates (see Table 8.2 for details). The figure for the amount of government investment in 1989, in particular, was extrapolated from the figures for 1990 and 1991. The authors also performed an analysis based on data for 1990, the oldest year for which actual figures could be used. According to that, either the interaction term of government investment and the year dummy ceased to be significant at an earlier stage (from the beginning of the 2000s or the end of the 1990s), or a positive and

significant coefficient is obtained depending on sub-sets that limit the number of observations. However, a similar explanation can be made when the estimated 1989 data is used as the base. Furthermore, it is difficult to imagine that during the Soviet era development policy changed all that much from year to year, and the regional distribution of government investment in 1989, for which the figure is an estimate, government investment in 1990, and government investment in 1991 are all highly correlated with each other (see Table 8.4). As a result, rather than excluding the data for 1989 from the analysis, the authors emphasize the use of interregional population migration in 1990, during the Soviet era, which is rare data. Second, as the authors mentioned in Note 7, there is the problem that in 2011 the definitions used in population migration statistics changed. With regard to this point, the authors performed an analysis using only migration data for the period to 2010 and confirmed that the results were qualitatively indifferent from the ones obtained in this chapter.

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9

In Lieu of a Conclusion

Kazuhiro Kumo, Tatiana Karabchuk and Ekaterina Selezneva

9.1 International Migration Trends Pertaining to Russia

This book has dealt with the phenomenon of domestic factors pertaining to Russia, such as birth rates, death rates, and interregional migration within the Russian Federation, which affect Russia's total population and the regional distribution of its population. What has been ignored is the external factor of international migration, which mainly takes the form of migration between those countries that comprised the former Soviet Union, and the impact of this needs to be discussed.

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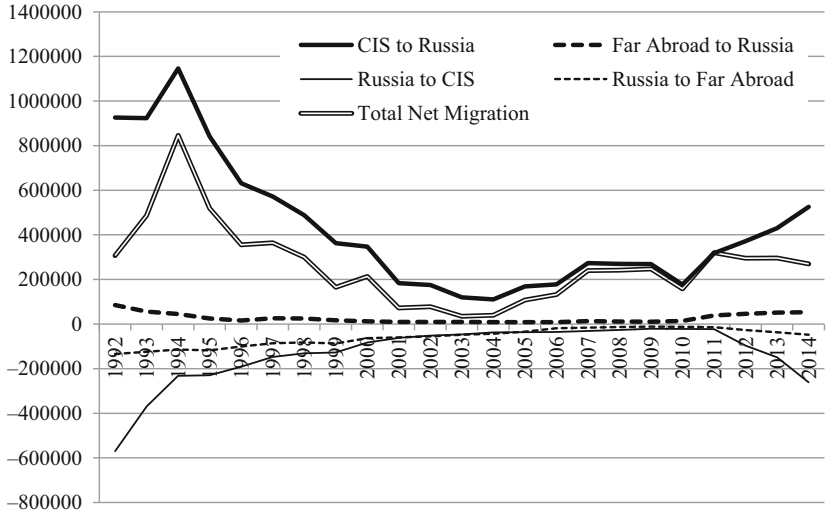

Fig. 9.1 Gross international migration flows in Russia, 1992–2014 (*Source*: Prepared by the author by Rosstat Website, http://www.gks.ru/ accessed on January 23)

As has been described in detail, during the 20 years since the collapse of the Soviet Union, the number of deaths in Russia has continuously exceeded the number of births. However, this loss of population due to natural decline has not been directly reflected in total population dynamics. This is because the small percentage drops in Russia's population have been compensated for by a net inflow of migrants.

Migratory trends are shown in Fig. 9.1, in which near-abroad refers to the countries that comprise the Commonwealth of Independent States (CIS) following the Soviet collapse. It does not include the Baltic states. Other countries are all classified as far-abroad. It should be noted that Georgia, which withdrew from the CIS after the South Ossetia war of 2008, is included in the former for calculation purposes in this figure.

It can be seen that large inflows and outflows occurred for several years after the collapse of the Soviet Union. The bulk of these migrants were returnees from former Soviet republics (Kazakhstan, Ukraine, etc.) in which large numbers of ethnic Russians had resided, returnees to former Soviet republics (Ukraine, Belarus, etc.) who had left those countries, and

German and Israeli citizens (moving to their respective mother countries) descended from people who had lived in Russia since the imperial era. The graph shows that although there has been incoming and outgoing migration, Russia has always recorded a net inflow. In 1993–1997, in particular, the country allowed net immigration of between just under 400,000 and over 800,000 each year. As a result, during the 1990s half or more of the natural decline in population, which was less than one million people per year was offset by net immigration. These movements occurred because the Soviet Union comprised nations with multiple ethnic groups. Since the imperial era, Russia had pursued a policy of assimilation based on sending ethnic Russians into the areas it controlled. As a result, even regions in Central Asia contained a considerable number of Russian residents.

However, the flow of such people shrank sharply between the end of the 1990s and the beginning of the 2000s. In 2001–2004 the number of net immigrants was less than 100,000 or even less than 50,000 a year. This means that migration by ethnic Russian residents in the republics that had comprised the Soviet Union who wished to or were able to migrate (return) was drawing to a close. Although it is true that ethnic Russian residents continue to live in the former Soviet republics, with 25 years having already passed since the collapse of the Soviet Union, it is hard to envisage large numbers of them returning to Russia in the future.

From 2006 onwards, the number of immigrants begins to increase once again. The reasons for this probably include the impact of measures introduced with the aim of offsetting the loss of population, such as policies making it easier for ethnic Russian residents of former Soviet republics to return to Russia, and the effect of aggressive immigration policies aimed at plugging the labor shortages that were expected to soon become apparent due to the decline in population. However, it is difficult to measure the impact of such measures, and there is also the question of how far they can compensate for the natural decline in the population, which already exceeded 200,000 people in 2010 and may accelerate each year from now on. In its mid-2016 (May 27, 2016) forecasts, the Russian Federal State Statistics Service (RFSSS) predicted that while the influx of immigrants could offset the population decline until 2023, from then on the total population would drop.

9.2 Can the Import of Labor Help Tackle the Problem of Population Decline

As the birth rate declines, labor shortages eventually occur. If there are concerns about labor shortages occurring, arguments may be made for the import of foreign labor. Such arguments are also made in Russia. During the same period that the case was being made for measures to encourage childbearing and improve standards of medical care, a 2006 presidential decree[1] and the "Program to Promote the Immigration of Ethnic Russians Residing Abroad"[2] contained statements extolling the virtues of boosting the working population through the enthusiastic acceptance of immigrants.

However, the acceptance plans submitted in conjunction with these developments by the various regions designated as pilot regions for the acceptance of ethnic Russians from abroad stated that only small numbers of immigrants could be accepted. For example, Amur Oblast (a region in Russia's far east) said it would accept only 992 people (which, if their relatives joined them, would actually amount to 3,000–4,000 people)[3] over the five years of 2007–2012, and Khabarovsk Krai (also in the Russia's far east) said it would take just 421 (around 1,700 including relatives)[4] in 2007–2009. However, these regions had been experiencing population declines of 6,500–20,000 people each year since 2000 (*Russia Population Yearbook*, RFSSS), and the figures their acceptance plans were quoting were far below this level. Compared with the scale of the actual population decline that was occurring, it is easy to see that the impact of these plans was going to be limited.

Regarding the acceptance of international labor migrants, it is a fact that aggressive action was seen in this area from 2006 onwards. The figures from the Ministry of Internal Affairs demonstrates this (Table 9.1). Between 2006 and 2007, the total number of foreign workers issued work permits by the Ministry of Internal Affairs of the Russian Federation increased by almost 1.7 times, and large numbers of labor migrants continued to be accepted steadily after that. Faced with labor shortages, in 2006 Russia eased restrictions on the acceptance of foreign labor. Rules entitled "Immigrant Registration of Foreign Country

Nationals and Stateless Persons,"[5] introduced in July 2006, were a mark of this trend. Under these rules, residency by immigrants without visas, most of whom were citizens of the former Soviet Union, only had to be registered, whereas before it had required a permit. In addition, employers, even if they did not have a permit to hire foreign workers, could do so if the worker concerned was already in possession of a work permit.

However, the term labor migrants as used here refers to persons who are only planning to stay temporarily, that is, for less than one year generally. It does not include permanent immigrants. The immigrant population of Russia, which comprises people who have become "residents" of Russia, that is, they are not temporary stayers but are immigrants to Russia from foreign countries, is less than 300,000 people. This is very different from the figures in Table 9.1, but this is because Table 9.1 gives numbers not for residents but for temporary stayers who have obtained work permits.[6]

Although an increase in temporary stayers does not compensate for a declining population in itself, it can make up for labor shortages. However, if legislative trends and media broadcasts are followed, it can be seen that Russian policy on the acceptance of foreign workers is neither consistent nor easy to predict. When large numbers of foreign workers are accepted, a rise in xenophobia is frequently reported, and it is certainly possible that the domestic situation in Russia is taken into account when policy on the acceptance of foreigners is determined.

Concerning the relationship with population dynamics, there is room for debate on the extent to which the interpretation that the acceptance of foreign immigrants (permanent residents) can alleviate a natural decline. Indeed, the real number is bound to increase. The issue is whether that is sustainable over the long term.

Many studies have explored the relationship between immigration and fertility, and one of the things that has been shown is that the childbearing behavior of immigrants changes to mirror that of the citizens of country that accepted them (Todd and Courbage 2007). In other words, even if it is normal in their own country for a woman to have three or more children, migrants residing permanently in another only have as many children as the people in the destination country.

Factors that influence birth rates, such as the cost of childrearing and a demand for "quality" children (Becker 1960), can be considered to be

Table 9.1 Number of foreign citizens engaging in work in Russia (number of issued work permits by country of migrants' origin)

Country/ Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Uzbekistan	49,043	105,061	344,559	642,696	666,300	511,500	399,000	467,900	476,600	422,000
Tajikistan	52,602	98,736	250,190	391,438	359,200	268,600	166,400	181,400	162,800	145,700
Ukraine	141,777	171,292	209,301	245,292	205,300	167,300	110,300	127,800	124,900	139,500
China	160,569	210,784	228,848	281,679	269,900	186,500	69,500	76,900	71,300	71,700
Kyrgyz	16,228	32,981	109,643	184,641	156,100	117,700	65,600	76,800	82,700	72,900
Turkey	73,695	101,407	131,248	130,477	77,200	45,700	18,900	27,700	27,700	24,100

Source: Prepared by the author by Internal Data offered by the Ministry of Interior of Russia; Rosstat, *Trud i Zanyatost Rossii* (Labor and Employment in Russia), 2011, Moscow. (in Russian)

dependent on the degree of economic development in the country, the degree of social support for childrearing, social attitudes towards childrearing, and so on. In addition, the average number of childbirths in each country can be regarded as being ultimately derived from residents making rational choices based on social conditions in that country. If that is the case, it is obvious that for immigrants who might have had a large number of children in their own country, the rational choice is to match their childbearing behavior with that of the citizens of the country that accepted them as immigrants.

However, such behavior ultimately renders meaningless policies such as accepting nationals of countries where people have large numbers of children in order to improve population dynamics. Such policies may only be being put forward as partial solutions to the immediate issue of population decline. They may lack a long-term perspective.

Let us assume that foreign workers in Russia eventually adopt similar childbearing behavior to Russian people. If they also exhibit the same birth rate as Russia's total fertility rate (TFR), each couple will produce well under two children. In other words, Russia's population dynamics will not improve. Moreover, when foreign workers reach the age at which they are eligible to receive pensions, it is possible that the fiscal burden of Russia's unfunded pension system (a pension system under which the working generation supports the elderly), while not worsening, will not improve either.

The acceptance of foreign labor in an effort to secure an adequate workforce may be effective to some extent. However, the method adopted by Germany, under which temporary stayers are continuously replaced to maintain the size of the workforce, ultimately results in the emergence of the issue of whether to accept foreign workers as permanent residents, so it is unlikely to be achievable. Large income differentials will encourage foreign workers to stay long term, and if that happens some are likely invite their families to join them. When discussing the acceptance of labor migrants, it is worth remembering the often quoted words: "We invited 'work forces' but what came were 'people'."[7] And when Russia adopts an immigration policy, it will probably be difficult to prevent a similar situation occurring.

9.3 Predictions for the Future

Chapter 3 showed that since 2006 Russia has been taking extremely aggressive measures to encourage childbearing, and if the birth rate has increased as a result of this policy, will that prevent Russia's population decline? By taking another look at Russia's population pyramid it is easy to make rough estimates of Russian birth dynamics 20 or 30 years from now.

The most recent population pyramid that can be produced is for January 1, 2015.[8] The base of the pyramid in Fig. 9.2 is getting wider as each year goes by. This is the result of a rise in the birth rate from 2000 onwards, and it can be seen that this expansion of the base begins in the under-10 age group.

Given the experiences of countries in Western Europe, it is hard to envisage Russia's birth rate recovering to a level of around 2.1, which would be sufficient to reproduce the population. Even if that does happen, it will be difficult to reverse a population decline that will continue for the next 20–30 years.

As mentioned earlier, the increase in the birth rate from 2000 accompanied a rise in the number of women of childbearing age. It can be pointed out that in Fig. 9.2 the bloating of the 30s age group corresponds to the bloating of the under-10 age group. The thickness of the 30s age group, meanwhile, corresponds to the thickness of the mid-50s age group. This can be seen in the same context as the post-war baby boomers and their children (the second-generation baby boomers) in other advanced countries. What this shows is that it is completely natural for population phenomena to repeat themselves in 20–30-year cycles in conjunction with human childbearing behavior.

From this perspective, let the authors focus on the under-25 age group, which has clearly shrunk dramatically. Although it is true that the under-10 age group has expanded, the number of the girls who are under one year old (940,000), which is the peak age in the under-10 age group, is much smaller than the number of women who are 27 years old (1,280,000), which is the peak age in the 20–30 age group, and the number of women who are 54 years old (1,320,000), which is the peak age in the around-50 age group. Even if the birth rate of females in the

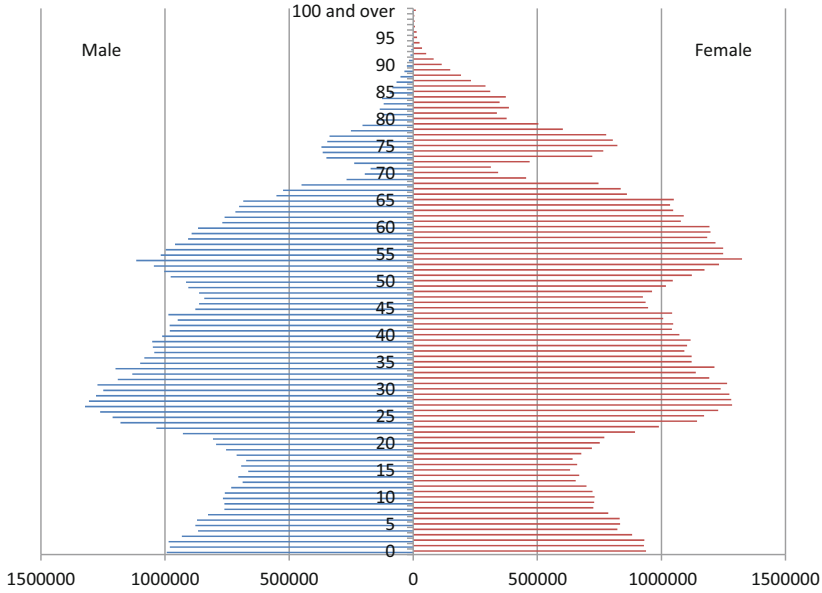

Fig. 9.2 Population by age and sex for Russia, January 1, 2015 (*Source*: Prepared by the author by Rosstat, *Chislennost naseleniya Rossiiskoi Federatsii po polu i vozrastu na 1 yanvarya 2015 goda* (The Number of Population of the Russian Federation by Sex and Age on January 1, 2015), 2016, Moscow. (in Russian))

under-20 age group happens to be 2.1 in the future, all it will mean is that the same pyramid will be redrawn. In other words, supposing the number of children borne by females who are 15 years old (in the pyramid) maintains the 2.1 level sufficient to regenerate the population, this would mean that the population of people aged 15 in 2015, the smallest cohort size, would be regenerated. In other words, the maximum number of people that could be born over the next 20–30 years is already pretty much determined at the present time.

As a result, even if a TFR as high as 1.5–1.6 upwards is maintained, this will not put a stop to the decline in Russia's population. Theoretically, to enable the population to be "maintained" over the long term, it would be necessary to maintain a TFR of around 2.1 for several decades. The decline in Russia's population can be said to be already destined.

Population dynamics cannot be changed overnight. Even if the birth rate suddenly increases dramatically, it will only affect total population dynamics at the national level after 20–30 years, when those expanded age groups reach adulthood and a reproductive age. In 2016, the generation born in 1992 just after the collapse of the Soviet Union finally turned 25. In the decade or so from 2016, the generation born when Russia's birth rate was exceedingly low (1993 to the mid-2000s) will become adults and start producing children. As a result, the impact of the dramatic fall in the birth rate seen in Russia immediately after the collapse of the Soviet Union will only become evident from the mid-2010s onwards.

These realities indicate that population dynamics in Russia in the near future are more or less determined. Whether it will actually be possible to change this future may, as one saw in Chaps. 4, 5, and 6, be dependent on whether the enthusiastic and clear introduction of, for example, gender equality and ambitious measures by the national government to support childbearing can affect social norms and go as far as transforming consciousness at the individual level.

Notes

1. Ukaz Prezidenta Rossiyskoy Federatsii ot 22 iyunya 2006 goda, Moskva № 637 o merakh po okazaniyu sodeystviya dobrovol'nomu pereseleniyu Rossiyskuyu Federatsiyu sootechestvennikov, prozhivayushchikh za rubezhom. (The order of the President of Russian Federation on June 22, 2006, Moscow, No. 637, "Measures to assist the voluntary resettlement of compatriots living abroad to the Russian Federation")
2. Rossiyskaya gazeta (Russian Newspaper), 2006.06.28.
3. Rossiyskaya gazeta, 2006.09.01.
4. Rossiyskaya gazeta, 2006.09.06.
5. Federal'nyi zakon ot 18 iyulya 2006 g. N 109-FZ "O migratsionnom uchete inostrannykh grazhdan i lits bez grazhdanstva v Rossiiskoi Federatsii" (in Russian) http://base.garant.ru/12148419/.(Federal Law of July 18, 2006, "On Migration Calculation of Foreign Citizens and the Persons without Nationality")

6. Although the table shows old data, in 2007 the total number of persons who had entered Russia from Tajikistan and made Russia their permanent domicile was just 17,300. This is the original table (note that after 2009 the CIS Statistical Committee stopped publishing inter-country migration flow tables and the information cannot be updated).

Migration Matrix in 2007 (in thousand)

	Destination					
Origin	Kazakhstan	Kyrgyz	Russia	Tajikistan	Turkmenistan	Uzbekistan
Kazakhstan	–	0	40.3	0	0.4	0.7
Kyrgyz	1.8	–	24.7	0.1	0	0.3
Russia	11	2.7	–	1	2.3	2.9
Tajikistan	0.1	0.5	17.3	–	0.5	0.4
Turkmenistan	4.1	0	4.8	0	–	0.2
Uzbekistan	24.9	0.1	52.8	0.2	3.1	–

Source: Prepared by the author by CISStat, *Sodruzhestvo Nezavisimykh Gosudarstv v 2007 godu* (Commonwealth of Independent States in 2007), Moscow; Rosstat, *Rossiiskii Statisticheskiy yezhegodnik* (Statistical Yearbook of Russia), Moskva, 2008

Look at the differences between this and Table 9.1. Compared with the number of persons who had changed their domicile, the number of persons who entered Russia as temporary workers is between four and more than ten times higher. It is also perfectly feasible that the return destination a person registered in the country they were leaving differed from the country they ultimately returned to and actually registered as residents in. As a result, the migration matrix based on outbound data and the migration matrix based in inbound data will differ. Refer to Kumo (2012) for a discussion of the issue of inconsistencies in statistics on migration between CIS countries. In addition, the UN (1998) has investigated in detail problems relating to immigration statistics as a whole.

7. "Wir riefen Arbeitskräfte und es kamen Menschen." by Max Frisch.
8. These are the latest figures obtained in January 2016 from the Russian Unified Interdepartmental Integrated Statistical Information System, a statistical database site built as part of a Russian federal program.

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