

Chapter 10

Gender Pay Gap in Russia: Literature Review and New Decomposition Results



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Abstract This chapter is dedicated to the gender pay gap (GPG) in Russia. First, it provides a review of the existing literature, covering key studies published in international and Russian academic journals. This investigation distinguishes between studies examining GPG in the 1990s and those analyzing the later period, briefly describing their focus and key findings regarding traditional economic explanations of GPG: differences in the amount of human capital between genders, family factors, industrial and occupational employment segregation, and discrimination. Second, this chapter presents and discusses the results of the standard Oaxaca-Blinder decomposition of GPG during the period from 1994 to 2018, by using RLMS-HSE microdata. Finally, it formulates a few stylized facts and conclusions concerning the size, evolution, and sources of GPG in Russia and outlines some promising avenues for future research.

Keywords Gender pay gap · Oaxaca-Blinder decomposition · RLMS-HSE · Russia

10.1 Introduction

Gender asymmetry in the labor market exists in all countries. Labor force participation and employment rates, hours of work and earnings of women are typically lower than those of men (e.g., see recent reports by ILO 2018 or UNDP 2019). This asymmetry suggests that female labor is underutilized, which is wasteful when many countries are suffering from ageing and depopulation. Further, it may reflect discrimination against women, which is currently as morally unacceptable as racial discrimination (ILO 2011). Therefore, it is not surprising that hundreds of economic and non-economic studies worldwide are trying to understand the reasons behind the unequal positions of men and women.

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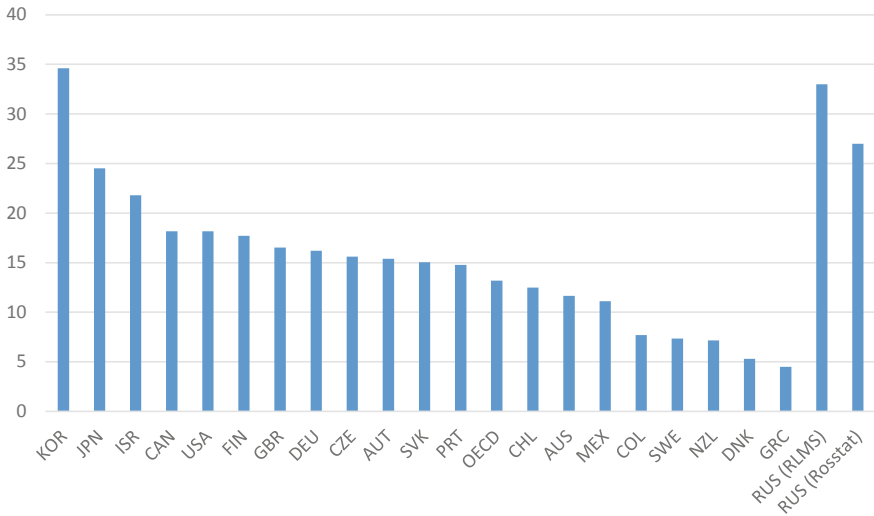


Fig. 10.1 Gender gap in monthly earnings across OECD countries and in Russia in 2017 (*Notes* The gender wage gap is defined as the difference between median earnings of men and women, relative to median earnings of men. Data refer to full-time employees, excluding self-employed individuals. The source of data for all countries, except Russia, is OECD Employment Database (2020), Gender wage gap (indicator). <https://doi.org/10.1787/7cee77aa-en> (Accessed on 16 January 2020). Estimations for Russia are made by author using RLMS-HSE and Rosstat micro-data of 2017)

One of the key aspects of the gender asymmetry is Gender Pay Gap (GPG). Although GPG has been decreasing over the last decades (see Ortiz-Ospina and Roser 2020), it is still prevalent in many countries. As Fig. 10.1 shows, in 2017 the raw GPG in median monthly earnings across OECD countries ranged from 34.5% in South Korea to 4.5% in Greece with the average OECD level at about 13% (percentage from the median earnings of men).

Extensive economic literature distinguishes among a few broad explanations of GPG: differences in the amount of accumulated human capital between genders, family factors (marriage and children), and employment segregation by gender, i.e., the uneven distribution of men and women across different industries and occupations. However, in many countries, a substantial part of GPG cannot be explained by such variables. While traditional economic approach implicitly attributes all unexplained differences to discrimination of women (in pay as well as in hiring and promotion), more recent economic literature is increasingly relying on adjacent social disciplines and explaining such differences, for instance, through social norms or differences in psychological attributes and non-cognitive skills between sexes (see Blau and Khan 2017).

This chapter is dedicated to GPG in Russia, the largest post-socialist economy. The size of GPG in the country is big by international standards. In 2017, the gap in median monthly earnings was about 30%, which substantially exceeded the OECD average and gaps existing in most developed countries, including Israel, USA, and

any Western European country (see Fig. 10.1). The high GPG is accompanied with other gender related gaps, such as the motherhood wage penalty (see Chapter 11 in this volume or e.g., Biryukova and Makerentseva 2017; Karabchuk et al. 2012) and fatherhood and male marriage premiums (Aistov 2013; Aswin and Isupova 2014; Oshchepkov 2020), reflecting the prevalence of strong traditional gender roles in the country (White 2005).

There are dozens of published studies examining GPG in Russia, but to the best of the author's knowledge, none has systematized existing evidence. This chapter fills this gap and reviews what is known about GPG in Russia, highlighting issues that need more focused research in the future. First, it presents a review of the existing literature on GPG in Russia, covering key articles published in international and Russian academic journals. Second, it provides and discusses the results of the standard Oaxaca-Blinder decomposition of GPG during the period from 1994 to 2018, by using the RLMS-HSE micro-data.

This study may be viewed as a country-specific extension of the literature reviewing gender asymmetry in the labor market in post-socialist countries (Khitarišvili 2019; Perugini and Selezneva 2015). While such literature provides a useful perspective, it is inevitably too general and omits important national specifics. In this regard, this study is similar to that of Pastore and Vereshagina (2011) which focused on Belarus, or Khitarishvili (2009) which focused on Georgia, and to studies presented in the other chapters of this book (e.g., see Chapters 7 and 8).

The chapter is organized as follows. The second section briefly describes Russia's macroeconomic background and traces the evolution of the raw GPG during 1994–2018. The third section presents the literature review. The fourth section provides and discusses the results of the standard Oaxaca-Blinder decomposition of GPG during 1994–2018. The fifth section derives general conclusions and outlines prospects for future research.

10.2 Macroeconomic Background and the Evolution of the Raw GPG During 1994–2018 in Russia

Since the early 1990s, Russia has come a long way from being the major republic of the USSR to an independent country with a market economy. Figure 10.2 traces the evolution of the country's key economic and labor market indicators, since 1993.

Transition from planned to market economy started in the beginning of 1990s, with political instability and deep-seated economic crisis that reached its peak by 1998 when the real GDP decreased by 30% from its 1992 level, while the Russian government defaulted. The labor market adjusted to these shocks through the reduction of real wages, which halved by 1998, while the reaction of the total employment

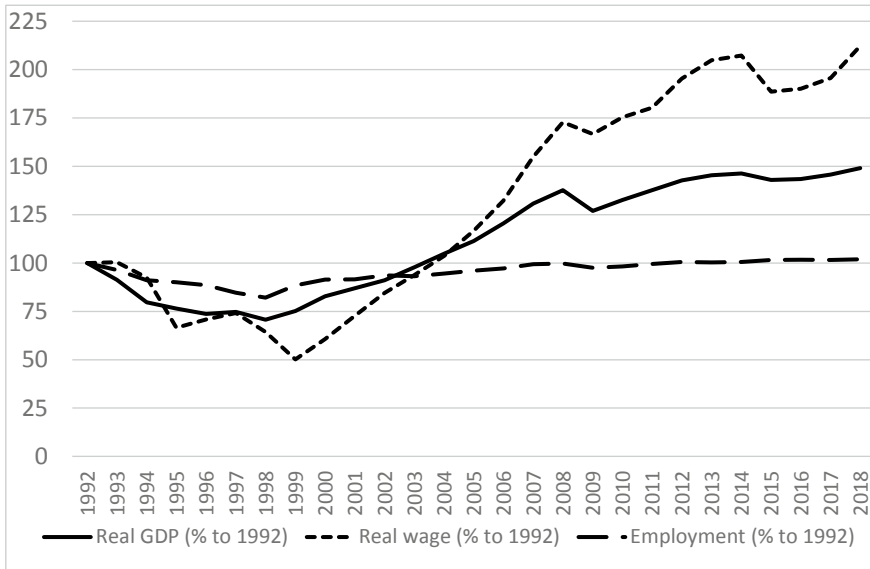


Fig. 10.2 The dynamics of Russia's real GDP, real wages, and employment in 1993–2018 (Source: the author's calculations by using Rosstat data)

was relatively modest, exhibiting only a 18% decrease by 1998. The rise in unemployment was modest as well: in 1998 the unemployment rate reached 13.3% and has been steadily declining thereafter.¹

The 2000s in Russia were characterized by political stabilization under the second (and current at the time of writing this chapter) Russian president Vladimir Putin, along with a strong economic recovery which had already started in 1999, when the economy grew by about 6.3%. The economic growth continued afterwards with 5–10% yearly rates until the World financial crisis of 2008–2009. Real GDP growth was accompanied with rising real wages, which were growing, on an average, by around 15% per year. The reaction of employment was modest, increasing by 1–2% per year. The economic boom ended in 2009 when real GDP fell by 7.8%.

The third decade (ongoing at the time of writing this chapter) was characterized by declining rates of economic growth. While in 2010 real GDP grew by 4.5%, by 2014 the rate of growth had already plummeted to around zero. The slowdown ended in 2015 with a 2.3% economic decline at the background of falling oil prices, ruble depreciation, and sanctions (and contra-sanctions) imposed after the accession of the Crimea. Similar to 2008–2009, the Russian labor market adjusted to these shocks mostly through the real wages which fell by 9% in 2015, while employment and

¹The strong reaction of real wages and weak reaction of employment and unemployment are the key features of the Russian model of the labor market adjustment to economic shocks (see Gimpelson and Lippoldt 2000; Gimpelson and Kapelyshnikov 2011; Kapelyshnikov 2001), similar to the transition experiences of some other post-socialist countries.

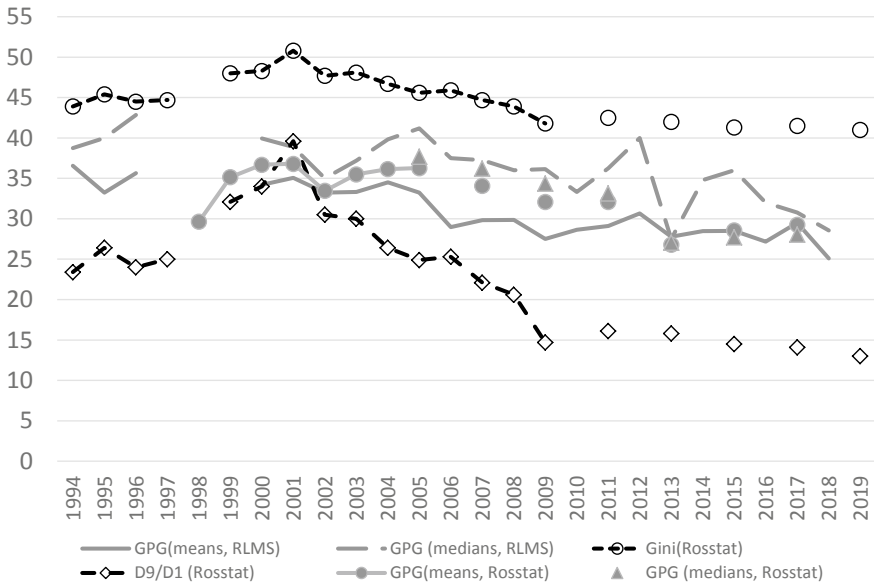


Fig. 10.3 The dynamics of GPG in monthly wages over 1994–2018 (Source the author’s estimations using Rosstat and RLMS-HSE data)

unemployment rates were rather stable. The rest of the decade was characterized by weak economic and real wages growth and stable employment.

Figure 10.3 traces the dynamics of the raw GPG in Russia during 1994–2018, estimated by using data from different sources. RLMS-HSE² is the only source that provides data for the entire period (with the exceptions of 1997 and 1999 when the survey was not conducted). According to these data, GPG in mean monthly wages was about 35% (percentage from men’s average wages) during 1990s,³ which declined to about 30% during 2000s and remained below 30% in 2010s. GPG in median wages was generally higher than that in mean wages (by 1–10 p.p.) but exhibited a similar pattern over time.

Another source of data that allow for estimating GPG in Russia are regular surveys of large and medium enterprises conducted by Rosstat. Although this source of data is quite different from RLMS-HSE, which is a population survey, the size and dynamics of GPG that it provides are quite similar to those obtained by using RLMS-HSE.

²“Russia Longitudinal Monitoring survey, RLMS-HSE” is conducted by National Research University “Higher School of Economics” and OOO “Demoscope” together with Carolina Population Center, University of North Carolina at Chapel Hill and the Institute of Sociology of the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences. (RLMS-HSE web sites: <http://www.cpc.unc.edu/projects/rllms-hse>, <http://www.hse.ru/org/hse/rllms>).

³Newell and Reilly (1996) reported the estimate of the raw GPG in mean monthly earnings for 1992 when the first wave of RLMS was conducted. Their estimate was 30%, which is close to the 35% level observed since 1994.

According to the Rosstat data, GPG in mean and median monthly wages ranged between 30 and 35%, slightly declining over time.

Figure 10.3 also presents the dynamics of the overall wage inequality measured by using Gini and D9/D1 decile ratio. Wage inequality was on the rise during the 1990s, peaking at the beginning of the 2000s, then declining during the 2000s and being stable in the 2010s. The evolution of GPG was generally in line with such dynamics, which suggests that rising (or declining) wage differentiation could be one of the factors driving GPG during the period.

10.3 Literature Review

The literature on GPG in Russia may be divided into two waves. The first wave of studies, conducted mostly by Western scholars, was spurred by the tremendous interest on Russia as the major communist country that has begun the transition from a planned to a market economy. These studies examined GPG and some related issues mostly in 1990s. A gradual decline in Western economists' interest in Russia and the appearance of domestic economic research marked the emergence of the second wave of studies, many of which were conducted by Russian-speaking authors who analyzed GPG in 2000s and 2010s.

10.3.1 *First-Wave Studies*

Most first-wave studies analyzing GPG in Russia in the 1990s regarded this issue in the context of the country's transition from planned to market economy. They were aimed at determining how the transformation process influenced the relative position of women in the labor market and paid less attention to the sources of GPG.

To understand changes in GPG during the transition better, the gender inequality that existed in USSR should be considered. Labor force participation of Soviet women was high by international standards (Gunderson 1989). Soviet women's high labor force participation before WWII was needed to support massive industrialization, while after WWII, it was required to compensate the tremendous decrease in men's labor supply. According to some authors, 89% of women were in full-time employment or study (e.g., see Shapiro 1992). In addition, Soviet women, like women in other countries, were responsible for housekeeping and caregiving. To reconcile employment with family responsibilities they were forced to attend jobs with more flexible working arrangements, shorter working hours, which, in turn, supported occupational and industrial segregation of employment by gender and contributed to GPG.

Reviewing several studies conducted on the Soviet period, Khitarishvili (2019) concludes that "Soviet women earned between 65–75% of men's pay" (p. 1258). Right before the beginning of the transition, differences in pay between the sexes in

the USSR and CEE countries were lower than in most Western countries. In 1989–1990, the average monthly wage of women in the RSFSR was approximately 71% of men's average monthly wage, 74% in Bulgaria and 76% in Poland, whereas, for example, in Britain it was only 60% (see Maltseva and Roschin 2006). However, existing studies have different opinions on the impact that the transition process had on the relative wages of Russian women.

On the one hand, according to Brainerd (2000), the relative position of women has declined due to the rapid growth of wage differentiation, since the percentage of women employed in relatively lower paid jobs was higher than that of men. This conclusion is in line with the estimates obtained by Newell and Reilly (1996): by 1996, in most CEE countries, relative women's wages were nearly the same, while in some countries they grew in comparison with the levels observed prior to the reforms; but as far as Russia was concerned, these wages dropped to a level of less than 70% of average men's wages.

On the other hand, according to Reilly (1999) who decomposed changes in GPG from 1992 to 1996, the increased wage dispersion was “a modest agent for the widening of the gap in Russia.” (p. 245). This conclusion echoes results of Newell and Reilly (2001) who noted that “the adjustment process itself appears, heretofore, to have been approximately neutral to the average pay position of women relative to men. This is perhaps most surprising for Russia and other countries of the Former Soviet Union where there have been large increases in wage inequality. It seems that in these countries, contrary to expectation, the relative pay position of women has not deteriorated.” (p. 302).

Some studies that examined GPG in the 1990s analyzed its sources by applying the Oaxaca-Blinder decomposition.⁴ Of those, one of the first was that of Newell and Reilly (1996). Using micro-data from the first wave of RLMS-HSE (conducted in 1992) the authors estimated the raw GPG in mean wages equal to 30%. According to their estimations, only about 11% of the gap could be accounted for by differences in productive characteristics (endowments) between sexes, while the remaining, almost 90%, were due to differences in returns of those characteristics. Occupational segregation accounted only for a small part of GPG (information on industrial affiliation of jobs was not available in RLMS-HSE at that time). The authors also noted the poor performance of the Mincerian equation “in marked contrast to its successful application when fitted to data for numerous capitalist economies,” which “highlights the role exerted by unobservable factors in the wage determination process for both gender groups in Russia.”

⁴There are few known quantitative studies on GPG in USSR. Ofer and Vinokur (1992) analyzed data from a survey of workers who had emigrated from the Soviet Union in the 1970s. Their analysis shows that, on an average, women in USSR earned less than two-thirds of men's wage. About 49.3% of this gap can be explained by differences in returns to characteristics (such as human capital and occupations), while the rest of GPG, according to the authors, may be attributed to discrimination. Katz (1997) used data from a survey conducted in Taganrog in 1989. The Oaxaca-Blinder decomposition of GPG in hourly wages has shown that the main factors driving GPG were family variables and employment segregation. Around 48% of the GPG was unexplained.

Glinskaya and Mroz (2000) examined GPG by using RLMS-HSE data from 1992 to 1995. In contrast to Newell and Reilly (1996), they found that occupational segregation of employment by gender was able to account for substantial part of GPG. When the female reward structure was used as a base in the Oaxaca-Blinder decomposition, the explained part of the gap was about 20%, while the contribution of occupational segregation was 25%. When the male reward structure was used as a base, the explained part constituted about 5% with the 7% contribution of occupational segregation. In addition, both variants of the decomposition have shown that differences in educational endowments between sexes tended to reduce GPG by 2–5%.

According to Ogloblin (1999) who studied GPG by using 1994–1996 RLMS-HSE data the role of occupational segregation by gender was even more important, accounting for almost 50% of the gap. The next factor was industrial segregation which accounted for about 30%. Therefore, occupational and industrial employment segregation by gender together accounted for more than 80% of GPG (jointly with ownership type). Human capital variables—education and experience—reduced the gap by about 3.5% each, close to the estimates obtained by Glinskaya and Mroz (2000). Finally, a correction for selectivity was able to reduce the unexplained part of the gap by about 11 pp.⁵ In sum, the explained part of the gap in this study constituted about 86.5%, which is the highest level attained among all published studies applying the standard Oaxaca-Blinder decomposition for the Russian case.

Deloach and Hoffman (2002) focused on the role of housework in generating GPG. Using 1994–1996 RLMS-HSE data, the authors found that Russian women spend substantially more time doing housework and less time on the job than Russian men. However, according to the authors, this did not lead to relatively low wages of women. Instead, low wages motivate women into doing more housework.

One issue specific to the 1990s is wage arrears. According to existing studies, wage arrears affected men to a larger extent than women (Lehmann and Wadsworth 2001). Gerry et al. (2004) re-examined GPG in 1994–1998 taking into account wage arrears and found that they attenuated the gap in mean earnings by about 7 p.p., which is close to the 10 p.p. estimate reported by Lehmann and Wadsworth (2001).

Overall, a relatively large unexplained part of GPG was inherent to almost all studies that applied the standard Oaxaca-Blinder decomposition of GPG in the Russian case (except for Ogloblin 1999). However, the authors did not suggest any explanations or offer any interpretations to this unexplained portion, and they were reluctant to interpret it in terms of discrimination.⁶ Instead, they were trying to find

⁵This is in line with results by Arabshuibani and Lau (1999) who used the RLMS-HSE data of 1994 and found that selection was significant for females (and not significant for males) and the explained part of the gap increases by about 10 p.p., after a Heckman correction. However, Gerry et al. (2004) found no evidence that either the male or female wage equations exhibited selectivity bias in RLMS-HSE data of 1994–1998.

⁶The key reason seems to be that the Oaxaca-Blinder decomposition does not allow direct estimation of the extent of discrimination and implicitly attributes the whole unexplained part to discrimination. However, this interpretation is problematic as the unexplained part absorbs all not controlled differences in productivity between males and females, which can exist not only due discrimination.

some external evidence on it. For instance, Ogloblin (1999), builds his previous discussion of discrimination on studies by Standing (1994, 1996), indicating that discrimination on the part of employers was insignificant in Russia, at least at the beginning of transition.

10.3.2 *Second-Wave Studies*

The 2000s in Russia were characterized by political stabilization and strong and persistent economic growth (until 2009). The size of GPG has stabilized at the 30% level of the men's average wage. In research, the focus has shifted to the sources of the gap, paying more attention to possible discrimination against women.

Oshchepkov (2006) made the standard Oaxaca-Blinder decomposition of GPG by using the NOBUS data of 2003 and explained half of the GPG through traditional economic variables. The key factor contributing to the gap was occupational and industrial segregation (about 45%, jointly with ownership), followed by human capital variables (minus 9.4%) and family factors (about 3.5%). The author also analyzed the distribution of the unexplained part across the overall wage distribution and within different groups of workers and found that the unexplained part was largest among workers of 25–29 and among those with short tenures, indicating statistical discrimination of women.⁷

Ogloblin (2005), by using RLMS-HSE data of 2000–2002, has also found that the employment segregation by gender was the key factor in GPG, accounting for about 75% of the gross differential in monthly earnings. Differences in human capital endowments had the offsetting effect, reducing the gap by about 8%.

Ogloblin and Brock (2005) examined the underpayment gap in Russia's urban labor markets due to monopsony. Using RLMS-HSE data of 2000–2002, the authors found significant differences in the degree of monopsony underpayment between men and women, with a lower degree of underpayment among female workers. These results suggest that the monopsonistic underpayment could be one of the factors reducing GPG in the Russian case, but this issue was abandoned in the subsequent literature.

Kazakova (2007) analyzed the impact of economic growth on GPG in early 2000s by using RLMS-HSE data of 1996–2002. The author found that a temporal increase

The underestimation of the extent of discrimination is also possible because part of industrial and occupational segregation may be caused by discrimination.

⁷Statistical discrimination is based on the assumption that different groups of workers have different average levels of productivity. If members of one group are on average more productive than members of another group, and if it is costly to determine the actual productivity of an employee, employers may find it profitable to pay workers based on data on average levels of productivity. Therefore, even when hiring a woman with a high personal level of productivity, employers can still offer her a lower wage. It should be noted that from the point of view of economic theory, statistical discrimination can eventually exist, only if the inter-group differences in average levels of productivity are real and do not just exist in the minds of economic agents.

in GPG in 2000 was due to reduction in the extent of wage arrears. In line with the results of previous studies, the key source of GPG was occupational segregation of employment by gender, explaining 30–60% of GPG. Human capital variables (education and experience) reduced GPG by about 10%.

While the issue of discrimination became more popular among scholars in the 2000s than it was in the 1990s, the quantitative evidence on discrimination was still rare,⁸ and researchers relied mostly on qualitative evidence, case studies, or interviews. For instance, Roshchin and Zubarevich (2005) analyzed job announcements placed by employers. They found that a large percentage of them was non-neutral in terms of gender. Employers preferred women as accountants and secretaries, but they preferred men as programmers, lawyers, and engineers.

A report by the Moscow-Helsinki Group (Moscow-Helsinki Group 2003) considered three forms of discrimination against women in the labor market: in hiring, in pay, and throughout career growth. Based on focus groups organized across 20 Russian regions, the following results were obtained: at the time of hiring, men were preferred to women mostly in situations where women either already have children or may have children in the future. Regarding pay, statistical discrimination is widespread: employers are of the opinion that women, on an average, are less productive than men, because women think more about family and children due to which they tend to dedicate less time and effort to work. In terms of career growth, available data clearly certify the insufficient representation of women in directors' positions in comparison with that of men (e.g., see Roshchin and Solntsev 2006). Nevertheless, there are no clear estimates that show how far such insufficient representation of women is a consequence of discrimination, or that of distribution on the basis of meritocratic principles.

Another trend in the literature in the 2000s is an emerging interest in differences in psychological traits and non-cognitive skills between sexes and their possible role in explaining GPG. Although evidence on such differences is still scarce in Russia as well as in other post-socialist countries (see Khitarishvili 2019), existing results suggest that these differences contribute to GPG to a much lesser extent than traditional economic factors (see Linz and Semykina 2008, 2009; Semykina and Linz 2007, 2010). This interest intensified in the 2010s; in 2016, RLMS-HSE measured respondents' psychological traits within the Big-5 framework. While published articles using these data are still rare, few existing studies indicate that men and women expectedly differ in psychological traits, which may affect their earnings and slightly reduce the portion of GPG unexplained by traditional economic variables (Maksimova 2019; Rojkova 2019).

Yet, the literature examining GPG in the 2000s, and particularly in the 2010s, typically used more sophisticated econometric techniques than studies focused on the

⁸Khitarishvili (2019) in her review of GPG in the post-soviet countries mentioned very little quantitative evidence on discrimination. She referred to Asali et al. (2017) who examined discrimination at the hiring stage in Georgia by using an experiment with fictitious resumes and found no evidence of such discrimination.

early transition period. In 2010s, conducting the standard Oaxaca-Blinder decomposition of GPG in mean earnings became clearly not enough for publishing in a peer-reviewed journal, partly because GPG was rather stable over time, and its chief driving factor—occupational and industrial employment segregation by gender—and chief offsetting factor—human capital endowments—were well understood. The popular methodological extension is to analyze GPG not only at the mean but also at different parts of the wage distribution. Following this way, Atencio and Posadas (2015) examined GPG by using the methodology of Fortin et al. (2011), which allows the estimation of the contribution of each covariate included in the wage equation on the wage structure and composition effects along the earnings distribution. Analyzing RLMS-HSE data of 1996, 2002, and 2011, the authors found that the raw GPG varies considerably along the earnings distribution, being lower toward its center. In addition, the contribution of wage structure components (differences in returns to characteristics) was increasing with the position in the wage distribution, while the largest unexplained gap was found at the top of the distribution, indicating toward glass-ceiling effect.

Finally, it should be mentioned that the possible impact of events specific to the 2000s and 2010s, including doubling the minimum wage in 2007 and 2009 (see Lukyanova 2011; Muravyev and Oshchepkov 2013) and sanctions and contra-sanctions imposed from 2014 has been left almost unexamined in the existing literature on GPG, which could be an engaging avenue for future research.

10.4 Sources of GPG in Russia: Oaxaca-Blinder Decomposition During 1994-2018 by Using RLMS-HSE Data

10.4.1 RLMS-HSE Data: A Brief Description

RLMS-HSE is the key source of data to study GPG and many other labor market issues at the individual level in Russia. The survey provides representative micro-data for each year since 1994 (except for 1997 and 1999). It allows the measurement of the rich set of individuals' socio-demographic and employment characteristics, including age, education, wage, tenure, occupation, etc. The analysis presented in this chapter uses RLMS-HSE data from 1994 to 2018.

10.4.2 Methodology

To analyze the sources of GPG in Russia, the author employs the standard Oaxaca-Blinder decomposition (Oaxaca 1973; Blinder 1973), developed in subsequent studies by Neumark (1988), Oaxaca and Ransom (1994, 1999), and Newman and

Oaxaca (2004). At the first stage, mincerian-type wage equations are estimated separately for men and women:

$$\begin{aligned} \ln(\text{Wage}_i) = & \alpha + \beta_1 * \text{HC}_i + \beta_2 * \text{Fam}_i + \beta_3 * \text{Job}_i + \beta_4 * \ln(\text{Hours}_i) \\ & + \beta_5 * \text{Controls}_i + \varepsilon_i \end{aligned} \quad (10.1)$$

where *Wage* is monthly wages; *HC* is the set of individual human capital characteristics (age and age squared to proxy labor market experience, education, tenure, and tenure squared); *Fam* is the set of family characteristics (marital status and children of different ages); *Job* contains job-related characteristics, including occupation, industry, enterprise size, and ownership type; *Hours* is monthly working hours; *Controls* include settlement type and regional dummies; ε is the conventional error term.

Monthly wages have been used on LHS of Eq. (10.1) because hourly pay is not common and institutionalized in the Russian labor market. Most workers are paid monthly and, for instance, the minimum wage is set on the monthly base. The inclusion of working hours to RHS allows the adjustment of differences in monthly wages to differences in working hours along with the estimation of the contribution of differences in working hours between men and women to the overall gender gap in (monthly) wages. Moreover, as Eq. (10.1) suggests, a simple division of monthly wages by the number of hours worked is correct, only if β_4 is close to one. (Looking ahead, the estimations show that β_4 is around 0.3 in the Russian case).

When estimating Eq. (10.1) for men and women, one should consider a possible sample selection. Generally, if a probability of inclusion to the sample is lower (higher) for low-paid workers, then the average wage will be (under-) overestimated. If men and women differ in direction and/or magnitude of that selection, it should have an impact on GPG. To adjust for this, the standard Heckman procedure is used (Heckman 1979). (However, the estimations show that the Heckman's correction almost does not affect the estimates of coefficients in wage equations for men and women, while ρ is insignificant in both cases, which is in line with earlier studies by Gerry et al [2004] and Oshchepkov [2006]. Therefore, this factor is not discussed in the empirical section where the results of the Oaxaca-Blinder decompositions are presented and discussed).

At the second stage, the difference in the average logarithms of wages between men and women is decomposed into four components:

$$\begin{aligned} \ln \overline{W}_m - \ln \overline{W}_w = & \overline{X}_m \hat{\beta}_m - \overline{X}_w \hat{\beta}_w = \overline{X}_m (\hat{\beta}_m - \beta^*) + \overline{X}_w (\beta^* - \hat{\beta}_w) \\ & + (\overline{X}_m - \overline{X}_w) \beta^* + (\lambda_m \hat{\beta}_m - \lambda_w \hat{\beta}_w) \end{aligned} \quad (10.2)$$

where \overline{W}_m и \overline{W}_w are a geometric means of men's and women's wages, respectively; $\hat{\beta}_m$ and $\hat{\beta}_w$ are vectors of the estimated coefficients from the wage equation estimated separately for men and women, respectively; \overline{X}_m и \overline{X}_w are sets of average values of worker and job characteristics for men and women, respectively;

β^* coefficients of worker and job characteristics in the absence of discrimination in pay (see below); $\hat{\beta}_m \lambda_m$ and $\beta_w \lambda_w$ are the elements which correct for possible gender differences in the sample selection (λ are the inverse Mill's ratios received from the Heckman procedure).

The key aspect of this decomposition is how to define β^* . Generally, in the absence of discrimination, the structure of wages lies between the actual earnings structures of men and women. Following Oaxaca, many authors assume $\beta^* = \beta_m$ or $\beta^* = \beta_w$. Hence, they receive two estimates for the unexplained part of GPG (see Oaxaca 1973). However, there are many examples when a difference between these two estimates is quite large, and it is not clear which of them should be used. Moreover, this approach does not consider the existing gender composition of employment. For instance, if female workers constitute 90% of total employment, it is difficult to think that the earnings structure in the absence of discrimination is close to men's earnings structure.

Neumark (1988) proposed estimating β^* in the following way:

$$\beta^*_j = \frac{W_{mj}M_j + W_{fj}F_j}{M_j + F_j} \quad (10.3)$$

where M_j and F_j are quantities of men and women among workers of type j . In other words, in the absence of discrimination, wages are the weighted average of wages of men and women under discrimination. In practice, β^* can be obtained from an estimation of the joint wage equation by using pooled sample of males and females.

Following Neumark (1988), we take β^* as an earnings structure obtained from the estimation of the wage equation jointly for men and women.⁹ Hence, the first term of the decomposition (2) is the difference between actual men's wages and wages that they would receive, if their wage structure was the same as β^* (e.g., in the absence of positive discrimination of men). The second term is a difference between actual women's wages and the wages they would receive, if their wage structure was the same as β^* (e.g., in the absence of discrimination of women). Together, these terms constitute the unexplained part of GPG. The third term is supposed to reflect the difference in wages due to differences in endowments (X s) between men and women. The fourth term represents wage differentials due to the varying direction and/or magnitude of selection of samples of men and women workers. Together, the last two terms constitute the explained part of GPG.

The key indicator of interest is the share of the explained part, i.e., the part of GPG which can be explained by differences in endowments (and selection) between sexes. As the explained part is a simple sum over the contributions of individual factors, it can be easily decomposed further to identify the contribution of each factor (endowment). The decomposition of the unexplained part is less straightforward as the contributions of factors to the unexplained part may depend on arbitrary scaling

⁹This approach was used earlier in a few studies on Russia (e.g. Gerry et al. 2004; Ogloblin 1999; Oshchepkov 2006).

decisions, if the predictors do not have natural zero points (see Jann 2008). In addition, the contributions of categorical predictors depend on the choice of the omitted base category. A possible solution is to transform the coefficients estimated at the first stage of men's and women's wage equations, so that they reflect deviations from the grand mean, which makes the results independent of the choice of the base category (see Jann 2008 for more details).

This study decomposes the overall GPG to the explained and unexplained parts and further decomposes both into contributions of different factors. These decompositions are made for each year during the period 1994–2018, which allows for tracing the evolution of the (un)explained part as well as the relative contributions of different factors to GPG over time. All decompositions were performed in Stata by using—*oaxaca*—module (Jann 2008).

10.4.3 Variables and Measurement

To measure individual monthly wages (at the primary job), we use answers to the following question: “*How much money did you receive in the last 30 days from your primary job after taxes? If you received all or part of the money in foreign currency, please convert that into rubles and report the total.*” To mitigate the role of outliers and decrease the probability of errors, all reported wages which are less than bottom 0.5% and greater than top 99.5% of the wage distribution for each year are recoded to missings.

Education is measured as the highest educational level attained by using already constructed variable provided with the dataset.

The length of tenure is measured as a difference between the calendar date of the survey and the date of the beginning of work at the current job. As in Oshchepkov (2016), the author first measures the tenure in months and then divides it by 12. In cases when the month of the job start was not provided, it was assumed to be June to keep observations.

To measure monthly working hours at the primary job, answers to the following question are used: “*How many hours did you actually work at your primary job in the last 30 days?*” All values exceeding 360 hours were recoded to missing values.

Marital status was measured by using the already constructed variable provided with the dataset. The parental status of workers was constructed by using information from the family ties section of the household questionnaire, which allows for counting the number of children and their age. (A direct question on the number of children appeared in RLMS-HSE only in 2004, and it allows for distinguishing children of different ages, which may be crucial for the understanding of the influence of children on men's and women's wages.) We distinguish between children of four age groups: 0–2, 3–6, 7–17, and 18+.

Job characteristics include occupation (according to Russian OKZ which is equivalent to ISCO-88), enterprise ownership (state or private), industry (according to Russian OKVED which is equivalent to NACE), and size. As the industry variable

is available in the RLMS-HSE data only since 2004, two series of decomposition results are conducted: one is for the whole period 1994–2018 without the industry variable, the other one is for the period 2004–2018 with the industry variable. The size of enterprise is measured as a categorical variable distinguishing six grades: 10 and less employees, 11–50, 51–100, 101–500, 501–1000, and 1000+.

Following most previous papers on Russia and other post-soviet countries (e.g., Atencio and Posadas 2015; Kazakova 2007; Pastore and Vereshagina 2011) the author excludes self-employed from the sample as principles and factors of the determination of their incomes may be quite different from wage determination of employees. Employees in military forces are also excluded.

10.4.4 Main Findings

To begin with, we present the results of the Oaxaca-Blinder decomposition for the available period, from 1994 to 2018, based on the estimated wage equations which do not consider the industry variable. Figure 10.4 presents the size of explained and unexplained parts of the gap measured in absolute terms (in log points, left scale) and the relative size of the explained part measured in percentages of the overall GPG (right scale).

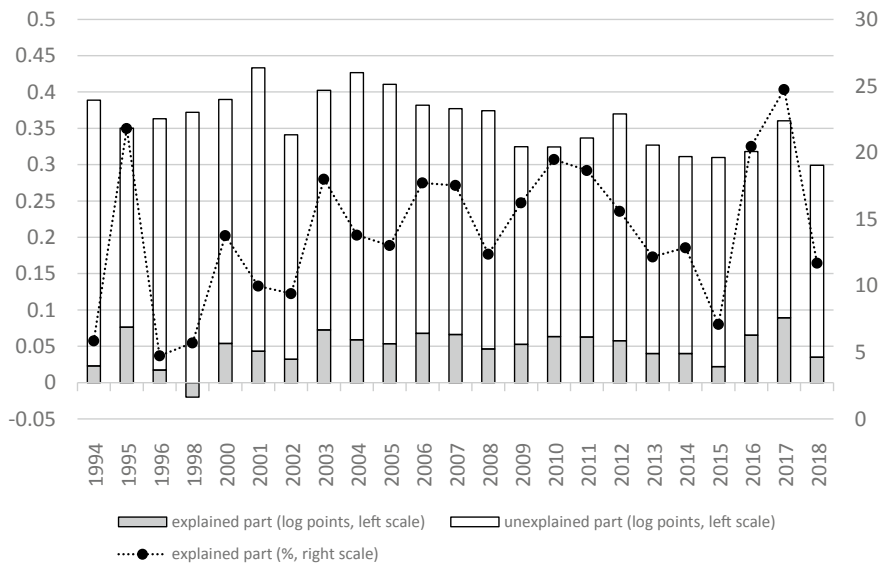


Fig. 10.4 The size of the explained and unexplained parts of GPG after the Oaxaca-Blinder decomposition in 1994–2018 (decomposition results without industries) (Source the author’s estimations using RLMS-HSE data)

The share of the explained part varied over time—from less than 5% (in 1996) to 25% (in 2017)—and never reached the share of the unexplained part. No clear trend in the dynamics of explained part is visible; its time pattern was quite irregular and not related to macroeconomic conditions and wage inequality. In 1998, the explained part was even negative in absolute terms, suggesting that traditional economic variables were helpless in explaining GPG in that year. The average value of the explained part over the entire period was about 14%.

Figure 10.5 shows decomposition results for the period 2004–2018, when the information on industrial affiliation of jobs was available in the RLMS-HSE data. Taking industries into account raises the explained portion of the gap by 1.5–2 times. The maximum value of the explained part reaches 32% (in 2017), while its minimum value rises to about 15% (in 2015). The average value of the explained part over 2004–2018 exceeded 25%. These results clearly suggest that the industrial segregation of employment by gender is an important factor of GPG in Russia, in line with conclusions of most previous studies.

Next, the structures of the explained and unexplained parts of GPG are analyzed. As industrial segregation of employment by gender makes a large contribution to GPG, the analysis is continued for the period 2004–2018, when the industry variable is available. Figure 10.6 shows the structure of the explained part for this period.

In any year, employment segregation by gender was clearly the key factor generating GPG. Its contribution varied from about 23% of the total GPG (in 2018) to more than 35% (in 2007), while its average value over time was about 30%. These estimates are quite akin to those of previous studies in Russia.

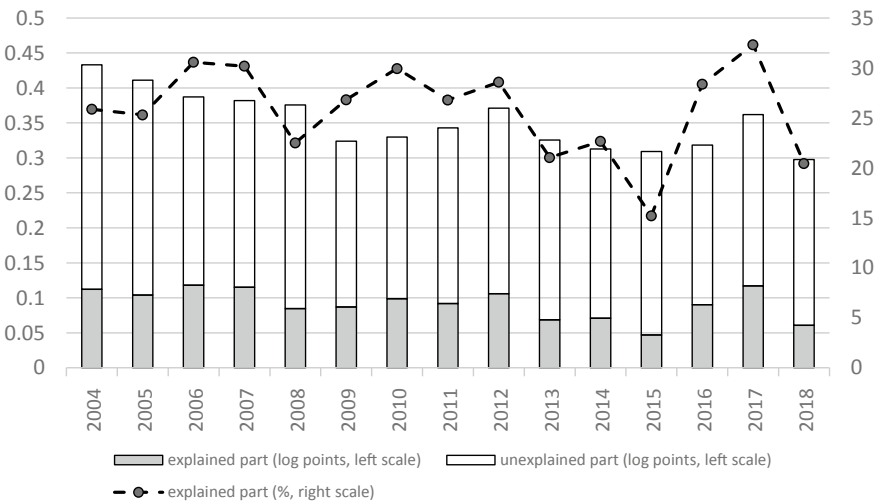


Fig. 10.5 The size of the explained and unexplained parts of GPG after the Oaxaca-Blinder decomposition in 2004–2018 (decomposition results with industries) (Source the author’s estimations using RLMS-HSE data)

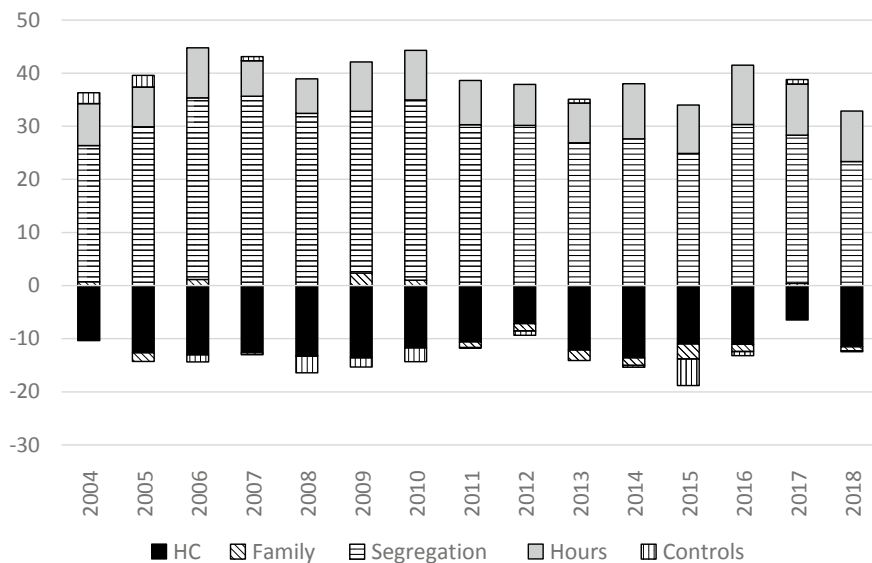


Fig. 10.6 The structure of the explained part of GPG (in % of total GPG) in 2004–2018 (Source the author's estimations using RLMS-HSE data)

The second largest contribution comes from the human capital variables. The joint contributions of age, education, and tenure was 6–13% of GPG, with the average value of more than 11%. The contribution of these variables to GPG was, however, negative. Human capital variables tended to reduce GPG, as women, on an average, have larger human capital endowments than men. If women would not have that advantage, GPG would be larger. This result is also completely in line with the results of all previous studies.

The contribution of working hours fluctuated from 6.5 to 10% over time, with the average value of 8.5%. The positive contribution of this factor to GPG in monthly wages is quite expected as women traditionally work less hours than men in the labor market. Once this difference is controlled, the overall gap shrinks.

The contribution of family characteristics varied in the range from +2.5% to –2.5% from year to year, with the average value over the period close to zero. Such a weak contribution of the family factor is related to the natural fact that differences in marital and parental statuses between men and women, on average, are quite small.

The joint contribution of the group of control variables, including the settlement type and region, was also quite small. However, in certain years it reached 5% of GPG. Therefore, the uneven distribution of men and women across urban and rural areas and regions should be taken into account when performing the standard Oaxaca-Blinder decomposition of GPG using RLMS-HSE data.

The structure of the unexplained part of GPG over time is presented in Fig. 10.7. In most years, the largest contribution to the unexplained part came from the difference in constant terms of wage equations estimated separately for men and women. Its

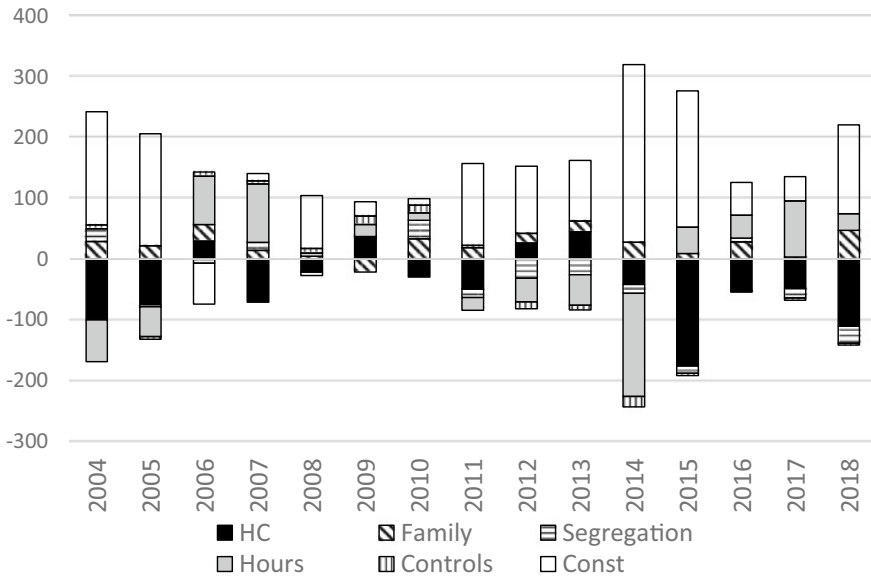


Fig. 10.7 The structure of the unexplained part of GPG (in % of the total GPG) in 2004–2018 (Source the author's estimations using RLMS-HSE data)

contribution often exceeded 100% of GPG. Although the large contribution of the constant term is typical for the results standard Oaxaca-Blinder decomposition, it does not have clear interpretations because it reflects wage differentials between sexes due to unobserved factors.

The next largest contribution comes from variables reflecting human capital. Differences in returns to human capital endowments (age, tenure, and education) shorten the gap, like the differences in the human capital endowments, as previously mentioned. On an average, their joint contribution was about 45%. The underlying reason is that women tend to receive higher returns to returns to human capital (formal education and experience) than men. (For instance, in 2018 the return to higher education relative to the secondary education was about 30% among women and only 20% among men.)

Family characteristics (marital status and children) take the third place among factors driving the unexplained part of GPG. Their joint contribution was, on an average, about 18.5%. While family characteristics themselves do not differ much between men and women, estimated coefficients of these characteristics in gender-specific wage equations, generally differ. While women experience motherhood penalties (e.g., Biryukova and Makerentseva 2017), men get marital and fatherhood premiums (Aistov 2013; Oshchepkov 2020).

Employment segregation by gender takes only the fourth place in this ranking of factors contributing to the unexplained part. While the average contribution of this factor over time was minus 5.5%, it exhibited a large variation from year to year,

ranging from plus 30% to minus 31.5%. The reason is that occupational and industrial wage structures among women differ from the wage structures existing among men (for instance, the estimation of wage equations show that women tend to receive higher wage premium than men when working as professionals, while men receive higher wage premium than women when working in elementary occupations), and these differences may play either in favor of women, reducing GPG, or against them.

The contribution of working hours was also quite irregular over time. While the average contribution of this factor during 2004–2018 was just about 1%, it ranged from almost plus 100% to minus 170%. Such fluctuations are related to the fact that the elasticity of monthly wages, with respect to working hours (reflected in coefficient β_4), was changing from year to year. While in some years this elasticity was greater among women than men (as in 2014), in other years it was less than that among men (as in 2007). Unfortunately, these yearly changes do not have clear substantive explanations and are likely related to changes in the composition of the yearly RLMS-HSE samples.

10.5 Conclusion

This chapter is dedicated to the gender pay gap in Russia. First, it reviews the existing literature, covering key studies published in international and Russian academic journals peer-reviewed journals. Second, it provides results of the standard Oaxaca-Blinder decomposition of GPG by using RLMS-HSE micro-data for the period from 1994 to 2018. This analysis allows for formulating a few stylized facts and conclusions concerning the size, evolution, and sources of GPG in Russia and highlighting some promising avenues for future research.

Firstly, the raw GPG in Russia is large compared to most developed countries. Population surveys (RLMS-HSE) and enterprise statistics (Rosstat) agree that its value was rather stable over the entire period of observation, ranging between 30 and 35% of men's average wage.

Secondly, all studies applying the standard Oaxaca-Blinder decomposition agree in that the main factor generating GPG in Russia is occupational and industrial employment segregation by gender. Decompositions during the period 2004–2018 show that this segregation may account for 20–35% of the raw GPG in mean monthly wages, depending on the year when the decomposition is conducted. Another stylized fact is that the differences in human capital endowments between sexes, particularly in educational attainments, tend to offset GPG, reducing it by about 6–13%. The fact that women usually work for lesser hours in the labor market than men widens GPG in mean monthly wages by 6.5–10%. Differences in family endowments—marital status and children—almost do not affect GPG, while the contribution of such variables as settlement type and region is marginal as well.

Thirdly, the major part of GPG in Russia cannot be explained by traditional economic variables including human capital, employment segregation, family characteristics, and working hours. Therefore, the key challenge to future quantitative

studies in Russia is to find explanations for the large unexplained part. While the standard Oaxaca-Blinder approach implicitly assumes that all unexplained differences in pay reflect discrimination of women, this explanation is clearly not satisfactory due to methodological limitations of this approach. Moreover, existing quantitative, qualitative, or experimental evidence on discrimination in Russia is scarce.

Fourthly, the analysis of the structure of the unexplained part may provide useful insights to the sources of the unexplained part of the gap. Although the largest relative contribution to the unexplained part comes from the difference in constant terms of the gender-specific wage equations, which does not have a clear substantive interpretation, examining contributions of other factors seems to be informative, indicating interesting avenues for future research. Decompositions made in this study show that a relatively large portion of GPG in Russia exists due to the gender differences in wage returns to human capital and family characteristics. Therefore, explaining these differences could help in understanding the overall GPG. Some insights can be made relying on the results of studies that analyzed marital and parenthood wage premiums and penalties. These results show that most differences between sexes are attributed to (self)selection of men and women with different individual productivity-related characteristics to marriage and parenthood (e.g., see Aistov 2013; Oshchepkov 2020). This heats the further interest on psychological attributes and non-cognitive skills and their role in wage formation and generating GPG in Russia, which emerged in the late 2000s.

Finally, the Oaxaca-Blinder decomposition results during the period from 1994 to 2018 presented in this chapter illustrate how the overall size of the explained part of GPG as well as the contributions of different factors may vary over time, differing even between two consecutive years under similar macroeconomic conditions. This suggests that any conclusions derived from examining data only for one particular year should be considered with caution. Therefore, a “good” practice could be to replicate results obtained for one year by using data on consecutive years.

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