



NATIONAL RESEARCH UNIVERSITY
HIGHER SCHOOL OF ECONOMICS

Victor Rudakov, Ilya Prakhov

GENDER WAGE INEQUALITY IN RUSSIAN UNIVERSITIES

**BASIC RESEARCH PROGRAM
WORKING PAPERS**

**SERIES: ECONOMICS
WP BRP 208/EC/2019**

GENDER WAGE INEQUALITY IN RUSSIAN UNIVERSITIES³

For several years, the Russian system of higher education had been undergoing massive transformations related to the enhancement of the global competitiveness of the national academic sector. The introduction of research-oriented universities and the transition to incentive contracts are the main elements of the reform. In this article we show how these institutional changes contribute to reducing the problem of gender inequality in academia. Based on comprehensive data from a Russian faculty survey (MEMO), it is found that there are considerable differences in gender wage inequality by university status: female faculty earn significantly lower salaries in ordinary universities, but there are no gender differences in pay in research-oriented universities, which are most actively transitioning to incentive remuneration schemes. Female faculty experience vertical segregation: women are less likely to achieve senior positions in university hierarchies. We also found indirect evidence of women's self-selection for lower-paid positions: female faculty are less likely to achieve advanced degrees and to have research publications. Overall, the study shows that male faculty earns 8.7% higher salaries than female counterparts after controlling for all observable characteristics. Oaxaca decomposition showed that 53% of the gender wage gap can be explained by observable characteristics, while the rest can be attributed to discrimination, self-selection or unobservable factors. In the absence of discrimination, male faculty should earn 10% higher salaries, but due to discrimination and unobservable factors, male faculty, on average, earn 18.7% more. However, the gender wage gap in academia is considerably below the national average: women earned on average around 80% of male salaries in academic sector, while in the whole Russian economy women earned around 70% of men's wages.

JEL Classification: J16; J30; J31; J41; J78

Keywords: gender wage gap, economics of gender, gender inequalities in academia, faculty pay, incentive contract, project "5-100"

¹ National Research University Higher School of Economics, Laboratory for Labour Market Studies. Research Fellow; E-mail: victor.n.rudakov@gmail.com

² National Research University Higher School of Economics, Centre for Institutional Studies. Research Fellow; E-mail: ipra@inbox.ru

³ The reported study was funded by RFBR according to the research project № 18-310-00115.

Introduction

The main motivation for research on gender wage inequalities is the sustained existence of a gender wage gap across different countries, between and within different occupations. This fact has been proved by a considerable number of research papers and the reports of international organizations (including OECD, International Labor Organization, World Bank). Most studies explore gender differences in the private sector by offering both theoretical explanations and empirical tests (Oaxaca 1973; Blau, Kahn 2000; Blau, Kahn 2017). However, the private sector is not the only area where gender inequalities occur. Recent studies have shown that gender differences in pay are widespread in the public sector and more specifically, in the academic labor market (Barbezat 2002; Perna 2003; Barbezat, Hughes 2005; Toutkoushian et al. 2005).

Studying gender inequalities in the academic labor market is of particular importance for at least two reasons. First, the higher education sector is attracting interest given the global transformations of the last decade (the globalization of higher education and the transition to a knowledge economy). Academics and their productivity have become an important source of scientific and technological progress (Kogan, Teichler, eds. 2007; St. George 2006; Marginson 2010). Thus, the questions of the most appropriate incentives in academia are on the agenda, and special attention is paid to the remuneration of university faculty which would reflect their individual productivity and would not lead to gender or other inequalities and discrimination. Nevertheless, even with performance-related pay, i.e. incentive salary mechanisms assuming the relationship between academic salary and specific performance indicators, the problem of gender wage inequality remains significant.

Second, when explaining gender inequalities in faculty remuneration, we should take into account the institutional differences between private and academic sectors. Higher education institutions (HEIs) have their own specific wage setting mechanisms. They are not classical profit-maximizing firms and salaries are highly correlated with the rank or position of faculty members within the university hierarchy and male faculty are more likely to be promoted to top positions (Barbezat, Hughes 2005; Silander et al. 2013). In other words, the gender wage gap may arise because of inequalities or non-transparency in faculty promotion both in the presence or the absence of proper performance-related payment schemes. This may create the space for gender discrimination in pay, vertical segregation and other kinds of discrimination.

Performance-related pay, or incentive contracts, may potentially solve the problem of gender inequality and discrimination in the academic sector. Potentially discriminated groups (in our case, female faculty) may benefit from incentive pay mechanisms as their salaries

would reflect their academic performance and depend solely on the observable characteristics concerned with their duties, such as research, teaching and service/administration. Properly designed, transparent incentive schemes assume that faculty pay should not be dependent on informal practices of faculty promotion, and both female and male faculty have equal opportunities for doing research, teaching or holding an administrative position within university. Hence, we may expect gender equality in the case of actively introduced incentive contracts: differences in salaries may be attributed to the differences in research productivity, teaching load, and administrative duties or service. In such circumstances gender should be neutral in the empirical estimates of faculty pay.

This paper analyses the reasons for and the degree of the gender wage gap in academia using data from the Russian higher education sector. We explore the case of Russia because the problem of gender inequality is extremely relevant, taking into account the gender structure of the domestic academic labor market and recent large-scale reforms in the national academic sector which affected academic profession (Prakhov, Rudakov 2018). Russia is ranked first in the world for the share of female faculty in tertiary education. Almost 60% of the faculty in Russian tertiary education are women, while the OECD average is 43%, G20 average is 41%, in United States – 49%, in the UK – 45%, in Germany – 39% (Education at a Glance, 2018; OECD). However, despite the numerical predominance of women in the academic market, recent studies show that gender inequality exists in a number of universities: for example, in 2012 male faculty were paid 22% more than their female colleagues, and in some HEIs the gender wage gap was up to 33% (Prakhov 2018).

Second, the problem of gender inequality in the Russian academic sector can be presented in light of the recent significant reforms aimed at improving the conditions of the academic profession. These institutional changes were concerned with the need to develop the Russian academic market and to increase its competitiveness internationally. Since 2012 Russia has gradually been implementing incentive contracts in academia. Such performance-related pay mechanisms are aimed to stimulate research activities and to increase the salaries of the most productive faculty by making salaries dependent on a number of observed parameters including the quality and quantity of publications and other research activities, teaching performance and administrative duties. These payment schemes, if properly designed, can increase the average faculty salary and reduce gender pay inequality as incentive mechanisms and performance-related pay could decrease the probability of discrimination. Other reforms were concerned with the introduction of research-oriented universities (where the most productive researchers may get a higher salary regardless of gender and other issues), and additional funding for such universities. However, even after

reforms the problem of gender inequality in Russian higher education has only been partially solved. Evidence shows that in 2017 the overall gender gap decreased to 12%, and payment schemes in research-oriented HEIs reflect equality, but in ordinary universities, male professors still receive 9–15% more than their female counterparts (Prakhov, Rudakov 2018). By studying the gender gap in the Russian academic sector, we argue that gender inequality can be decreased or even eliminated with the active adoption of incentive pay schemes, which are common for the recently introduced research-oriented universities in Russia.

Despite the large-scale contract reforms in Russian higher education gender wage inequality still exists. There are a number of negative consequences of such wage discrimination, such as the vulnerability of women, the feminization of poverty and the increased financial burden on the state to address this problem (Dipboye, Colella, eds. 2013; Becker 1985; Prokofieva 2000; Oshchepkov 2006; Kalabikhina 2011). In Russia, the problem is aggravated by the fact that after the collapse of the Soviet Union and until recently, the academic profession lost its prestige and was one of the most underpaid (Prakhov 2018). Recent institutional changes in Russian higher education are aimed at increasing the income of professors and contributing to the growth of the prestige of the academic profession, and at the moment, almost all universities have completed the transition to incentive contracts. However, such contracts should be non-discriminatory: the level of wages of women and men occupying the same positions and having similar responsibilities should be the same and depend directly on competencies, skills and productivity. In addition, women and men should have equal chances for career development and employment in high-level positions.

Hence, we explore the gender wage gap among Russian university faculty and the determinants of gender pay inequality in Russian HEIs. More specifically, we address the following questions: What are the determinants of gender pay inequalities? What is the difference in the magnitude of the inequality between research-oriented and ordinary HEIs? What share of gender inequality can be explained by observed parameters and what share can be attributed to discrimination? Separately, we look at how the gender wage gap changed in dynamics: before, during, and after large-scale reforms in the national academic sector.

The main contribution of this study to the existing literature is the detailed analysis of gender wage inequality in Russia, which is a leader by the share of female faculty in tertiary education. Additionally, we test the main hypotheses common for discrimination studies in labor economics (including vertical and horizontal segregation, self-selection, cross-sectoral differences, and the effects of specialization) applying them to the post-reform national

academic market using a comprehensive representative dataset⁴. This study also highlights the connection between incentive contracts and performance-related pay on gender inequality.

The study is structured as follows. Section 1 presents the theoretical framework of the study: we discuss the origins of gender pay inequalities and the theoretical explanations of the gender wage gap and their implications for the academic market. Special attention is paid to the microeconomic determinants of gender wage inequality, as these are the focus of the empirical part of this study. In Section 2, we set up the institutional framework of our study which includes an analysis of the institutional features of the Russian academic sector, recent reforms in higher education and their potential impact on gender inequality. Here we formulate the hypotheses of the study. Section 3 describes the data and methodology of the study. Section 4 explores the dynamics of the gender wage gap both in the pre- and post-reform periods. The magnitude of the gender gap in the academic sector is compared to that in the national economy as a whole. Section 5 presents the results of regression analysis of the determinants of gender wage inequality and gender wage gap decomposition. The final section concludes.

1. Theoretical approaches to the analysis of gender differences in pay and their empirical applications for the academic market

The majority of studies on gender wage inequality in the academic sector have proved the existence of the gender wage gap: on average, male faculty earn 19–25% more than female faculty (Barbezat 2002; Perna 2003; Barbezat, Hughes 2005; Toutkoushian et al. 2005; Umbach 2007). For example, Barbezat and Hughes (2005), using data of the National Study of Postsecondary Faculty 1999, found that male faculty earn 20.7% more than female colleagues. In order to explain these differences, we employ several theoretical approaches to analysing gender inequalities in the labor market with a special focus on the specific features of the academic market.

The theories which explain gender differences in pay and which are applicable to the academic labor market can be divided into two groups: theories of discrimination and non-discriminatory theories. Proponents of theories of discrimination argue that selection of female workers in lower-paid jobs is caused by gender segregation (vertical and horizontal) and discrimination.

As far as we analyze the gender wage gap within the academic sector, differences between different sectors of employment are excluded from our analysis. However, gender

⁴ MEMO dataset – Monitoring of education markets and organizations; Available at: <https://memo.hse.ru/en/>.

wage inequality within the academic sector can be partially explained by gender segregation by fields of study: male faculty are more likely to work in fields with higher average salaries (Toutkoushian, et.al, 2005; Barbezat, Hughes, 2005; Umbach, 2007). Umbach (2007) argues that faculty who are engaged in disciplines with relatively low demand, high teaching loads and less research funding earn less than faculty in other disciplines. Faculty in fields employing high percentages of women earn less than their counterparts in male-dominated fields. For instance, in the humanities, such subjects as English literature have the highest proportion of female faculty and are characterized by low salaries, and a low percentage of funded research. Mechanical engineering, one of the most well-paid fields, is characterized by the lowest salaries of female faculty (Umbach 2007). There is some evidence of gender specialization: women tend to work in fields that have higher teaching loads and less time for research (Umbach 2007).

There is gender segregation by university type and status. For instance, Barbezat and Hughes (2005) found that differences in the salary structure between research and liberal arts institutions are important determinants of gender wage inequality. Female faculty in research universities experience less favorable conditions relative to their male colleagues and are relatively more likely to face with wage discrimination. Faculty of research universities earn higher salaries and as a result, despite the less favorable conditions compared to male faculty in research universities, female faculty enjoy a significant wage premium over women at liberal arts colleges (Barbezat, Hughes, 2005).

There is also vertical gender segregation, when women cannot achieve the same rank or position in a company as men (Blau, Kahn 2000; 2017). Vertical segregation (the so-called 'glass ceiling') is considered one of the main determinants of gender wage inequality in the academic sector and is reflected by inequality in gender distribution by position and rank within universities. Female faculty are less likely to be promoted to senior positions within universities or get tenure positions, which results in lower salaries (Barbezat 2002; Barbezat, Hughes 2005; Ginther, Hayes 2003; Monroe, Chiu 2010; Silander, et.al. 2013). Taking into the consideration that universities are conservative and bureaucratic organizations, the institutional peculiarities of the Russian academic labor market with very large internal markets, inbreeding and low mobility, theories of vertical gender segregation, such as the glass ceiling theory seem most relevant for our analysis.

In general, proponents of non-discrimination theories claim that the gender wage gap is not connected with discrimination and the gender wage inequality can be explained by the self-selection of women for less well paid jobs, which is determined by their rational preferences. According to the theory of equalizing differences and compensating wage

differentials, gender wage inequality can be related to non-pecuniary job characteristics (risk level, health hazards, etc.), which are compensated by differences in salaries (Rosen 1986; Smith 1979; Duncan, Holmlund 1983). The academic sector is not connected with negative non-monetary characteristics (high risk and health hazard). Moreover, there is no evidence to suggest differences in average productivity between female and male faculty are determined by sex. This is why we suggest that gender wage inequality in the academic sector should be lower than for the whole economy.

Other non-discriminatory theories, such as household labor supply theory and the theory of gender specialization (Gronau 1986) are less applicable for the analysis of the academic labor market. Most of these non-discriminatory theories have one main idea in common: the lower wages of female workers are the result of their own choices, which are determined by their preferences, or by a self-selection process.

Some of the literature which is more related to non-discriminatory theories, considers psychological issues and shows that female faculty are less likely to participate in career competition ('shying away' from competition), are less likely to take risks or discuss the increase of salaries and career promotion with their managers (Niederle, Westerlund 2007; Claussen et al. 2015).

2. Gender differences in academia and the recent reforms in Russian higher education

There are several institutional features of the Russian higher education system which emphasize the relevance of the Russian case of the gender wage gap in the academic sector and make the analysis of gender inequality in Russian universities an area of the particular interest. Since the collapse of the Soviet Union, the academic sector and universities have faced a sharp decrease in government expenditures on education, which resulted in low salaries for university faculty and a sharp decrease of the prestige of an academic career (Prakhov 2018). During 1990–2000s the academic profession was neither prestigious nor attractive for young faculty. This resulted in a decrease of the proportion of male faculty from 49% in 2005 to 41% in 2016 (OECD Education at a Glance, 2018), as male workers tend to concentrate in jobs with higher salaries and are relatively more eager to take risks. In 2016, the share of female faculty in Russian HE was 59%, which makes the gender structure of the academic sector in Russia different from other countries. For instance, in US, the share of female faculty in HE is 49%, in UK it is 45%, the OECD Average is 43%, in Japan it is 27%. The closest countries to Russia by the share of female faculty in higher education are post-communist Baltic countries, i.e. Lithuania, Latvia and Estonia (Figure 1). We suggest that the

prevalence of women in the faculty gender structure in these countries could be a legacy of the Soviet system, where female employees were overrepresented in public sector (especially, in the education and healthcare sectors).

Among the other institutional features of Russian HE – legacies of the Soviet education system – is the underdevelopment of an academic labor market, as the best researchers are concentrated in Moscow and St. Petersburg universities and some regional educational clusters (such as Tomsk and Novosibirsk). There is academic inbreeding, when universities hire their own PhD graduates (Sivak, Yudkevich 2015), and low mobility which usually is a one-directional move from regional universities to universities in Moscow and Saint-Petersburg. As a result, the academic labor market is almost limited to the internal markets of different universities with very restricted opportunity for job mobility. We suggest that the large internal university market with a non-transparent system of career promotion, non-transparent wage setting and low mobility increases the probability of discrimination, including gender discrimination. These conditions may significantly affect salaries of university graduates and the gender wage gap.

After the collapse of the Soviet Union, the problem of gender inequalities in academia was aggravated by the fact that post-socialist Russian universities inherited features of the Soviet system, such as the separation of teaching and research (university faculty were mainly involved in teaching, while research activities in the most cases were concentrated in the Russian Academy of Sciences), accompanied by a deterioration in the prestige of the academic profession (Smolentseva 2003; Prakhov 2018). The massive reforms started after 2010 may at least partially solve these problems as well as address the problem of the gender imbalance in Russian HE. Recent changes in the academic sphere were focused on the intensification of research activities, the improvement of the position of Russian universities in the global education market, an increase of faculty salaries and the prestige of the academic profession (Prakhov 2018). The introduction of incentive contracts is one of the core components of the reforms. An incentive contract is a mechanism of remuneration which links salary with the observed proxies of individual productivity (as individual productivity itself is unobservable by the employer). In a changing academic world and with more attention being paid to the research component, incentive contracts should include indicators of faculty research productivity, expressed in the number of publications in academic top journals, the number of books and so on.

Such an approach to remuneration not only improves academic productivity and contributes to increased wages⁵, but also can smooth gender inequality, since it links wages to indicators of academic productivity. Such contracts imply that university faculty have to perform in 3 different areas – research (the main focus of the recent academic reforms in Russia), teaching, and administrative duties; salary should be related to these performance indicators only. Hence, properly designed incentive contracts can handle vertical segregation in the academic sector through the transparency of design and non-discriminatory remuneration schemes, which reflect only individual academic productivity.

We need to highlight that the incentive contract itself was a productivity improvement mechanism that was part of a program to achieve the broader goal of enhancing the position of Russian universities in the global education markets. This is a common problem for many developing countries, and these goals require major institutional shifts. In 2008, the first research-oriented universities with special status (National research universities, NRUs) appeared. The nature of NRUs assumed a harmonious combination of teaching and research. It is expected that such universities will contribute to the development of the national academic sector by outstanding research practices. The status of NRU is awarded on a competitive basis, which means that competition for state financial support can result in increased requirements for research. NRUs were the first universities which introduced research-related remuneration schemes.

In 2012 the ‘5-100’ Russian Academic Excellence project was launched. Universities which participate in this program get additional funding to increase academic productivity and increase the prestige of Russian higher education globally. One of the expected consequences of this project is the improvement of the positions of participating universities in global rankings. Additional funding was granted to improve research activities, increase the quantity and quality of publications, and advance the competitive positions of these universities in global university rankings. In order to stimulate research activities within these universities, the administration of research-oriented universities introduced incentive contracts with special bonuses for publications and other performance indicators. As a result, salaries in these universities depend more on observable indicators, such as the quantity and quality of publications. This may result in more gender equity in pay in universities with special status and decrease of the impact of unobserved factors, which determine gender pay inequality because female faculty may experience more favorable conditions in universities with special

⁵ The goal of the increase of faculty salaries was proclaimed in May 2012 by the Presidential Decree.

status; in the case of incentive contracts and bonuses for publications, their salaries depend directly on their performance. The only factor which can neglect the positive effect of performance pay for gender equality is gender specialization: male faculty can specialize in research activities which are better paid and female faculty on teaching.

The goals for HEIs with special status are the intensification of research and the creation of additional research incentives. These are addressed in the incentive contracts: these universities are actively introducing performance-related schemes and we expect that the focus on research output will contribute to a better gender wage balance given the proper design of faculty remuneration. However, universities with special status currently make up only a small proportion of the total number of universities in Russia: there are 29 NRUs (2.5%), 21 '5-100' universities (1.8%) out of 1,171 HEIs in Russia (484 HEIs are state universities). This means that the majority of Russian universities are those without special status and without an explicit research orientation. Despite the fact that most of them have also introduced incentive payments, the lack of clear development goals may result in a misinterpretation of the incentive contract (for example, weak research incentives) and continuing gender inequality. In the absence of clear contractual goals, the transition to incentive payments will not contribute to reducing gender inequality. Thus, only the clear goals that underpin the stimulation of academic productivity can help address gender wage gap in universities.

In Russian universities there is a high premium for administrative duties, a modest premium for research and no premium for teaching (Prakhov, Rudakov 2018), while in European and US universities faculty reward systems generally emphasize research over other activities (Perna 2003; Fairweather 2005). We expect vertical segregation in Russian universities to mean that female faculty cannot reach top positions (and therefore do not have administrative duties), which results in lower salaries compared to male faculty. For vertical segregation, we suggest that there could be a gender specialization by activities: male faculty may concentrate on administrative duties and research, and female faculty mainly on teaching, resulting in gender wage inequality.

On the basis of these theoretical issues and the peculiarities of the Russian higher education sector, we formulated the following hypothesis, which will be tested in our study:

Hypothesis 1. There is a gender wage gap in Russian universities but it is below the national level of 27%.

Hypothesis 2. Gender wage inequality in the Russian academic sector is determined by vertical segregation (the prevalence of male faculty in senior positions).

Hypothesis 3. There is more gender equality in universities with special status ('5-100' and NRUs)

We also examine the shares of the gender wage gap which can be explained by observable and unobservable characteristics. Our data also let us indirectly examine the 'self-selection' versus 'discrimination' explanations of the gender wage gap.

H1 is formulated on the basis of the theory of equalizing wage differentials (Rosen 1986) under the assumption that the academic sector does not have negative non-monetary factors and productivity is not determined by gender differences, while there are sectors with a prevalence of male employees and additional compensation for negative non-pecuniary characteristics. As a result, the gender wage inequality in the academic sector should be lower than the overall gender wage gap in the national economy. We compare the academic labor market with the private sector in terms of their different mechanisms of salary formation. If we would compare academic and other spheres of public sector, we could not test the theory of equalizing wage differentials due to close non-pecuniary characteristics and gender structure with prevalence of female workers.

H2 is based on multiple empirical studies which underline that vertical segregation is one of the main determinants of gender wage inequality in academia (Barbezat, Hughes 2005; Monroe, Chiu 2010; Silander et al. 2013) and the institutional features of higher education in Russia (the lack of an academic labor market, large hierarchical internal markets, low mobility).

H3 is formulated under assumption that universities with special status more intensively introduce incentive contracts and as a result, salaries in such universities are more likely to depend on observable research performance-related indicators, eliminating gender wage inequality.

3. Data and methodology

Our study is based on MEMO 2006-2017 pooled cross-sectional data on faculty salaries, career trajectories, professional practices and personal characteristics. The data include more than 10,000 observations and represent faculty of Russian universities at the national level. Our empirical research follows the methodology used in gender wage inequality research (Barbezat 2002; Perna 2003; Barbezat, Hughes 2005; Blau, Kahn 2017).

We define the salary of university faculty as a sum of self-reported remuneration for teaching, administrative duties and research activities. We excluded from salary calculations remuneration earned for work in other organizations, teaching and administrative duties in

other universities, private tutoring, all other activities not related with work at current university.

First, men's and women's wage dynamics are compared in order to calculate the basic gender wage gap index (1). We analyze the dynamics of gender wage inequality 2006–2017: before reforms (2006–2012) and after the implementation of reforms (2013–2017).

$$\text{Gender wage gap index} = \frac{\text{Mean}(\text{Salary}, \text{female})}{\text{Mean}(\text{Salary}, \text{male})} \quad (1)$$

Further analysis is carried out for the MEMO faculty survey for 2015–2017, which is used as pooled cross-sectional data. The '5-100' project was launched in 2012, and in 2014 there was an economic crisis in Russia which may create outliers in our data. Before the 2015 wave of the survey, 6 universities were added to the project. Since 2015 the number of participating universities has not changed and there have been no considerable macroeconomic shocks. All these factors determine the choice of the 2015–2017 period for our analysis.

We merge MEMO data for 2015–2017 with university-specific characteristics, i.e. university status. We run an OLS-regression based on the Mincer wage equation (2) for the total sample and separately by gender, which shows the various characteristics that explain wage disparities between men and women and calculate the wage premium for gender. The Mincer equation-based regression estimates the wage determinants with the logarithm of real wages used as the dependent variable, and gender, position, academic degree, type of university, individual faculty's socio-demographic characteristics and labor market conditions as control variables (2).

$$\ln(W) = \beta_0 + \beta_1 \cdot G + \beta_2 \cdot S + \beta_3 \cdot G * S + \beta_4 \cdot E + \beta_5 \cdot E^2 + \beta_6 \cdot A + \beta_7 \cdot P + \beta_8 \cdot J + \beta_9 \cdot R + \beta_{10} \cdot SD + \varepsilon, \quad (2)$$

where:

$\ln(W)$ – is the logarithm of average monthly salary of university faculty;

G – gender dummy (1 if male);

S – dummy variable reflecting university status (1 if NRU, or '5-100');

E – pedagogical experience (years);

A – dummy variable for administrative duties (1 if yes);

P – a vector of variables, which measure publication and research activities;

J – a vector of job-related characteristics including position, rank, degrees;

R – the region of Russia;

SD – individual faculty’s socio-demographic characteristics (age, marital status, family income etc.).

The next step is the Oaxaca-Blinder decomposition for the wage gap to determine what part of the gap is defined by observable factors and what part is unobservable and may therefore be attributed to discrimination (Oaxaca 1973; Neumark 2004). For the purpose of our study we use a twofold Blinder-Oaxaca decomposition. The twofold approach decomposes the mean outcome difference with respect to a vector of reference coefficients.

Limitations

Our empirical analysis has some limitations. There are some factors, including individual psychological traits, abilities, risk attitudes (risk-aversion), the corporate culture within a university and many other, which are *unobservable* and can be attributed to the unexplained part of gender wage gap. Oaxaca-Blinder decomposition distinguishes between the explained and unexplained parts of gender differences, but the unexplained part cannot be fully attributed to discrimination. We should take into consideration non-discriminatory explanations of the gender wage gap and adjust our empirical results, because interpreting results only from the prospective of discriminatory theories can overestimate level of discrimination. It is also hard to distinguish, for instance, between vertical or horizontal segregation and the self-selection of female workers for lower positions, which limits the interpretation of our results. Another limitation is connected to the measurement of salaries. We excluded from calculations remuneration earned for work in other organizations, other universities and private tutoring. By doing this we lose some variation of salaries, which may affect gender differences and underestimate average salaries. The last limitation is the sample size for universities with special status which does not let us perform some advanced techniques of analysis.

4. The dynamics of the gender wage gap and descriptive analysis

Real faculty salaries increased considerably overall during the observed period, however, there was a considerable decrease in 2011 and a moderate decrease 2015–2017. During the latter period, there was a relatively long period of slight decreases in real faculty salaries, caused by the recession in the Russian economy after 2014 (Fig. 1). The substantial increase of real faculty salaries during 2012–2014 coincided with the implementation of incentive contracts and reforms in the Russian higher education sector. During this period there was also an increase from 82–91% of relative faculty salaries compared to other sectors of the national economy (Figure 2). These trends provide some evidence, that there might be causality between the growth of faculty salaries and recent reforms in Russian higher

education. However, this issue is highly endogenous and we cannot accept or reject this hypothesis.

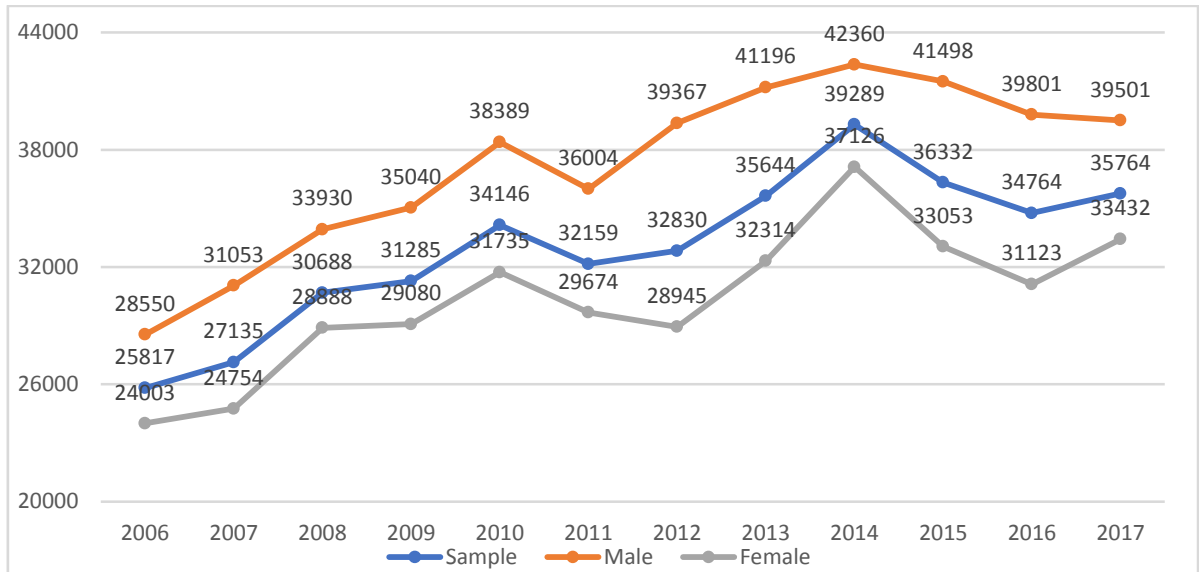


Fig 1. Real salaries of the faculty of Russian universities (2006-2017), in 2017 prices, by gender groups, rubles.

Source: MEMO data

Average salaries in the Russian academic sector are relatively low compared not only with the salaries of academics from developed economies but also compared to other sectors of the Russian economy (Fig. 2). To compare salaries in the academic sector with the average salaries in the economy we calculated the faculty salary ratio by dividing the average salaries in academic sector by the average salaries in the economy as a whole.

After the collapse of the Soviet Union, the academic sector experienced a sharp decline in faculty salaries and in the prestige of the academic profession. During the early 2000s, despite strong economic growth, the education sector remained relatively low paid. Average salaries in HEIs are relatively high compared to the education sector overall, but still considerably lower compared to other sectors of the Russian economy. During the observed period average faculty salaries were 82–94% of the national level (Fig. 2). These results can partially explain the decrease in the prestige of the academic profession in Russia, the potential adverse selection in the academic sector, and the prevalence of female faculty in higher education.

After the May 2012 Presidential Decree, which was designed to increase the salaries of the faculty in higher education, the faculty salary ratio grew from 82% to 91%. In 2017, the average faculty salary was still below the national level and was 91% of the national average salary (Fig. 2). However, we should take into consideration that to measure faculty salary in our study we used the sum of self-reported salary for teaching, administrative duties and

research activities and did not include in our calculations remuneration for work in other universities and organizations, private tutoring and other activities. Using this methodology, we can underestimate faculty income, but trends are the same.

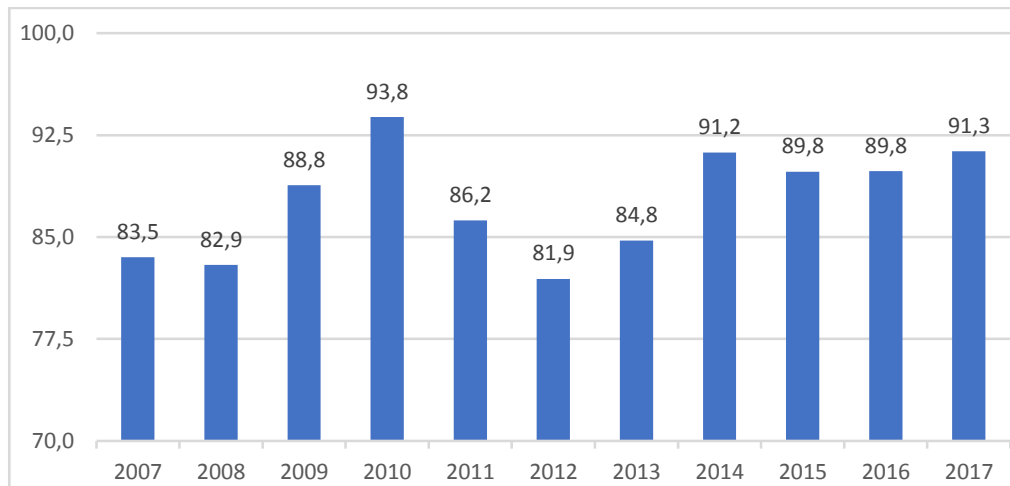


Fig 2. Faculty salaries ratio = mean faculty salaries/ mean salaries in the Russian economy (2007-2017)

Source: Russian Federal Statistics service

In order to compare salaries by gender in the academic sector and the national economy we calculated the gender wage index using formula (1). The closer the index is to 100, the more gender equality exists. During the period, in the national economy and in the academic sector women earned less than men. The analysis shows that *gender inequality in the academic sector is below the national level, which confirms H1*. During the period, wage inequality in the academic sector was considerably lower than in the national economy: women earned on average around 80% of men’s salaries, while in the whole Russian economy women earned around 70% of men’s wages (Figure 3).

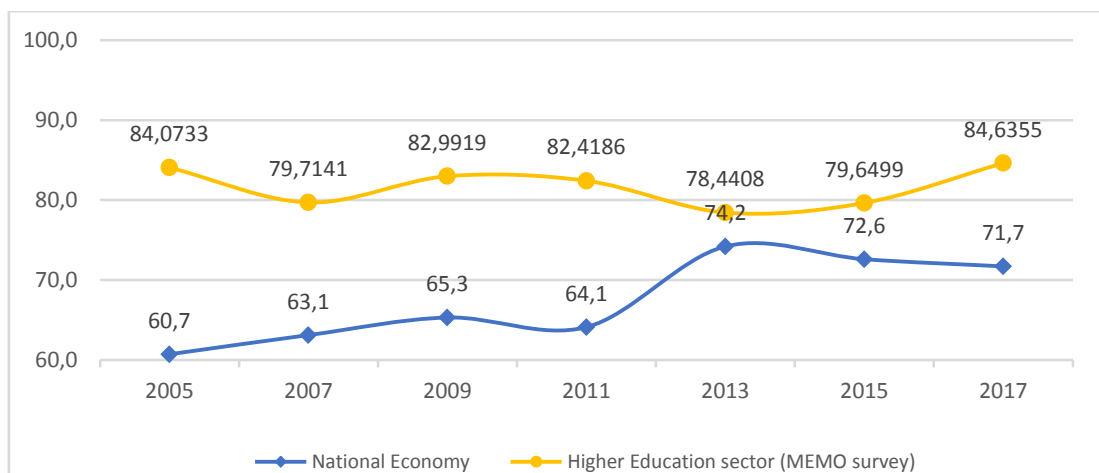


Figure 3. Gender wage index for Russian economy and academic sector (2006-2017)

Source: Russian Federal Statistics Service, MEMO survey

Further analysis was carried out by using MEMO survey for 2015–2017 as pooled cross-sectional data. There are more than 1,400 observations for each year. Total faculty sample size is 4,295 observations, representing 91 Russian universities each year. 8 to 10 of them were universities with special status. Around 15 faculty members of the 91 universities were randomly chosen for the survey (Table 1A). The same university could participate in the sample each year – there were no specific requirements on this issue. As a result, 131 unique universities participated in the sample 2015–2017.

Table 1A. MEMO descriptive statistics by year

Year	N obs	%	Number of universities	Number of special status universities	Share of female faculty	Share of faculty of special status universities
2015	1403	32,7	91	8	57,4	9,5
2016	1448	33,7	91	10	60,8	10,9
2017	1444	33,6	91	9	58,9	10,6
Total (non-duplicates)	4295	100,0	131	13	58,8	10,3

The gender structure of our sample for 2015–2017 is almost equal to the gender structure of the general population of university faculty at the national level (Table 1B): 59% female.

Table 1B. The comparison of the sample and Russian faculty gender distribution in the national level.

Gender	Sample (2015-2017)	Sample share (2015-2017) (%)	Gender distribution- National (2016) (%)
Female	2529	58,9	59
Male	1766	41,1	41

Table 1C represents the comparison of the sample means of the main continuous variables by gender including a t-test for significance. The average real salary of faculty in 2017 prices is 35,400 rubles, male faculty earn 21% higher salaries than their female counterparts. According to the latest available Russian Federal Statistics Service data, the average salary of Russian university faculty is 38,100 rubles.⁶ Thereby, faculty salaries are underestimated in our sample, which is caused by the exclusion of some sources of faculty

6 Russian Federal Statistics Service, Indicators of Education in the Russian Federation, 2017

income in our calculations. Male faculty have significantly more work experience, pedagogical experience and experience within their current university, and are older.

On average, university faculty worked 42 hours a week. (Table 1C).

Table 1C. Main variables descriptive statistics (means), by gender

Variable	N_obs	Sample	Male	Female	Diff (t-test)
Monthly Salary (rub)	3076	35446	39479	32685	6794.82***
Working hours (per week)	2167	42.0	41.9	42.1	-0.18
Age	4282	45.4	47.5	43.9	3.63***
Total work experience	4295	23.9	26.1	22.4	3.73***
Pedagogical experience	4295	19.2	20.7	18.2	2.44***
Experience within current university	4211	15.7	17	14.7	2.30***

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

Although the total differences in working hours of male and female faculty are insignificant, female faculty are more likely to spend more hours on teaching while male faculty are more likely to devote time to research (Table 1D). Gender differences in hours devoted to administration and differences in the share of faculty involved in such activities are not significant.

Table 1D. Working hours by types of activities and by gender groups⁷

Variable	N_obs	Female (%)	Sample	Male	Female	Diff (t-test)
Hours devoted to teaching	2748	58,2%	28,7	27,5	29,6	-2,09***
Hours devoted to research	1951	55,0%	9,8	10,3	9,5	0,85**
Hours devored to administrative duties	1301	57,4%	17,4	17,1	17,7	-0,59

Gender segregation by university status, location and field of study

Table 2 shows the sample distribution and gender differences by university-specific variables. Average salaries in universities with special status are considerably higher (by 40%) than in universities with no special status. Male faculty are more likely to be employed in universities with special status, while there is a slight gender segregation in universities

⁷ The descriptive statistics accounts only faculty with positive reported working hours

with no special status. Even more significant differences are observed for faculty employed in universities in Moscow and other regions of Russia (respectively, 52,400 and 33,700 rubles – a 55% difference).

Male faculty are more likely to work in universities located in Moscow while their female colleagues are more likely to work in regional universities. Differences in sample distribution and faculty salaries by gender are insignificant by type of university (public or private) (Table 2). The calculation of the gender wage gap index shows that female faculty earn 83–85% of male salaries, and these differences are more substantial by university location: women earn a higher percentage of male salaries in regional universities. There is considerable gender segregation by field of study: female faculty are more likely to teach social sciences while male faculty are more likely to work in STEM fields. However, average salaries are almost equal between social scientists and specialists in STEM fields (Table 2).

Table 2. University-specific variables and gender distribution

	N	Share	Male (%)	Female (%)	Salary (RR)	Gender wage gap index
University status						
No status	3850	89,6	40,3	59,7	34079	83%
NRU/5-100	445	10,4	47,9	52,1	47645	84%
Total	4295	100,0	41,1	58,9	35445	
Public/Private university						
Private	434	10.10	35,7	64.3	35491	85%
Public	3861	89.90	41,7	58.3	35441	83%
University location						
Other regions of Russia	3858	89,8	40,5	59,5	33721.23	84%
Moscow	437	10,2	46,2	53,8	52400.31	80%
Field of study						
Other	1545	36,0	31,9	68,1	32095	85%
Social Sciences	1182	27,5	34,4	65,7	37228	89%
STEM	1568	36,5	55,3	44,7	37300	80%

The descriptive analysis shows that there are considerable differences in salaries by region and by university status and the prevalence of male faculty in universities with special status and Moscow universities can partially explain the male wage premium in the Russian academic labor market.

Gender, university status and incentive contracts

The analysis of the implementation of incentive payments by university status shows that incentive schemes are more likely to be introduced in universities with special status compared to universities without, and the share of the incentive part in the overall salary is considerably higher in universities with special status (Table 2A).

Table 2A. University status and incentive contracts

	All sample		No status	Status	Female	Male
	N	%	%	%	%	%
Incentive payment dummy						
Receive incentive payment	1876	66.0	65,7	69,3	64,4	68,3
Do not receive incentive payment	965	34.0	34,3	30,7	35,6	31,7
Share of incentive bonuses in salary						
< 30%	1165	62.7	64,9	44,0	65,8	58,6
30-60%	511	27.5	26,5	36,0	25,5	30,1
61-100%	114	6.1	5,8	9,0	5,5	6,9
101-200%	44	2.4	2,0	5,5	2,3	2,5
>200%	25	1.3	0,8	5,5	0,9	2,0

This shows that in universities with special status incentive contracts provide powerful incentives, while in universities with no status there is only a slight increase in salaries. These results are consistent with the goals of universities: universities with special status achieve additional funding for the improvement of research activities and use these bonuses as powerful incentives for faculty. We may expect higher gender equality in universities with special status as incentive contracts are more likely to be introduced in these universities and affect salaries to a greater extent. Incentive contracts should be gender-neutral, however, there is some evidence that male faculty are more likely to work under incentive contracts and have a higher share of the incentive part in their contracts.

Vertical segregation and self-selection

The analysis of gender distribution and salaries by position in university hierarchies shows significant gender differences. Male faculty are considerably more likely to work as professors, while female faculty more often work as senior lecturers, lecturers and assistants. The average professor's salary is 84% higher than a lecturer's salary (Table 3). Hence, the gender wage gap could be partially explained by vertical segregation: male faculty are more likely to hold senior positions. Male faculty are also much more likely to work as researchers.

Table 3. Gender distribution by job-related or faculty-specific variables and mean salary

	N	Share	Male (%)	Female (%)	Salary (RR)	Gender wage gap index
Position						
Professor	380	9.2	66.7	33.3	48035	95%
Associate Professor	1661	40.3	48.3	51.7	35034	91%
Senior Lecturer	620	15.0	33.3	66.7	27526	84%
Lecturer	487	11.8	40.5	59.5	26070	92%
Assistant	127	3.1	38.1	61.9	20958	72%
Rector, Vice-rector	30	0.7	73.3	26.7	63418	117%
Dean, deputy dean	197	4.8	59.3	40.7	46431	65%
Head of Department, Deputy head of department	378	9.2	50.0	50.0	48716	87%
Laboratory Head, Deputy laboratory Head	22	0.5	66.7	33.3	29446	152%
Head of other unit	69	1.7	40.0	60.0	47995	126%
Research Fellow	42	1.0	64.3	35.7	47780	168%
Administrative staff (Dean's office, methodical department)	82	2.0	32.9	67.1	36247	78%
Teaching and research support staff	29	0.7	10.3	89.7	19595	132%
Total	4124	100.0	41.3	58.6		
Academic degree						
No degree	1451	33.8	33.8	66.2	27053	83%
Candidate of Sciences	2349	54.7	41.9	58.2	36513	89%
Doctor of Sciences	495	11.5	59.2	40.8	54150	97%

Publications during last 3 years						
No publications	992	34.8	35.8	64.2	29697	85%
Publications, not included in Wos and/or Scopus	1006	35.3	39.9	60.1	36780	83%
Publications in WoS and /or Scopus	546	19.2	48.7	51.3	43107	81%

The descriptive analysis shows that there is a high premium for academic degrees: Doctor of Candidate of Sciences⁸ and Doctor of Sciences⁹. A Doctor of Sciences earns twice as much as a faculty member without an academic degree (i.e. only having a Master's or Specialist degree). Male faculty are considerably more likely to earn a Doctor of Sciences degree while female faculty are likely to either have no degree or a Candidate of Sciences. Gender wages are sensitive to academic degree: women without an academic degree earn only 83% of male salaries, while women with a doctoral degree earn almost the same salaries as their male colleagues.

There is also a considerable wage premium for publications in journals indexed in WoS and Scopus and even for other publications. Female faculty are more likely to have no publications, while male faculty are more likely to have WoS or Scopus publications. Women who publish papers in Wos or Scopus journals earn 81% of the salaries of male colleagues, who published papers in these journals, while those who did not publish earn 85% of the salaries of male colleagues who did not have publications (Table 3).

There are some differences in the hours devoted to different activities by university status and position. Faculty of universities with special status spend relatively more time on research – and faculty of universities with no status spend considerably more time on teaching (Figure 4). These results can be explained by the fact that universities with status are research universities, while universities with no status are teaching universities.

⁸ According to the International Standard Classification of Education (ISCED) 2011, Candidate of Sciences belongs to ISCED level 8 – ‘doctoral or equivalent’, together with PhD, DPhil, D.Lit, D.Sc, LL.D, Doctorate or similar. Candidate of Sciences allows its holders to reach the level of the Associate Professor.

⁹ A post-doctoral degree called Doctor of Sciences is given to reflect second advanced research qualifications or higher doctorates in ISCED 2011.

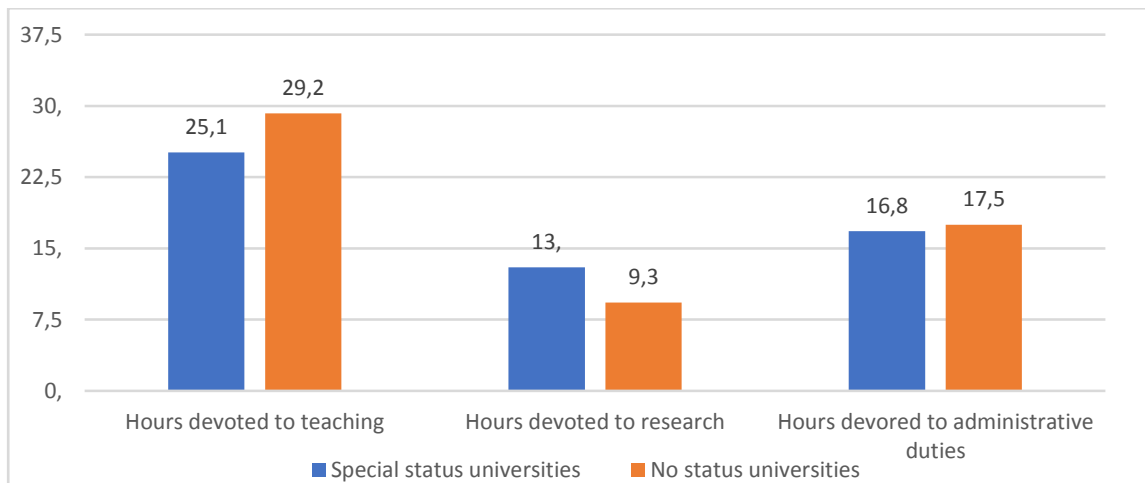


Figure 4. Distribution of faculty working hours per week on different activities by university status

There are considerable differences in teaching hours by position. Teaching loads are negatively correlated with seniority: lecturers tend to have the highest teaching load, (34 hours a week), senior lecturers and associate professors – 29 hours, professors – 27 hours. Research fellows also have a teaching load, which is 24 hours a week. However, there is an exception for assistants, who have the lowest rank and a relatively low teaching load.

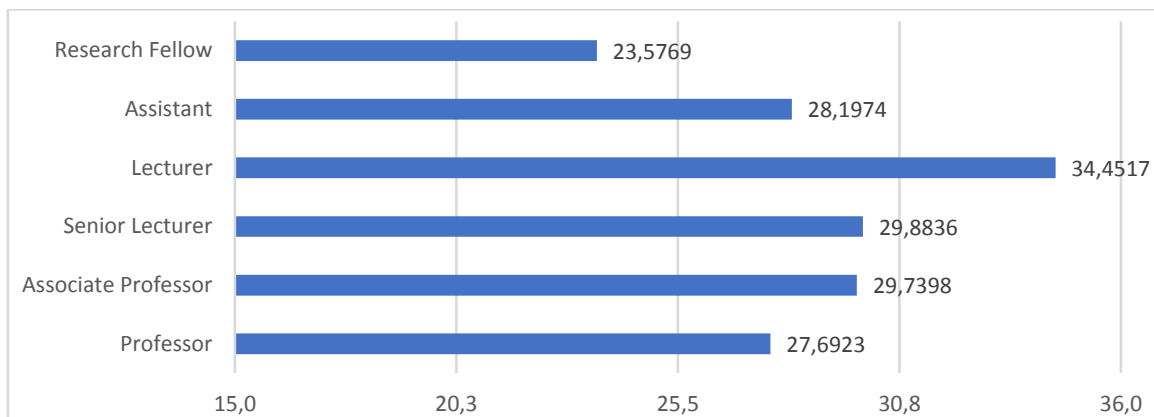


Figure 5. Teaching hours per week by position

The lower percentage of female faculty with academic degrees and publication activity provides indirect evidence that the lower salaries of female faculty can be explained not only by segregation but also by the fact that female faculty invest less in their education, participate less in research and self-select for lower paid positions. The descriptive analysis shows that female faculty are relatively less likely to work in universities with special status or in Moscow universities; they less likely to hold senior positions, to achieve a doctoral degree or to publish. These differences can explain the gender wage gap. However, these are only preliminary results.

5. Regression analyses of the determinants of gender pay inequality and the decomposition of the gender wage gap

We estimated the Mincer wage equation for faculty salaries using 5 different specifications: the whole sample, male faculty, female faculty, universities with special status, and other universities (Table 4). We checked our models for multicollinearity due to the potential correlation between regressors by using VIF analysis. The value of VIF in each regression is 1.96 for the main specification and from 1.95 to 2.65 for subsample estimations, showing that multicollinearity is not a problem in this model (Table 4).

The regression analysis for the whole sample shows that after controlling for different observable factors, there is still a gender wage premium for male faculty: they earn 8.7% higher salaries than their female colleagues. Male faculty who work in universities with no special status earn an even larger wage premium compared to female colleagues (8.8%). However, the regression analysis shows that there is no gender wage gap in universities with special status, which is an important result of our analysis.

Table 4. Results of regression analysis

Variables	All sample	Male faculty	Female Faculty	University of special status	University with no status
Gender=male	0.0876***			0.0473	0.0884***
	(0.0194)			(0.0698)	(0.0201)
Status= University with special	0.204***	0.142***	0.237***		
	(0.0342)	(0.0524)	(0.0439)		
Location=Moscow	0.498***	0.480***	0.517***	0.331***	0.522***
	(0.0229)	(0.0344)	(0.0300)	(0.0686)	(0.0243)
Public University	0.0246	0.0550	-0.00142		0.0240
	(0.0380)	(0.0844)	(0.0397)		(0.0381)
Candidate of Sciences	0.0697**	0.0122	0.105***	0.0524	0.0640**
	(0.0282)	(0.0479)	(0.0346)	(0.0996)	(0.0293)
Doctor of Sciences	0.265***	0.185***	0.346***	0.0398	0.292***
	(0.0431)	(0.0599)	(0.0599)	(0.184)	(0.0439)
Publications: reference group "no publications"					
Publications not included in	0.0307	0.0517	0.00552	0.00603	0.0250
	(0.0208)	(0.0341)	(0.0258)	(0.0834)	(0.0214)
Scopus/Wos publications	0.0750***	0.140***	0.0157	0.129	0.0502*
	(0.0275)	(0.0427)	(0.0354)	(0.0934)	(0.0286)

Year_2016	-0.0256	-0.0111	-0.0436	-0.222***	-0.00810
	(0.0217)	(0.0343)	(0.0278)	(0.0835)	(0.0221)
Year_2017	-0.0324	-0.0629	-0.0247	-0.177**	-0.0177
	(0.0226)	(0.0387)	(0.0278)	(0.0787)	(0.0234)
Having children	-0.0150	0.0496	-0.0523*	-0.0311	-0.00447
	(0.0241)	(0.0423)	(0.0288)	(0.0770)	(0.0249)
Administrative Duties	0.203***	0.191***	0.215***	0.332***	0.187***
	(0.0209)	(0.0348)	(0.0261)	(0.0676)	(0.0221)
Teaching Hours	0.0387	0.0231	0.0462	-0.174**	0.0616**
	(0.0243)	(0.0405)	(0.0300)	(0.0872)	(0.0250)
Rank (lecturer=control group)					
Professor	0.148***	0.311***	0.0116	0.0738	0.156***
	(0.0492)	(0.0728)	(0.0677)	(0.187)	(0.0505)
Associate Professor	0.0479	0.147**	-0.00441	0.125	0.0554
	(0.0370)	(0.0654)	(0.0441)	(0.124)	(0.0385)
Senior Lecturer	-0.0909**	0.0404	-0.157***	-0.0567	-0.0914**
	(0.0354)	(0.0656)	(0.0421)	(0.112)	(0.0375)
Assistant	-0.263***	-0.0548	-0.321***	-0.302	-0.248***
	(0.0682)	(0.183)	(0.0687)	(0.212)	(0.0730)
Rector, Vice-Rector	0.576***	0.440	0.626***		0.589***
	(0.168)	(0.272)	(0.187)		(0.168)
Dean, Deputy Dean	0.177***	0.407***	-0.000703	0.247	0.175***
	(0.0549)	(0.0876)	(0.0671)	(0.193)	(0.0562)
Head of Dep, deputy	0.206***	0.278***	0.160***	0.194	0.214***
	(0.0472)	(0.0758)	(0.0595)	(0.125)	(0.0502)
Head of Lab, deputy	-0.0800	-0.128	-0.0979		-0.0626
	(0.125)	(0.158)	(0.210)		(0.130)
Head of other unit, deputy	0.194**	0.0251	0.408***	0.661***	0.137
	(0.0902)	(0.132)	(0.0983)	(0.146)	(0.0911)
Research fellow	-0.0396	0.0262	0.0438	-0.401	0.137
	(0.151)	(0.171)	(0.324)	(0.342)	(0.143)
Teaching support staff	-0.262***		-0.290***	-0.151	-0.324***
	(0.0926)		(0.0810)	(0.143)	(0.105)
Field of study (others= control group)					

Social Sciences	0.0218	0.0356	0.0238	0.137	0.00693
	(0.0234)	(0.0442)	(0.0279)	(0.0858)	(0.0242)
STEM	-0.00897	0.0186	-0.0224	0.0137	-0.00469
	(0.0213)	(0.0344)	(0.0272)	(0.0842)	(0.0219)
Pedagogical Tenure	0.00553***	0.00126	0.00878**	-0.00169	0.00662***
	(0.00202)	(0.00312)	(0.00268)	(0.00655)	(0.00207)
Constant	9.737***	9.798***	9.757***	10.83***	9.633***
	(0.102)	(0.174)	(0.123)	(0.336)	(0.104)
Observations	2151	876	1275	221	1930
R-squared	0.422	0.391	0.447	0.442	0.422
VIF	1.96	2.15	1.95	2.65	1.98

Robust standard errors in parentheses

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

Working in a university with special status and in a university located in Moscow brings a considerable wage premium: 20% and 50% respectively compared to universities with no special status and non-Moscow universities. The premium for a university with special status is higher for women: it means that women who work in universities with special status earn 24% more than women who work in other universities (Table 4).

Acquiring a doctoral degree also brings a very high wage premium (26%) compared to faculty without doctoral degrees. Female faculty have a higher premium for doctoral degrees (35%). Faculty who work as professors get a significant wage premium compared to lecturers (15%), the premium is higher for male faculty (31%), while for women it is insignificant (Table 4). There is also a wage premium for publications in WoS and Scopus journals (7%), which is as higher for male faculty (14%) and insignificant for female. The effect of other (non-WoS or Scopus) publications is insignificant for all specifications.

There is also a considerable premium for administrative duties (20%), which is much higher in universities with special status (33%). Specializing in teaching and the number of teaching hours have an insignificant effect for the whole sample and by gender groups. However, there is a considerable wage penalty for teaching in universities with special status (17%), which can be explained by the research orientation of these universities and incentive contracts oriented toward research productivity. These results show that in universities with special status, administrative and research activities are highly paid, in contrast to teaching, which is a result of incentive contracts designed to increase research productivity.

At the last stage of the analysis we used decomposition techniques in order to estimate the share of the total gender wage gap which is determined by observable characteristics and

the share which remains unexplained and can be attributed to discrimination or self-selection. The results of the Oaxaca-Blinder decomposition are presented in Table 5.

The predicted gender wage gap for the Russian academic sector is 18.7%. More than half (53%) of these gender differences can be explained by observable characteristics, while 47% remains unexplained and can be attributed to discrimination, self-section or other unobserved factors (Table 5). In the absence of discrimination, male faculty should earn 10% higher salaries, but due to discrimination and unobservable factors, male faculty earn 18.7% more on average. Factors which contribute to the gender wage gap are ranked in the descending order in the Table 5. Among the main factors are university location (in Moscow), rank, advanced degree (Doctoral or Candidate degree), while the effects of tenure, university status and publications as explanations for the gender wage gap are considerably lower – other factors are insignificant. The results of the decomposition show that the gender wage gap can be explained by unequal gender distribution between Moscow and regional universities, gender vertical segregation (rank) and unequal gender distribution by degrees.

Table 5. Results of Oaxaca-Blinder decomposition of gender wage gap

	(1)	(2)	(3)	(4)
VARIABLES	Differential	Explained	Unexplained	Percentage
Prediction_1	10.46***			
	(0.0182)			
Prediction_2	10.27***			
	(0.0148)			
Difference	0.187***			
	(0.0234)			
Explained portion of wage gap		0.0992***		53%
		(0.0163)		
Unexplained portion of wage gap			0.0876***	47%
			(0.0193)	
Location=Moscow		0.0393***	-0.0103	21%
		(0.0100)	(0.0128)	
Rank (position)		0.0274***	0.158**	15%
		(0.00681)	(0.0616)	
Candidate/Doctoral Degree		0.0236***	-0.0747*	13%
		(0.00526)	(0.0405)	
Pedagogical Tenure		0.00552*	-0.121**	3%

		(0.00290)	(0.0532)	
Status= University with special status		0.00549*	-0.0104	3%
		(0.00292)	(0.00720)	
Publications		0.00345**	0.0418*	2%
		(0.00174)	(0.0233)	
Public University		0.000707	0.0518	
		(0.00112)	(0.0847)	
Year effects		-0.000308	-0.00146	
		(0.00118)	(0.0255)	
Children		-0.000449	0.0768**	
		(0.000771)	(0.0380)	
Administrative Duties		0.00116	-0.00928	
		(0.00436)	(0.0171)	
Teaching Hours		-0.00276	-0.0755	
		(0.00188)	(0.163)	
Field		-0.00386	0.0211	
		(0.00427)	(0.0278)	
Constant			0.0412	
			(0.210)	
Observations	2151	2151	2151	

Robust standard errors in parentheses

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

Conclusion

Our analysis shows that there is gender pay inequality in the Russian academic sector: male faculty earns 18.7% more than female faculty. These results are consistent with most international research devoted to the gender wage gap in academia (e.g. Barbezat 2002; Perna 2003; Barbezat, Hughes 2005; Toutkoushian et al. 2005; Umbach 2007), so, we conclude that Russia is not an exception.

If we take into consideration only observable characteristics, male faculty should earn 10% higher salaries, but unobservable factors increase wage inequality by 8.7 percentage points. Hence, the results of the Oaxaca-Blinder decomposition show that 53% of gender wage gap is explained by observed factors and the rest of gender pay inequality can be attributed to discrimination, self-selection and unobservable factors. The unexplained part of gender inequality is considerably higher than in studies for other countries. Among the main

factors explaining the gender wage gap are gender differences in rank or position within the university hierarchy, having a doctoral degree, and differences in tenure.

The analysis of the dynamics of gender inequality confirmed our hypothesis that the gender wage gap in the Russian academic sector is considerably below the national level. This can be explained by the prevalence of cross-sectoral differences in the determinants of gender pay inequality which are absent for a single sector analysis. As the academic sector is not characterized by negative non-monetary factors and differences in productivity are attributed to gender differences, one can expect lower gender wage inequality. These results provide empirical evidence for the theory of equalizing wage differentials (Rosen 1986).

The descriptive and regression analysis confirmed that gender wage inequality in the Russian academic sector is considerably determined by vertical segregation or the prevalence of male faculty in senior positions (the glass ceiling). Female faculty are underrepresented in top positions: male faculty are considerably more likely to work as professors, while their female colleagues experience vertical segregation and work as senior lecturers, lecturers or assistants. The results of the Oaxaca-Blinder decomposition show that one of the largest contributions to gender differences in pay is the vertical segregation or gender differences in rank or position and gender differences in holding doctoral degrees. These results are consistent with findings from other countries, which also emphasize vertical segregation as one of the main determinants of gender wage inequality (Barbezat 2002; Barbezat, Hughes 2005; Ginther, Hayes 2003; Monroe, Chiu 2010; Silander et al. 2013).

However, we found indirect evidence for female self-selection for lower-paid positions: female faculty are less likely to achieve advanced doctoral degrees which provides the opportunity for career advancement and significantly higher salaries. Such degrees normally do not have any observable barriers except for ability and effort. Gender wage inequality is also determined by the fact that male faculty are relatively more likely than female colleagues to be employed in universities with special status and universities located in Moscow, which provide considerably higher salaries. These results support theories of horizontal segregation, with unequal access of male and female workers to different segments or industries in the labor market. There is some evidence for gender specialization by type of activities: male faculty are relatively more oriented toward research activities and are more likely to achieve administrative positions, while female faculty are involved in teaching activities, which are lower paid compared to administrative duties.

Our study has shown that there is no gender inequality in universities with special status, while in other universities there is a considerable gender wage gap. This finding provides empirical support for our hypothesis that we may expect more gender equality in

universities with special status. We can suggest that in such universities salaries are more likely to depend on performance and research-related indicators (as a result of the introduction of incentive contracts) and by this eliminate gender inequality. It supports the idea that the introduction of incentive contracts may result in a smaller gender wage gap as performance-related pay directly depends on observable results, which are more likely to be free from discrimination.

Literature

Barbezat, D. A. (2002). History of pay equity studies. *New Directions for Institutional Research*, 2002(115), 9-40.

Barbezat, D. A., & Hughes, J. W. (2005). Salary structure effects and the gender pay gap in academia. *Research in Higher Education*, 46(6), 621-640.

Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of political economy*, 70(5, Part 2), 9-49.

Becker, G. S. (1985). Human capital, effort, and the sexual division of labor. *Journal of labor economics*, 3(1, Part 2), S33-S58.

Blackaby, D., Booth, A. L., & Frank, J. (2005). Outside offers and the gender pay gap: Empirical evidence from the UK academic labour market. *The Economic Journal*, 115(501).

Blau, F. D., & Kahn, L. M. (2000). Gender differences in pay. *Journal of Economic perspectives*, 14(4), 75-99.

Blau, F. D., & Kahn, L. M. (2017). The gender wage gap: Extent, trends, and explanations. *Journal of Economic Literature*, 55(3), 789-865.

Booth, A. L., Francesconi, M., & Frank, J. (2003). A sticky floors model of promotion, pay, and gender. *European Economic Review*, 47(2), 295-322.

Brown, R. S., Moon, M., & Zoloth, B. S. (1980). Incorporating occupational attainment in studies of male-female earnings differentials. *Journal of Human Resources*, 3-28.

Claussen, J., Czibor, E., & van Praag, M. (2015). Women Do Not Play Their Aces: The Consequences of Shying Away. *IZA Discussion paper № 9612*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2713033

Dipboye, R. L., & Colella, A. (Eds.). (2013). *Discrimination at work: The psychological and organizational bases*. Psychology Press.

Fairweather, J. S. (1996). Faculty work and public trust: Restoring the value of teaching and public service in American academic life. Longwood Division, Allyn and Bacon, 160 Gould St., Needham Heights, MA 02194-2310.

- Fairweather, J. S. (2005). Beyond the rhetoric: Trends in the relative value of teaching and research in faculty salaries. *The Journal of Higher Education*, 76(4), 401-422.
- George, E. S. (2006). Positioning higher education for the knowledge based economy. *Higher Education*, 52(4), 589–610.
- Ginther, D. K., & Hayes, K. J. (2003). Gender differences in salary and promotion for faculty in the humanities 1977–95. *Journal of Human Resources*, 38(1), 34-73.
- Gronau, R. (1986). Home production—a survey. *Handbook of labor economics*, 1, 273-304.
- Kogan, M., & Teichler, U. (2007). *Key challenges to the academic profession*. Kassel: Junior.
- Marginson, S. (2010). Higher education in the global knowledge economy. *Procedia-Social and Behavioral Sciences*, 2(5), 6962–6980.
- McDowell, J. M., Singell, L. D., & Ziliak, J. P. (1999). Cracks in the glass ceiling: gender and promotion in the economics profession. *American Economic Review*, 89(2), 392-396.
- Mincer, J., & Polachek, S. (1974). Family investments in human capital: Earnings of women. *Journal of political Economy*, 82(2, Part 2), S76-S108.
- Monroe, K. R., & Chiu, W. F. (2010). Gender equality in the academy: The pipeline problem. *PS: Political Science & Politics*, 43(2), 303-308.
- Neumark, D. (2004). Employers' discriminatory behavior and the estimation of wage discrimination. In *Sex Differences in Labor Markets* (pp. 163-177). Routledge.
- Niederle, M., & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much?. *The Quarterly Journal of Economics*, 122(3), 1067-1101.
- Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. *International economic review*, 693-709.
- Perna, L. W. (2003). Studying faculty salary equity: A review of theoretical and methodological approaches. In *Higher education: Handbook of theory and research* (pp. 323-388). Springer, Dordrecht.
- Phelps, E. S. (1972). The statistical theory of racism and sexism. *The American economic review*, 62(4), 659-661.
- Prakhov, I. (2018). The determinants of academic salaries in Russia. *Higher Education*, 1-21.
- Prakhov, I., & Rudakov, V. (2018). *The Determinants of Faculty Pay in Russian Universities: Incentive Contracts* (No. WP BRP 47/EDU/2018). National Research University Higher School of Economics.

Rosen, S. (1986). The theory of equalizing differences. *Handbook of labor economics*, 1, 641-692.

Rudakov, V., Chirikov, I., Roshchin, S., & Drozhzhina, D. (2017). The impact of academic achievement on starting wages of Russian university graduates. *Voprosi Ekonomiki*, 3, 77-102.

Silander, C., Haake, U., & Lindberg, L. (2013). The different worlds of academia: a horizontal analysis of gender equality in Swedish higher education. *Higher Education*, 66(2), 173-188.

Sivak, E., & Yudkevich, M. (2015). Academic immobility and inbreeding in Russian universities. In *Academic Inbreeding and Mobility in Higher Education* (pp. 130-155). Palgrave Macmillan, London.

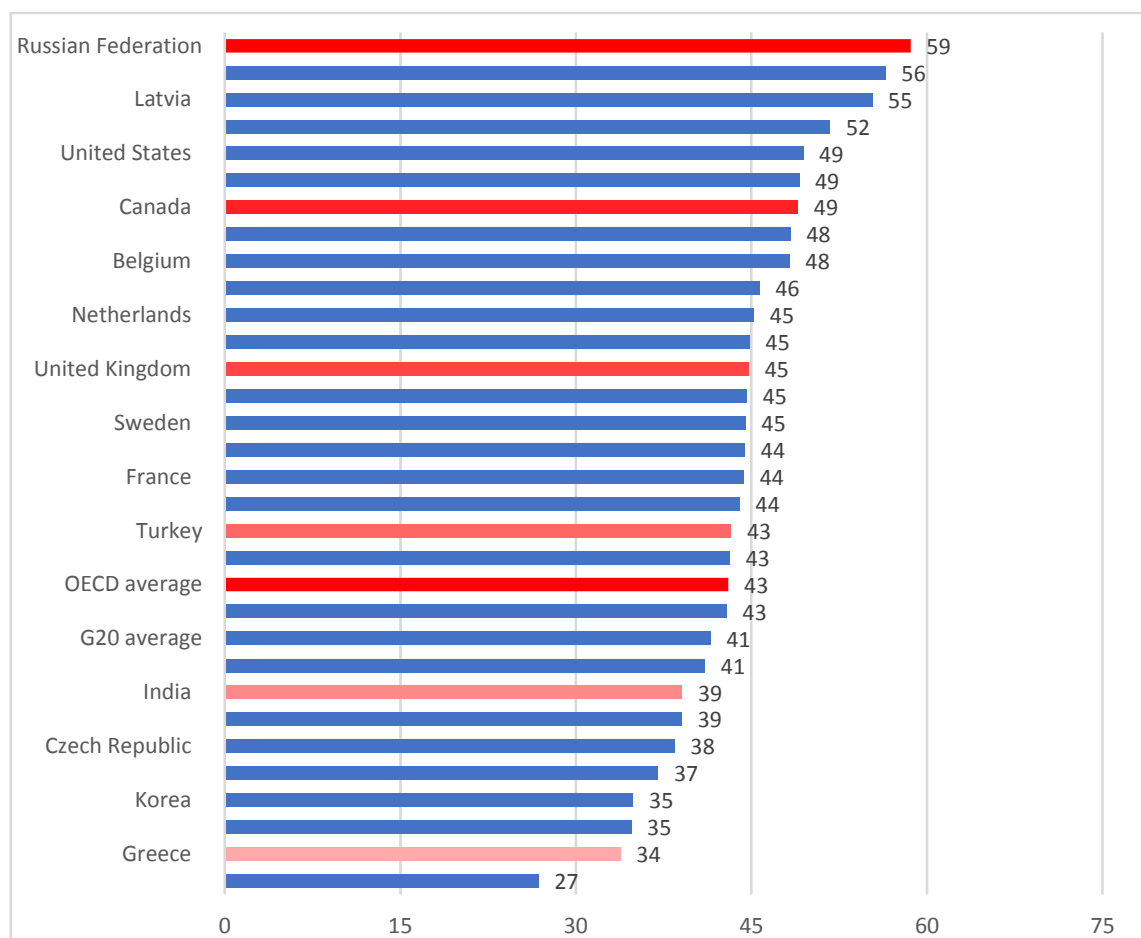
Smith, R. S. (1979). Compensating wage differentials and public policy: a review. *ILR Review*, 32(3), 339-352.

Toutkoushian, R. K., & Conley, V. M. (2005). Progress for women in academe, yet inequities persist: Evidence from NSOPF: 99. *Research in Higher Education*, 46(1), 1-28.

Umbach, P. D. (2007). Gender equity in the academic labor market: An analysis of academic disciplines. *Research in Higher Education*, 48(2), 169-192.

Appendix

Figure A1. Gender distribution of faculty (2016) in tertiary education by selected OECD countries and partner countries: % of female faculty



Source: OECD (2018)

Authors:

Victor Rudakov

National Research University Higher School of Economics (Moscow, Russia).

Laboratory for Labour Market Studies, Research Fellow;

E-mail: victor.n.rudakov@gmail.com; vrudakov@hse.ru

Ilya Prakhov

National Research University Higher School of Economics (Moscow, Russia).

Centre for Institutional Studies, Research Fellow;

E-mail: ipra@inbox.ru

Any opinions or claims contained in this Working Paper do not necessarily reflect the views of HSE.

© Rudakov, 2018

© Prakhov, 2018