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Sergey Yu. Roshchin, Natalya K. Yemelina

GENDER DIFFERENTIATION IN WAGES IN KAZAKHSTAN

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Sergey Yu. Roshchin[1], Natalya K. Yemelina[2]

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This paper represents the empirical analysis of existing gender differentiation in labour income in the Republic of Kazakhstan. Research is performed on micro data of annual tests of households conducted by the Committee on Statistics of the Ministry of the National Economy of the Republic Kazakhstan. On the whole, scales of gender differences in wages in the Kazakhstan labour market are comparable with similar evaluations in other countries. In Kazakhstan, the proportion of wages of women to men is 69%. For the last 15 years, the reduction of difference in the salary, by gender, was caused by changes in the gender structure of employment. The results of the evaluation of the segregation indexes testify about the recess of the situation connected with segregation of the labour market in Kazakhstan.

A decomposition of the distinction in annual average labour incomes between men and women, carried out by the method of Oaxaka-Blinder, showed that gender segregation explains that more than thirds of observable differences in wages between men and women. This is not offset by the higher level of accumulated human capital of women. However, 80% of gender distinctions in wages remain unexplained, apart from being related to the existing discrimination against women in the labour market in Kazakhstan.

JEL Classification: J16, J24, J31, J71.

Keywords: differentiation, wage, gender gap, segregation, decomposition, discrimination, labour market, Kazakhstan.

[1] National Research University Higher School of Economics. Candidate of Science, Laboratory for Labor Market Studies, Laboratory Head; E-mail: sroshchin@hse.ru

[2] National Research University Higher School of Economics. Candidate of Science, Laboratory for Labor Market Studies, Senior Research Fellow; E-mail: nyemelina@hse.ru

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Introduction

The problem of inequality between men and women, including inequality in opportunities and results of work, is one of the key issues identified in the UN Millennium Development Goals. In order to reduce gender disparities in Kazakhstan, between 2006-2016, the National Strategy for Gender Equality of the Republic of Kazakhstan was implemented, aimed at the empowerment of women, the elimination of discrimination in the labour market and the establishment of equal pay for work of equal value. Despite current transformations in the field of employment, there is still a gap in wages between men and women at the level of 28-30% in Kazakhstan. In this case, a lot of questions can be asked: whether these differences are the result of women choosing the individual sectors of economic activity, or is it the result of gender discrimination, and what is the breakdown of each of the identified reasons? If gender segregation is the dominant, then what determines the motives of such behaviour of labour market participants? If there is discrimination in attitudes towards women, what policy measures need to be taken to achieve gender equality?

Scientists and specialists in the field of labour economics of all countries have been searching and continue to look for answers to these questions. Some of them focused on the problems of gender segregation (Maltseva, Roshchin 2006; Antonczyka et al. 2010; Blau, Kahn 2017; Heab, Wub 2017; Pearlman 2018; Khitarishvili 2019), others on discrimination against women and nepotism towards men (Becker 1971; Johnes, Tanaka 2008; Barth, Dale-Olsen 2009; Chen et al. 2013; Lanning 2014; Gharehgozli, Atal 2020).

The issue of gender inequality in the labour markets of Central Asia have been highlighted in the work of (Khitarishvili 2016), who noted horizontal and vertical segregation as a major cause of the gap between male and female pay, which are caused by institutional barriers and social settings.

In the report (Gender Study for Central Asia 2017) the presence of gender discrimination against women was noted, when hiring and moving up the ranks in Central Asia. A high level of education does not guarantee them decent wages and does not protect against job loss. As a result, women prefer self-employment increasingly, especially in rural areas.

The author of the work (Lipovka 2016), singled out as the main reason for gender differences in the labour market of the Republic of Kazakhstan – the insufficient use of women's human capital and the lack of demand for their individual abilities, for the disclosure of which, certain favourable conditions are required from the state and the business community. The results of the research published in the article confirm that women have no less potential than men for entrepreneurial activity, as well as for occupying leadership positions in both public organisations

and private companies. However, these results are far from the entrenched stereotypes of Kazakhstan's society, determining the position of men and women in it.

The purpose of this work is an empirical analysis of the existing gender differentiation in wages in the Republic of Kazakhstan. Estimates and the gap in levels of wages between men and women in the Kazakhstan labour market is practically not studied, except in the works of (Arabsheibani, Mussurov 2007; Kemelbayeva 2020), where gender differences in labour payment were considered solely in terms of the return on human capital. Among the main tasks that were set for us were to define the determinants that explain the differences in wages between men and women in Kazakhstan and their influence on these differences, as well as the assessment of the level of nepotism between men's and women's wage discrimination.

Literature review and the situation on the labour market in Kazakhstan

A lot of empirical works have been devoted to the study of gender differences in pay. The patterns that were identified by Russian and foreign authors are mostly similar for different countries. The place with the assumption of men and women in the Kazakhstan labour market has distinctive features due to established traditions.

In Kazakhstan, there is a high level of female and male employment, which practically did not change over the period from 2001 to 2016. The average female participation rate in the labour market is 65.6%, while the average share of the labour force among men is 76.2% (Economic activity of the population of Kazakhstan 2017). The reasons for such labour activity on the part of women, on the one hand, is the insufficient level of material support for the family by one working spouse. On the other hand, it is the desire of women to fulfil themselves. The latter is due to the high level of education of the female population, which motivates Kazakhstani women to apply their acquired competencies in professional activities.

It should also be noted that the educational level of employed women is much higher than that of employed men. The percentage of men with higher education in the total number of employed in 2016 was 31.6, with an average professional (special) - 35.2. In contrast, the proportion of working women with a university degree was 40.8%, and special - 34.7%. In our opinion, the desire of women to obtain higher education is dictated by the employer's increased requirements for the level of education of women, in comparison with men, when hiring. However, in Kazakhstan, women have slightly different motives for having a higher education: admission to a higher educational institution is perceived as a socially recognised and society-approved norm,

and having a diploma is a marker of success and a means of achieving life goals. Thus, the higher level of education of women, as one of the characteristics of human capital, contributes to the reduction of the gender pay gap.

Many important features, characteristic, to some extent, for the labour market in all countries, including Kazakhstan's, is sectoral and professional segregation, where the root cause lies in the different qualifying characteristics and individual features of men and women. Already at the educational level, women opt for medical, pedagogical and economic specialties, while men prefer technical and legal professions (Kay, Gorman 2008).

According to the author (Oshchepkov 2007), the existing branch asymmetry can be explained by the preferences of women of those activities in which skills development requires lower investment costs, since it is assumed that a woman's working career is shorter than a man's and is intermittent. To some extent, such conclusions can be justified, since, unlike in Western countries, there were no cases in Kazakhstan when a husband went on parental leave, despite the fact that, according to the law, they have the same rights to do so. Therefore, in view of continuous working careers, men are willing to invest in the development of their professional skills more. However, you cannot argue that, by choosing teaching or the medical profession, women see these as less costly in terms of investment. Quite the opposite, getting the opportunity to work as a teacher or doctor requires obtaining a higher level of education than a bachelor's academic degree, that is, continuing education in a master's degree, doctoral studies in the first case and residency in the second.

In addition, the interruption of a career for women teachers later entails compulsory professional development, and for women doctors, passing aptitude exams. Thus, an uneven sectoral structure of employment between men and women cannot entirely be explained in terms of investment, aimed at obtaining professional skills.

Compensating differences are identified as the next reason for the gender asymmetric distribution by spheres of economic activity (Johnson 2007; Dawa, Hardieb 2012). Indeed, women are more likely to choose a job that does not require heavy physical effort, has a shorter working day, and provides a certain social package, which to some extent can compensate for lower wages.

From the analysis of the indicator of her average monthly real wages by type of economic activity (Labour remuneration in the Republic of Kazakhstan 2017), it follows that in the industries preferred by women, to carry out their labour activities, namely education, healthcare, agriculture, wholesale and retail trade, wages are below the average for the economy as a whole, while real

wages in industry, construction, transport, where one third of working men are concentrated, is above average.

As a rule, work that requires certain physical efforts, firstly, concentrates on male labour resources, and secondly, is paid higher. In addition, employment in areas such as industry and construction are associated with more hazardous working conditions than in “female” occupations. In this connection, in Kazakhstan, the “List of jobs where the employment of women is prohibited”, approved by the Minister of Labour and Social Protection in 2007, is still in force. All 299 professions included in this list, have wages above the national average, which is justified by the harmful and dangerous labour conditions.

According to the author (Lipovka 2016), a ban on women's access to certain types of work, enshrined in the labour legislation of Kazakhstan, is contrary to the principles of equality between men and women, enshrined in the Constitution of the Republic of Kazakhstan. However, the abolition of this list is unlikely to significantly change the female sectoral structure of employment. This is primarily due to the negative attitude of women towards risk, due to their inclination for maternal responsibilities. Thus, realising their differences in the physical plane and social roles, men and women are focused on various sectors of the economy.

Along with the “male” and “female” spheres of economic activity, where the concentration of employed men and women, respectively, exceeds 66%, there are areas of activity that are gender neutral. These include industries with high, medium and low levels of earnings. In such highly paid areas of activity, such as finance, insurance, science, information and communications, the proportion of men to women is almost the same, the difference is no more than 8% (Women and Men of Kazakhstan 2017). Therefore, we cannot say that women are concentrated in sectors with lower wages.

The study of the relationship between the level of wages in the sphere of economic activity and the industry concentration of women in the Republic of Kazakhstan, in 2016, showed no relationship between the indicators R^2=0.06, which refutes the claim that the wage ratio in the industry to the average for the economy is inversely related to the share of women in the industry (Maltseva, Roshchin 2006).

Consequently, the existing gender imbalance in the sectoral structure of the labour market in Kazakhstan is due to the voluntary choice by women of typically “female” professions related to upbringing, care, training or manual work, in which a woman feels comfortable and has an opportunity for career growth. The latter, according to the authors (Maltseva, Roshchin 2006), is

easier for a woman to do in the “female” employment sector, since she is perceived as a leader here, normally, and “is not discriminated against”.

If the sectoral asymmetry of employment arises as a result of the voluntary choice of certain niches by men and women, then the concentration of men in higher positions is due to discrimination against women by employers (Becker 1971; Barth, Dale-Olsen 2009). This phenomenon in the labour market is called vertical segregation or "glass ceiling". The discriminatory behaviour of employers is based on prejudice against women as managers. The belittling of the managerial abilities of women is generated by generally accepted tacit notions about her role in the family and society. The functions of a woman are the birth and education of children. Such attitudes lead to gender inequality and limit women's access to decision-making, which, subsequently, negatively affects the country's economy.

Another reason for the existence of a barrier for women to occupy leadership positions, according to the authors (Roshchin, Solntsev 2006), is the heterogeneity of the human capital of men and women. However, the difference in human capital is characterised not so much by the level of education, as is known in women, it is higher than in men, but by the accumulated experience. Since women's work experience has breaks associated with maternity leave, men have an advantage over women in terms of accumulated experience.

In addition, studies (Vinkenburg et al. 2011) show that men and women differ in management styles. Female leaders are flexible and able to resolve emerging conflict situations, while male leaders tend towards dynamism, dominant behaviour and the desire to extract benefits. More often these qualities, in the eyes of the employer, make a man more attractive as a candidate for a managerial position.

Thus, vertical segregation is often a reflection of the rational behaviour of the employer, rather than discrimination against women. However, the problem of the “glass ceiling” hinders the achievement of gender equality, which is targeted by politicians in all countries.

Data and methodology

An empirical analysis of the gender pay gap between men and women was carried out using microdata from annual household surveys for the period from 2011 to 2016 provided by the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan (Committee on statistics of the Ministry of national economics in the Republic of Kazakhstan). The survey was conducted in all regions of Kazakhstan: 14 regions and cities of Almaty and

Astana[4], which was renamed later as Nur-Sultan. The sample includes 108,504 observations, and is representative not only at the country but also at the regional level. In accordance with the methodology of the survey, the sample frame is a repeating cross-sectional data from the annual replacement of one-third of observations.

Survey data include information on the annual income of individuals from wage labour, self-employment and entrepreneurial activity. Revenues were adjusted by the value of the consumer price index, respectively, for 2011-2016 (base 2011).

In addition to data on the labour income of household members, there is information about the individual characteristics (gender, year of birth, education, marital status, status of the main activity, type of activity), region and area (urban or rural) of residence of the household. A significant limitation for our study is the lack of information on the amount of time worked by each individual.

The survey involved 49% of women and 51% of men aged 16 to 81 years (Table 1). According to the data of the sample, the wages of men are higher than the wages of women in Kazakhstan by 23%, on average, for the entire study period. In dynamics, the gap in annual labour income between men and women varied from 20% in 2012 to 25% in 2015 (Fig. 1). This indicator is somewhat underestimated in comparison with the data of official statistics, which is due to the sampling shift, due to the fact that the high-income group of the population does not fall into it. For both gender groups, the average labour income is higher than the median labour income. This indicates that most of the respondents receive wages below the average for the aggregate.

Tab. 1. Selected characteristics of the labour income of men and women on average for 2011-2016

Numerical characteristics of the sample	Annual labour income of an individual, thousand tenge	
	Female	Male
The average	525.7	680.5
Standard deviation	305.9	447.3
Minimum	7	7.1
Maximum	5,958.1	7,201.4
Median	464.9	579.7
Number of observations	53,005	55,499

Source: Household Survey of the Committee on Statistics of the Republic of Kazakhstan

[4] Renamed to Nur-Sultan city from March 2019

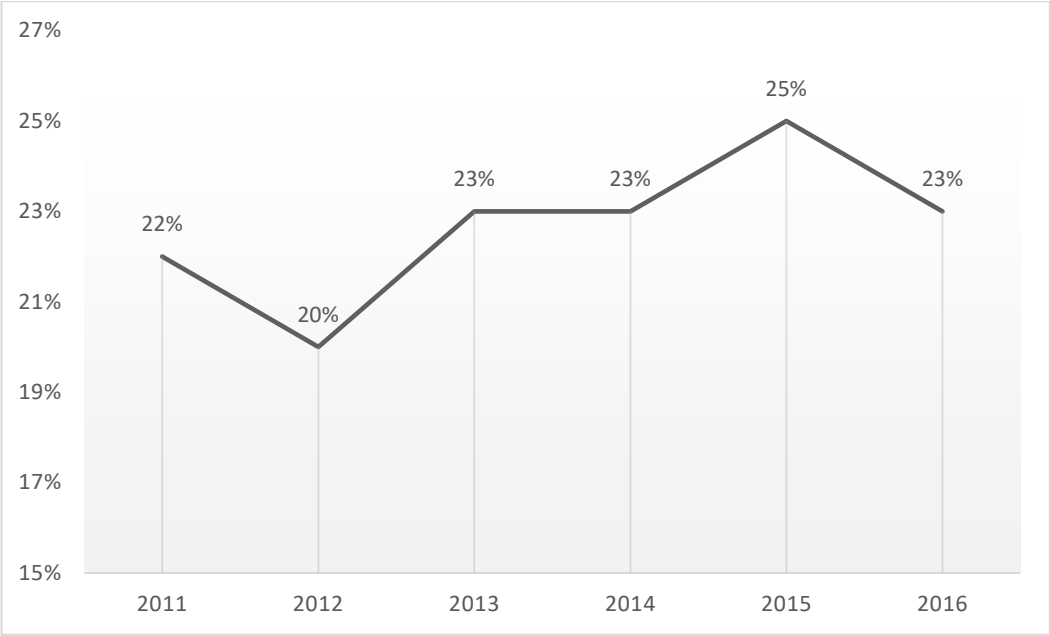

Fig. 1. Gender gap in annual labour income in Kazakhstan time between 2011 and 2016

Representation of men and women and their labour income levels, in different spheres of activity, are reflected in Appendix 1. The main proportion of women (50%) in the sample are working in the field of education (17.8%), administrative and support services (11.6 %), retail and wholesale trade (11.4%), public administration and welfare (10.6%). While the greatest proportion of men are concentrated in construction (13.7%), mining (11.2%), agriculture, forestry and fishery (9.9%). The smallest number of both men and women (less than 1%), is involved in the work of extraterritorial organisations and bodies and in the activities of households that hire servants and produce goods and services for their own production. At the same time, in all economic spheres, except for household activities, the labour income level of women is lower than that of men, including in traditionally "female" activities such as education, health care, administrative services, accommodation and food services. The latter has the largest gender labour income gap (53%), followed by mining and quarrying, with a gap of 43%. The smallest labour income gap of 5% between men and women is recorded in education. Note that, in construction, this figure is at the level of 10%, despite a very high proportion of men (87%), employed in this industry.

Analysis of the structure of the distribution of men and women by industry does not allow us to fully determine the extent of gender segregation observed in the republic. Segregation indices are used to quantify the segregation of the labour market, the most popular of which is the Duncan Dissimilation Index (ID*)*:

$$ID = \frac{1}{2}\sum_i \left|\frac{F_i}{F} - \frac{M_i}{M}\right| \quad (1)$$

where

M_i and F_i - the number of men and women employed in the *i*-th field of activity respectively;

M and *F* - the total number of men and women employed in the economy.

The dissimilation index is used to estimate the proportion of women or men who must change their field of activity to ensure an even distribution across industries.

The difference between the concentration of women in the "female" employment segment and the level of their concentration in the "male" occupations is calculated using the sex ratio index (*SR*):

$$SR = \frac{F_f/N_f}{F/N} - \frac{F_m/N_m}{F/N} \quad (2)$$

where

F_f and F_m – the number of women employed in "female" and "male" professions respectively;

N_f and N_m – the total number of people employed in "female" and "male" professions respectively;

F – the number of employed women;

N – the total number of people employed in the economy.

The sex ratio index takes the value 0 in the case when the share of women in each industry fully coincides with their share in the economy as a whole, but it does not have an upper limit.

Another indicator that measures the level of sectoral segregation is the female employment index (*WE*), determined by the formula

$$WE = \sum_i \left|\frac{F_i}{F} - \frac{N_i}{N}\right| \quad (3)$$

where

N_i - the number of employees in the *i*-th industry.

Unlike the dissimilation index, the female employment index shows how much the proportion of women in each industry deviates from the proportion of the total number of people employed in this industry.

The strength of the connection of workers of a certain gender group with their belonging to the "male" or "female" sectors of the economy is shown by the marginal compliance index:

$$MM = \frac{F_f \cdot M_m - F_m \cdot M_f}{F \cdot M} \quad (4)$$

where

M_f and M_m - the number of men employed in "female" and "male" professions, respectively.

This indicator reflects the degree of deviation of the real distribution of women and men in specific spheres of activity from the situation of absolute segregation, in which all men are employed in “male” professions, and women in “female” ones.

Since the calculation of the *SR* and *MM* indices directly depends on the distribution of gender groups in relation to the “female” and “male” spheres of employment, the way of identifying the latter is important.

To calculate the sex ratio index, we applied the approach proposed by A. Beller (1982), according to which, an industry is classified as “female” (“male”) if the percentage of women (men) employed in this industry exceeds the percentage of their employment in the total number of workers by 5 points. In our opinion, this methodology most adequately determines the "gender-dominated" industries, since it allows us to compare the share of a certain gender group in each industry with its share in the total number of employed.

The marginal compliance index assumes a different principle of distinguishing between “male” and “female” professions. The essence of the method is to rank all spheres of activity according to the level of concentration of women in them, from maximum to minimum. Next, the number of people employed in these sectors is summed up, starting with the first, until the result reaches the total number of women employed in the economy. All industries that were added to the list in the process of adding up are classified as "women", industries outside this list - as "men".

According to the described procedure for the gender of the industry, we obtained the distribution of employed by “male” and “female” industries in the Kazakhstan labour market (Table 2).

Tab. 2. Distribution of men and women by gender-dominated industries in Kazakhstan (%)

Industries	2011		2016	
	Male	Female	Male	Female
All	100	100	100	100
"Male"	42.1	20.0	67.0	35.9
"Female"	57.9	80.0	33.0	64.1

Source: Household Survey of the Committee on Statistics of the Republic of Kazakhstan

The data in Table 2 indicate significant changes in the distribution of men and women by gender-dominated sectors of the economy that occurred during the period from 2011 to 2016. If, in 2011, the highest concentration of both men and women was observed exclusively in the “female” industries, where 58% of men and 80% of women were concentrated, then, by 2016, both gender groups shifted to the “male” industries. Moreover, the concentration of men in "male" spheres of activity increased from 42% to 67%, and women from 20% to 36%.

The structural changes in the labour market of Kazakhstan are also evidenced by the values of segregation indices, the dynamics of which are shown in Fig. 2.

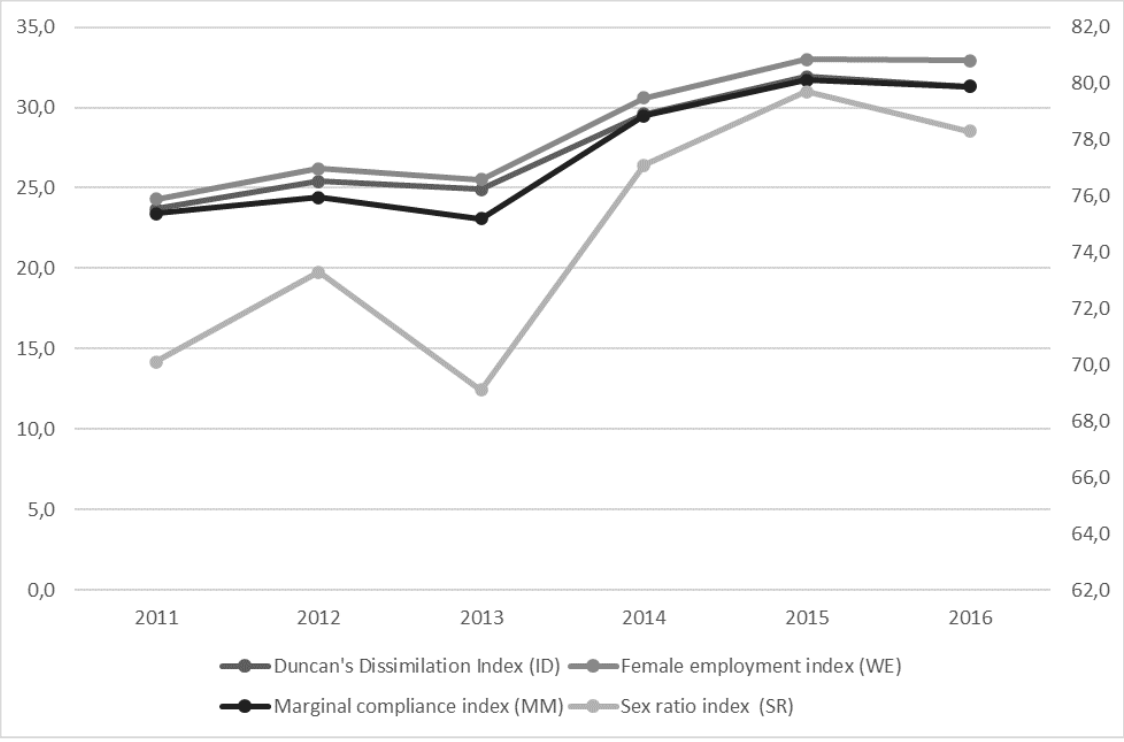

Fig. 2. Change sectoral segregation in Kazakhstan time between 2011 and 2016

As seen from Fig. 2, in the period from 2011 to 2013, there is an insignificant variation in the values of the indices. However, in 2014 there was a sharp increase and further increase in all indicators of segregation. There was a jump in index values by 5-6 points, due to the crisis in the economy of Kazakhstan in 2014, which led to the redistribution of men and women in the spheres of economic activity. As a result, agriculture moved from the group of "women" to the group of "men", while activities related to real estate, on the contrary, became predominantly "female". In addition, during the study period, there was a significant reduction in the share of the agricultural sector in the structure of male and female employment. If, in 2011, a third of all working men and women were employed in agriculture, then, in 2016, their share more than halved. And, as noted earlier, women preferred employment in the agricultural sector to the service sector, namely trade, education, health care, and public catering. Men doubled their employment in the construction industry as it began to thrive during this period.

Structural changes that took place in the employment sector, during the study period, contributed to the deepening of the situation related to the segregation of the labour market in Kazakhstan. Duncan's Dissimilation Index went up from 2 to 3.7%, in 2011, to 31.3% in 2016, i.e. the share of women or men who must change their field of activity, in order to achieve an even distribution, relative to the sectors of the economy, increased by almost 7 percentage points.

The trajectory of the female employment index completely coincides with the trajectory of the Duncan index. The difference in the values of these two indices reflects only the difference in the share of women and men employed. Since the number of women and men in the economy of Kazakhstan has remained almost equal for all six years, we observe an almost parallel arrangement of the graphs of the dynamics of the *ID* and *WE* indices.

The marginal compliance index, like other indices, also underwent changes in 2014, due to the change in the gender dominant in the agricultural sector. By 2016, its value reached 31.3%, up 7.9 p.p. more than 2011. This indicates an increase in the degree of segregation of the Kazakhstani labour market.

The sex ratio index *SR*, in its value, differs significantly from the *ID, WE* and *MM* indices, due to a different meaningful interpretation. Since, during the study period, the concentration of women in the “female” sectors and men in the “male” sectors varied both upward and downward, we observe significant fluctuations in the *SR* index.

Thus, the analysis performed allows us to assert the presence of sectoral gender segregation in the Kazakhstani labour market, which, in turn, significantly affects the wage gap between men and women employed in the country's economy.

The distribution of men and women, by status of main activity, is presented in Appendix 2. According to the data, 68% of employees of state organisations and enterprises are women, in non-state organisations men prevail, whose share is 64%. A similar picture is observed among the self-employed, where men account for 66%. There are slightly fewer female employers than male employers, namely by 19 percentage points. The ratio of women and men, among hired workers in a peasant (farm) economy, as well as among members of a production cooperative, is 1:6.

According to the structure of employment, 49% of women work in state organisations, while only 22% of men enter the civil service. More than half of all men, namely 56%, prefer to work in private companies and other non-governmental organisations; among working women, only a third (33%) are hired by enterprises with the status of non-governmental organisations. Less than one percent of all women and men are employers and members of a production cooperative, despite the fact that the annual labour income in these categories of employment exceeds the average annual labour income in all other categories. Moreover, the labour income level of women members of a production cooperative is 1.4 times higher than the labour income of men of the same activity status, and this is the only category where the labour income of women is higher than that of men. For the category of hired workers in the peasant (farm) economy, the largest gender pay gap is observed. Here, the average annual labour income of men is 12.5 times the annual labour income of women. Since we do not have information about the time of employment, it can be assumed that, for women working in a peasant farm, the work was of a periodic nature, while, for men, it was permanent.

According to the data in Table 3, the higher the educational level of individuals, the higher their annual labour income and the smaller the gap between the earnings of men and women. Most of the respondents, both men and women, have general secondary education, the smallest share with primary education only. The share of women with higher education exceeds the share of men, namely 39% against 26%. All other levels of education are dominated by men. Despite the higher level of education of women, their labour income is significantly lower than that of men. Women with higher education earn 1.4 times less than highly educated men.

Thus, the revealed gender differences in the level of education, as one of the characteristics of the accumulated human capital, are reflected in different ways on the labour income of men and women. As a consequence, a higher level of education for women can be expected to provide a higher return on human capital and contribute to a reduction in the gender pay gap. Meanwhile, the gender asymmetry that we observe, in the context of economic spheres and status of main activity, leads to an increase in the labour income gap between different gender groups, as women prefer to work in government and, as a rule, low-paid organisations.

Tab. 3. Annual labour incomes of men and women by educational level

The level of education	Structure,%		Annual labour income, thousand tenge		Ratio*,%
	Female	Male	Female	Male	
Primary (4 grades)	0.01	0.02	82.4	242.7	34
Basic secondary (9 grades)	3.8	6.5	356.8	493.8	72
General secondary (11 grades, technical and vocational)	56.9	67.7	449.3	614.6	73
Higher	39.3	25.9	667.3	900.1	74

Source: Household Survey of the Committee on Statistics of the Republic of Kazakhstan

* The ratio of the average annual labour income of women to the average annual labour income of men

Econometric methodology

To estimate the differences in the labour incomes of men and women, we used the Mincer equation (Mincer, Polachek 1974), in the following modification

$$\ln(Inc) = \beta_0 + \beta_1 X + \beta_2 Y + \beta_3 Z + \varepsilon \quad (5)$$

where

$\ln(Inc)$ – natural logarithm of the annual labour income of individuals received in the form of wages, as well as from self-employment and entrepreneurial activity;

X_i - vector of individual characteristics of workers (gender, age, marital status, education);

Y_i is a vector of characteristics of an individual's workplace (industry, employment sector).

The vector of variables Z_i acts as a control of the place of residence of an individual (locality, region).

In order to determine the level of gender discrimination, the standard Oaxaca-Blinder decomposition (Oaxaca 1973), was used with Neumark's amendment (Neumark 1988). According to the method, the decomposition equation of differences in wages of men and women can be represented as:

$$ln(Inc_m) - ln(Inc_f) = (V_m - V_f)\beta_t + V_m(\beta_m - \beta_t) + V_f(\beta_t - \beta_f) \quad (6)$$

where:

V_m, V_f – vectors of mean values of explanatory variables for men and women, respectively;

β_m, β_f – estimates of the coefficients of the equations of earnings separately for men and women;

β_t – the vector which estimates of the coefficients of the equation for the entire set of observations in the absence of discrimination.

The first term on the right-hand side of the equation represents the difference in wages due to differences in average productivity of gender groups. The second and third terms reflect the unexplained part of gender differences in wages, decomposed, respectively, into the effect of nepotism towards men and the effect of discrimination against women.

Empirical results

The results of evaluating the models separately for women, men and all individuals are given in Appendix 3. The coefficients of the equation fix the positive return on education for both gender groups, but its magnitude is not the same at the different levels of education. For women, the premium for all levels of education is higher than for men. Women with general secondary education receive 16% more labour income, and those with higher education 59% more than women with basic secondary education. Whereas, for men, this difference is 13% and 44%.

The peak of earnings for men, on average, occurs a little earlier than for women, at about 42 and 43 years respectively. If we look at the log labour income-age profile for each gender group (Fig. 3), we see, in men, a more intense increase in labour income up to the tipping point, and then the same intense decline than in women, for whom the profile is flatter. In addition, the gender gap in earnings with age increases, reaches a maximum value of 42 years, and then gradually reduced to zero at 73 years, after which the average women's labour income exceeds the average labour income of men.

The labour incomes of women who are not married are 8% higher than those of married women, with divorced women earning more than those who have never been married. Family women, due to their additional responsibilities related to childcare and housework, according to the productivity theory, make less effort at work, respectively, have lower productivity and, as a result, lower wages than women who are not burdened with family responsibilities.

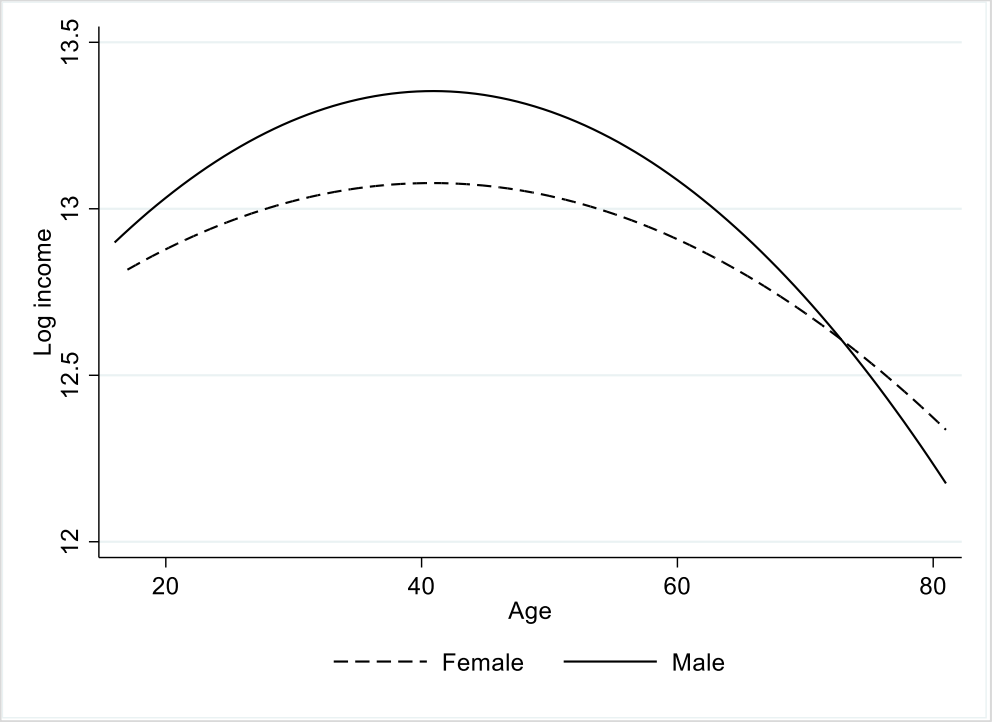

Fig. 3. Profile "Logarithm of labour income - age"

The opposite is true for married men, whose labour incomes are higher than those of unmarried men. A divorced man earns on average 19% less than a married man, a widower 14% less, and a man who has never married earns 27% less labour income than a married man. Thus, marriage, like in the case of women, imposes additional family obligations on men, arising from their status as "breadwinners" in the family.

This division of responsibilities in the family is reflected in the choice, by women and men, of jobs in government and non-government organisations and enterprises. Since work in private companies and other non-governmental institutions often requires more effort and dedication, which married women cannot fully afford, they prefer to work in government organisations. As a result, we get an insignificant coefficient in the earnings equation for this category. On the contrary, for men, this coefficient is significant and negative, which indicates lower labour incomes in state organisations compared to non-state ones, namely, by 5%. Employers, both men and women, earn 31% more than employees of the respective gender groups employed in non-state enterprises. Self-employment gives lower labour incomes: for women by 14%, for men by 29%, compared to employment in non-governmental organisations.

As for the spheres of activity, there is a higher intersectoral differentiation for men than for women. In all spheres except healthcare, the return on employment is higher for men than for women. For women working in health care organisations, the labour income level is, on average, 9% higher than for women in the education sector, while, for men, this indicator is 6%. In general,

the greatest returns among women were recorded in such economic activities as the activities of extraterritorial organisations and bodies (29%), mining (20%), electricity, gas, steam and air conditioning (16%), as well as financial and insurance activities (15%). The smallest positive returns for women from work in wholesale and retail trade (2%), and in the field of administrative and support services (1%). Women workers in agriculture, forestry and fisheries, the information industry, as well as working as a servant or producing goods and services for their own consumption, compared to women teachers, earn 2-5% less labour income. Among men, the greatest return on employment is received by workers in professional, scientific and technical activities (26%), mining (36%) and manufacturing (25%) industries, wholesale and retail trade (25%). Real estate activities, along with administrative and support services, generate labour incomes for the male working population that are 3-5% higher than the average male labour income in education. Arts, entertainment and recreation - this area of activity for men is less profitable than teaching, on average by 6%.

As noted earlier, wages for both men, and women in urban areas, are higher than in rural areas. Indeed, for women working in the city, earnings are 16% higher than those for women in rural areas. For men, the figure is 11 percentage points higher.

Controlling the differences in the labour income of men and women by region gives expectedly significant results. Women, regardless of the region of residence, receive lower salary than women in the labour activities in the city of Astana, as there a lot of state institutions, health centres and educational organisations focused. Meanwhile, as we found out earlier, men receive a greater return on employment in the industrial sector, as a result of which, we have a positive coefficient of the logarithm of labour income in the Mangystau region, which is the country's industrial centre for oil production. In other regions of the republic, men's wages are lower than in the capital.

Estimation of determinants that explain the wage gap between men and women in Kazakhstan allowed analysing the extent of their influence on the level of earnings. However, there is a significant part of inexplicable gender differences in wages which is considered to be the magnitude of the level of discrimination against women. Evaluation of the inexplicable constant part of the pay gap allows confirming or refuting the hypothesis of the existence of a “glass ceiling” and thereby proving the existence of discrimination against women.

The results of the decomposition of the difference in average annual labour income between men and women are presented in Table 4. As noted earlier, the average annual labour income of women is 76.85% out of men's annual labour income. It took 19.97% on the explained gap, while the inexplicable gap constant is 80.03% of the gender pay gap.

Tab. 4. Decomposition of the difference in average annual labour income between men and women using the Oaxaca-Blinder method

Gross Differential	76.85
Explained Differential	19.97
Age	-4.83
Education	-19.29
Residence	-5.90
Marital status	10.22
Type of employment	5.42
Industry	36.10
Region	-1.76
Unexplained Differential	80.03
The effect of nepotism	41.01
Discrimination effect	39.02

Source: Household Survey of the Committee on Statistics of the Republic of Kazakhstan

The major share of the gap (36.1%) in wages between men and women is explained by the uneven distribution of genders by industries. Thus, we obtained a result similar to earlier studies of the Russian labour market (Ogloblin 1999; Hansberry 2004). Gender sectoral segregation for the post-Soviet republics is a direct legacy of the Soviet economy, where employment spheres were assigned to men and women at the legislative level, the strength of their psychobiological characteristics, as well as social functions in the family and society.

The second most important factor that has a positive effect on the gender pay gap is the marital status of labour market participants. The employee's marital status explains 10.22% of the gap in average labour incomes of gender groups, which confirms our conclusion about the established priorities for men and women between employment in the household and work in the paid sector. Married women prefer part-time work, with the result that their wages are lower than that of unmarried women, employed full-time. While married men earn more than unmarried men, they often have more than one source of labour income, thereby providing for not only themselves, but also the whole family.

A relatively small explanatory part of the gender pay gap, namely 5.42%, is due to the predominance of female employment in the state sector of the economy, where wages are lower than in the non-state sector, which increases the gap in earnings between men and women.

Factors which are conducive to reducing the backlog of women to men in pay are the characteristics of human capital (education, age) and the place of residence of the individual (district, region). Moreover, the largest share (19.29%), is the employee education level, since highly educated women have significant advantages, compared with men who have higher education.

To a lesser extent, the gender gap is reduced by the area of residence and the age of the individual, by 5.9% and 4.83% respectively. The region of residence makes an insignificant share (1.76%) in narrowing the gap.

In general, the decomposition of the signs coincide with the results of the Russian labour market research (Ogloblin 1999; Hansberry 2004), but the proportion of the unexplained constant part of the wage gap between men and women in Kazakhstan is much higher, approximately at 20-25 percentage points. In addition to the discriminatory component, this can also be explained by the failure to include factors that significantly affect the logarithm of an individual's labour income in the model. Such factors include the individual's ability, personal characteristics of men and women belonging to different professional groups and others, which, with consideration, allow reducing the inexplicable part of the gender gap in wages significantly.

Conclusion

The results of the study of the labour market in Kazakhstan, in terms of gender differences in wages, showed that the existing inequality in wages for men and women is persistent. In general, the scale of the gender gap in earnings in the Kazakhstan labour market is comparable to similar estimates obtained in other countries.

In Kazakhstan, the share of women's wages to men's wages is 69%. Over the past 15 years, we have seen a 10 percentage point reduction in the gender pay gap. Changes in the gender structure of employment contributed to an improvement in the situation related to a decrease in the differentiation of wages between men and women. There was a movement of men from the agricultural sector to the construction industry, and women from there to the service sector, which is due to the low level of remuneration of agricultural workers.

Another factor which has influence on reduction of the gender gap in wages was represented by the differences in the characteristics of the accumulated human capital of men and women. Since women in Kazakhstan have a higher level of education than men, then, other things being equal, they receive a greater return on it. Having higher education for women also makes it more likely for them to realise themselves as equal participants in the labour market.

When choosing spheres of activity, women are guided primarily by working conditions and flexible working hours, which, to some extent, compensate for lower wages. As a result, the preferences of women stop at the spheres of education and health care, which, among other things, are cultivated by Kazakhstani society as the most suitable types of activities for female employment.

However, the high concentration of women in the teaching and medical professions does not guarantee them higher wages due to the existing vertical gender segregation. Long-standing stereotypes, that a woman is primarily obliged to raise children and do housekeeping, do not allow her to move freely up the career ladder. As a result, we observe an insignificant proportion of women holding leadership positions both in the education system and in public administration. The weak representation of women in decision-making is also fixed in the business sector, and the size of the enterprise is closely correlated with the proportion of women in management: the larger the company, the fewer women are in the top management.

The results of our evaluations confirm that gender segregation explains the significant gap in the wages of men and women (36.1%), it is impossible to compensate for the higher level of accumulated human capital (education, age), the representatives of the female gender group, which helps to reduce the gap between women and men in wages at the level of about 25 %.

In addition, strengthening patriarchal traditions, which lead to a rigid separation of social functions between spouses within the household, have an essential influence on the formation of differences in salaries of men and women. As a result, the employee's marital status explains 10.22% of the gender pay gap. The labour incomes of women who are not married are 8% higher than those of married women; and divorced women earn more than those who have never been married. Married women receive lower wages than women who are not burdened with family responsibilities, whereas married men earn more than single men.

The status of an employee's economic activity also increases the labour income gap between men and women, namely by 5.9%, while the locality and region of residence of workers blocks this value, contributing to a decrease in the gender pay gap by 7.7%.

As a result, 20% of the gender gap in wages is explained by determinants that take into account the individual characteristics of the workers, the characteristics of the workplace and place of residence of the individual. However, 80% of differences remains unexplained and cannot be fully attributed to the level of discrimination, as our model does not take into account important factors such as the individual's ability, differences in personal characteristics of men and women, the distribution of working positions, since they are not observable.

Appendix 1: Distribution of men and women and their level of labour income by economic activity

Field of activity	Share of individuals,%		Participation rate,%			Annual labour income, thousand tenge		Share of women' labour income in men's labour income, %
	Female	Male	Total	Female	Male	Female	Male	
Accommodation and food services	73.0	27.0	2.1	3.1	1.1	373.8	787.4	47
Activities of extraterritorial organisations and bodies	36.8	63.2	0.0	0.03	0.04	677.2	825.5	82
Activities of households employing servants and producing goods and services for their own consumption	62.5	37.5	0.2	0.3	0.2	344.5	337.6	102
Administrative and support activities	72.6	27.4	7.8	11.6	4.2	534.4	582.6	92
Agriculture, forestry and fisheries	24.0	76.0	6,7	3.3	9.9	395.8	499.4	79
Arts, entertainment and recreation	63.5	36.5	1.0	1,3	0.7	473.2	546.7	87
Building	12.9	87.1	8.0	2.1	13.7	611.9	681.6	90
Education	76.4	23.6	11.4	17.8	5.3	510.1	539.1	95
Electricity, gas, steam and air conditioning	15,8	84.2	4.7	1.5	7.8	604.5	696.5	87
Financial and insurance activities	65.5	34.5	2,3	3.1	1.5	738.8	882.3	84
Healthcare and social services	71.9	28.1	5.9	8.7	3.2	533.5	616.2	87
Information and communication	55.8	44.2	2.1	2.4	1.8	526.3	732.5	72
Manufacturing industry	28.5	71.5	3.4	2.0	4.8	561.5	801.7	70
Mining and quarrying	24.4	75.6	7.6	3.8	11.2	438.6	763.9	57
Provision of other types of services	45.9	54.1	3.7	3.5	3.9	465.4	559.3	83

Appendix 1: Distribution of men and women and their level of labour income by economic activity

Field of activity	Share of individuals,%		Participation rate,%			Annual labour income, thousand tenge		Share of women' labour income in men's labour income, %
	Female	Male	Total	Female	Male	Female	Male	
Professional, scientific and technical activities	54.1	45.9	3.0	3.3	2.7	552.9	792.5	70
Public administration and defense; compulsory social security	64.6	35.4	8.0	10.6	5.5	549.2	728.7	75
Real estate operations	52.1	47.9	1,3	1.4	1,2	582.6	694.8	84
Transport and storage	21.5	78.5	5.9	2.6	9.0	575.6	699.1	82
Water supply, sewerage system, control over the collection and distribution of waste	57.7	42.3	5.2	6.2	4,3	512.2	685.3	75
Wholesale and retail trade; repair of cars and motorcycles	58.2	41.8	9.6	11.4	7.8	474.2	788.6	60

Source: Household Survey of the Committee on Statistics of the Republic of Kazakhstan

Appendix 2: Distribution of men and women and their level of labour income by economic activity status

Activity status	Share of individuals,%		Structure,%			Annual labour income, thousand tenge		Share of women' labour income in men's labour income, %
	Female	Male	Total	Female	Male	Female	Male	
Work for individuals	51.9	48.1	11.5	12.2	10.8	400.4	513.8	78
Employer	40.7	59.3	0.1	0.1	0.2	851.9	1231.8	69
Employment in a peasant (farm) economy	13.4	86.6	1.8	0.5	3.0	33.1	412.6	8
Member of a production cooperative	15.0	85.0	0.02	0.01	0.03	956.6	680.4	141
Self-employment	33.6	66.4	5.1	3.5	6.6	533.9	569.9	94
Work on a personal backyard	57.5	42.5	1.8	2.1	1.5	213.7	312.8	68
Employment in a non-governmental organisation (enterprise)	35.6	64.4	44.7	32.6	56.3	601.3	769.7	78
Employment in a government organisation (enterprise)	68.4	31.6	35.0	49.0	21.6	520.3	623.8	83

Source: Household Survey of the Committee on Statistics of the Republic of Kazakhstan

Appendix 3: Results of estimating the wage equation

	Dependent variable					
	Logarithm of labour income					
	All		Female		Male	
Constant	12.0844 ***	(0.0238)	11.7491 ***	(0.0327)	12.1787 ***	(0.0337)
Age	0.0419 ***	(0.0010)	0.0512 ***	(0.0014)	0.0420 ***	(0.0014)
Age square	-0,0005 ***	(0.0000)	-0,0006 ***	(0.0000)	-0,0005 ***	(0.0000)
Education (Basic secondary education (9 grades) - basic variable)						
Primary (4 grades)	-0.5351 ***	(0.1271)	-0.8507 ***	(0.2335)	-0.4793 ***	(0.1440)
General secondary (11 grades, technical and vocational)	0.1248 ***	(0.0069)	0.1442 ***	(0.0108)	0.1211 ***	(0.0085)
Higher	0.3986 ***	(0.0074)	0.4644 ***	(0.0112)	0.3653 ***	(0.0093)
Residence (0 - rural, 1 - urban)	0.1857 ***	(0.0035)	0.1481 ***	(0.0048)	0.2392 ***	(0.0048)
Marital status (Married - basic category)						
Divorced	-0.0747 ***	(0.0049)	0.0747 ***	(0.0063)	-0.1773 ***	(0.0073)
Never married	-0.1084 ***	(0.0049)	0.0675 ***	(0.0059)	-0.2392 ***	(0.0083)
Widower / Widow	-0.1360 ***	(0.0073)	0.0058	(0.0075)	-0.1288 ***	(0.0246)
Type of employment (Employment in a non-governmental organisation (enterprise) - basic category)						
Work for individual individuals	-0.2295 ***	(0.0053)	-0.1738 ***	(0.0078)	-0.1820 ***	(0.0071)
Employer	0.2599 ***	(0.0403)	0.2704 ***	(0.0599)	0.2709 ***	(0.0506)
Employment in a peasant (farm) economy	-0.2092 ***	(0.0123)	-0.1970 ***	(0.0306)	-0.1979 ***	(0.0130)
Member of a production cooperative	- 0.0188	(0.1100)	- 0.0756	(0.2691)	- 0.0749	(0.1157)
Self-employment	-0.2274 ***	(0.0074)	-0.1289 ***	(0.0122)	-0.2540 ***	(0.0088)
Work on a personal backyard	-1.0880 ***	(0.0124)	-1,0049 ***	(0.0176)	-0.8707 ***	(0.0177)
Employment in a government organisation (enterprise)	-0.0506 ***	(0.0057)	0.0043	(0.0074)	-0.0512 ***	(0.0084)
Industry (Education - basic category)						
Accommodation and food services	0.0897 ***	(0.0123)	0.0935 ***	(0.0139)	0.1018 ***	(0.0224)
Activities of extraterritorial organisations and bodies	0.2557 ** *	(0.0799)	0.2516 * *	(0.1246)	0.1292	(0.0978)
Activities of households employing servants and producing goods and services for their own consumption	-0.1969 ***	(0.0327)	-0.2822 ***	(0.0393)	-0.1518 **	(0.0519)
Administrative and support activities	0.0207 ** *	(0.0070)	0.0138 *	(0.0077)	0.0285 * *	(0.0133)
Agriculture, forestry and fisheries	0.0786 ***	(0.0091)	-0.0336 * *	(0.0144)	0.0193	(0.0133)
Arts, entertainment and recreation	- 0.027 *	(0.0156)	- 0.0341 *	(0.0184)	-0.0560 * *	(0.0255)
Building	0.2432 ***	(0.0085)	0.0958 ***	(0.0159)	0.1533 ***	(0.0127)
Electricity, gas, steam and air conditioning	0.2725 ***	(0.0095)	0.1462 ***	(0.0180)	0.1899 ***	(0.0134)
Financial and insurance activities	0.1542 ***	(0.0116)	0.1406 ***	(0.0136)	0.1571 ***	(0.0195)
Healthcare and social services	0.0825 ***	(0.0078)	0.0864 ***	(0.0086)	0.0538 ***	(0.0148)
Information and communication	0.0281 * *	(0.0120)	-0.0536 ***	(0.0149)	0.1000 ***	(0.0186)
Manufacturing industry	0.2773 ***	(0.0105)	0.1280 ***	(0.0165)	0.2242 ***	(0.0148)
Mining and quarrying	0.3668 ***	(0.0089)	0.1793 ***	(0.0149)	0.3048 ***	(0.0130)
Provision of other types of services	- 0.0141	(0.0102)	-0.0872 ***	(0.0134)	- 0.023	(0.0154)
Professional, scientific and technical activities	0.1672 ***	(0.0098)	0.0377 ** *	(0.0122)	0.2344 ***	(0.0153)

Appendix 3: Results of estimating the wage equation

	Dependent variable					
	Logarithm of labour income					
	All		Female		Male	
Public administration and defense; compulsory social security	0.1221 ***	(0.0069)	0.0541 ***	(0.0079)	0.1896 ***	(0.0124)
Real estate operations	0.0444 ** *	(0.0142)	- 0.0202	(0.0182)	0.0498 * *	(0.0210)
Transport and storage	0.2361 ***	(0.0089)	0.0835 ***	(0.0147)	0.1726 ***	(0.0130)
Water supply, sewerage system, control over the collection and distribution of waste	0.1743 ***	(0.0095)	0.1051 ***	(0.0119)	0.1968 ***	(0.0151)
Wholesale and retail trade; repair of cars and motorcycles	0.1346 ***	(0.0084)	0.019 *	(0.0105)	0.2202 ***	(0.0136)
Region (city A stana - basic category)						
Akmola region	-0.4064 ***	(0.0091)	-0.4063 ***	(0.0122)	-0.3858 ***	(0.0125)
Aktobe region	-0.3066 ***	(0.0086)	-0.3016 ***	(0.0115)	-0.2985 ***	(0.0117)
Alma-Ata's region	-0.1801 ***	(0.0091)	-0.1969 ***	(0.0123)	-0.1588 ***	(0.0125)
Almaty city	-0.0474 ***	(0.0083)	-0.0475 ***	(0.0109)	-0.0265 * *	(0.0116)
Atyrau region	-0.2322 ***	(0.0090)	-0.2917 ***	(0.0124)	-0.1723 ***	(0.0121)
The East Kazakhstan region	-0.4045 ***	(0.0090)	-0.3917 ***	(0.0120)	-0.3940 ***	(0.0125)
Karaganda region	-0.3234 ***	(0.0085)	-0.3722 ***	(0.0113)	-0.2487 ***	(0.0118)
Kostanay region	-0.4511 ***	(0.0092)	-0.4072 ***	(0.0123)	-0.4714 ***	(0.0128)
Kyzylorda Region	-0.4056 ***	(0.0092)	-0.3980 ***	(0.0129)	-0.4211 ***	(0.0122)
Mang and Stau region	0.0563 ***	(0.0091)	-0.1074 ***	(0.0123)	0.1980 ***	(0.0123)
North-Kazakhstan region	-0.5173 ***	(0.0099)	-0.4329 ***	(0.0133)	-0.5771 ***	(0.0137)
Pavlodar region	-0.3245 ***	(0.0089)	-0.2974 ***	(0.0120)	-0.3335 ***	(0.0122)
South Kazakhstan region	-0.3531 ***	(0.0090)	-0.3570 ***	(0.0125)	-0.3643 ***	(0.0121)
West-Kazakhstan region	-0.3719 ***	(0.0091)	-0.3499 ***	(0.0122)	-0.3903 ***	(0.0126)
Zhambyl region	-0.3888 ***	(0.0093)	-0.3789 ***	(0.0128)	-0.4129 ***	(0.0126)
N	108504		53005		55499	
Adjusted R^2	0.3478		0.3483		0.4035	

Source: Household Survey of the Committee on Statistics of the Republic of Kazakhstan

Robust standard errors are in parenthesis.

* p <0.1; ** p <0.05; *** p <0.01

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Sergey Yu. Roshchin
National Research University Higher School of Economics (Moscow, Russia). Candidate of Science, Labouratory for Labour Market Studies, Labouratory Head;
E-mail: sroshchin@hse.ru

Natalya K. Yemelina
National Research University Higher School of Economics (Moscow, Russia). Candidate of Science, Labouratory for Labour Market Studies, Senior Research Fellow;
E-mail: nyemelina@hse.ru;