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CAN NON-COGNITIVE SKILLS EXPLAIN THE GENDER WAGE GAP IN RUSSIA? AN UNCONDITIONAL QUANTILE REGRESSION APPROACH

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Non-cognitive skills are widely recognized in economics as an important factor that affects various individual outcomes, including wages and employment. Non-cognitive skills can also serve as an additional explanation for the gender wage gap. This paper disentangles the complex relationship between non-cognitive skills and the gender wage gap based on Russian data. Data are collected from a nationally representative Russian survey RLMS-HSE and include detailed information on individuals aged 20–60. We use the Big Five factor model, locus of control, and attitudes towards risk to represent non-cognitive skills. Our findings suggest that non-cognitive skills account for up to 8 per cent of the gender wage gap, although significant variation is observed with different measures of personality and across the wage distribution. We conclude that personality traits are noteworthy but not exhaustive factors in the gender wage gap, and there are other unobserved factors which researchers have yet to identify.

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1. Introduction

The gender wage gap is one of the most researched topics in labour economics, alongside returns to education (for review, see Blau, Kahn, 2017). However, gender inequality in pay remains an open issue in every country across the world, despite multiple attempts to overcome it. Evidence suggests that the wage difference between men and women on average amounts to 25 per cent, ranging from 8 per cent in Slovenia to 45 per cent in low-income countries (ILO, 2019). The research has proposed several explanations for the observed gap.

One strand of the literature discusses various attributes of accumulated human capital and their relevance to the gender wage gap. These traditionally include education and cognitive skills acquired through education or learning on the job. Even though women demonstrate higher levels of education compared to men, as well as better technical skills (Siddiq, Scherer, 2019), they tend to gain less work experience due to maternity leave and are more prone to skill depreciation due to career breaks (Blau, Kahn, 2017). However, given that the gender wage gap already exists from the beginning of working life (Triventi, 2011), there must be other explanations which originate from before entering the labour market.

Another strand of the literature focuses on segregation, either horizontal or vertical, as the key explanation for the gender wage gap. Segregation accounts for approximately one third of the overall gender wage gap (Blau, Kahn, 2017). In general, women tend to work in lower-paying occupations (Gradín, 2020), industries (Leuze, Strauß, 2016), and firms (Bertrand, Hallock, 2001). While men are usually concentrated in managerial positions and high-paid fast-developing segments of economy such as IT, women occupy jobs in fields that are less well rewarded such as health and education. Even the rise in women's representation in management, which has been taking place for the past 30 years, is accompanied by a widening of the gap in managerial pay, since female managers are concentrated in people-centered fields such as human resources (Geiler, Renneboog, 2015).

However, labour market sorting is at least partly dependent on the personal preferences of men and women for particular types of jobs. Non-cognitive skills may determine the process of sorting and, therefore, affect the gender wage gap. Also referred to as personality traits, non-cognitive skills represent a relatively stable way of thinking, feeling, and behaving in certain circumstances (Roberts, 2009).[5] While these factors are proven to influence labour market performance beyond the traditional components of human capital (Mueller, Plug, 2006; Nyhus, Pons, 2005; 2012; Heineck, Anger, 2010), they can form preferences (Borghans et al., 2008; Brunello, Schlotter, 2011; John, Thomsen, 2012) and determine individual choices with regard to

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[5] In this paper, we use terms "non-cognitive skills" and "personality traits" interchangeably

job, occupation, and industry (Krueger, Schkade, 2008; Judge, Cable, 1997; Borghans et al., 2008). Non-cognitive skills are also likely to be related to such educational choices as the field of study (Humburg, 2017) which define one's career and further contribute to segregation. Finally, non-cognitive skills are also related to the formation of reservation wages. Accounting for reservation wages makes wage differentials between men and women statistically and economically negligible (Caliendo et al., 2017).

In spite of the many suggested reasons behind the gender wage gap, a large fraction of it remains unexplained and is usually attributed to labour market discrimination. In Europe, approximately 38 per cent of the gap remains unexplained by human capital and segregation (Triventi, 2013). Research suggests that including non-cognitive skills into the analysis explains from 2.5 to 28 per cent of the gap (Manning, Swaffield, 2008). Moreover, the contribution of non-cognitive skills increases progressively across the wage distribution (Nandi, Nicoletti, 2014; Collischon, 2020). Discovering the reasons behind the unexplained part of the gap is not only important on its own merit but is also vital to identify the steps that should be taken to achieve gender pay equality. If the labour market values the same skills and characteristics differently based on gender, this means policy steps to reduce discrimination should be taken. However, if males and females differ in non-cognitive skills, then particular attention should be paid to compulsory education. Although non-cognitive skills are partly inherited (Jang et al., 2006), they are ultimately formed as a result of socialization. Therefore, particular traits can be developed throughout formal education in order to reduce the gender wage gap.

Compared to many high-income countries, Russia is still lagging behind in gender equality, ranking 81st in WEF gender gap index (World Economic Forum, 2021). According to the Federal State Statistics Service (Rosstat), women earn 30 per cent less than men in contemporary Russia on average (see review in Oshchepkov, 2021). Recent research suggests that not even a portion of the gap can be explained by gender differences in human capital accumulation (Roshchin, Yemelina, 2021). Although the Soviet system effectively promoted image of women as workers, providing equal rights in labour and education for both genders, it also imposed institutionalized segregation which has been inherited by the modern Russian economy (Ogloblin, 1999). The Russian context is especially valuable since cultural and geographic factors play role in discrimination and gender-specific preferences as well as in variations in non-cognitive skills (Allik, McCrae, 2004). To our knowledge, there is only one paper that analyzes personality in relation to the gender wage gap in the Russian context. Semykina and Linz (2007), using employee survey data from 2000–2003, found that 8 per cent of the gender wage gap can be attributed to personality. Since that time, the Russian labour market has undergone significant changes. That paper, along with many others on developed countries, analyze the gender wage gap at the mean,

while non-cognitive skills are reported to be more important for high-paid jobs requiring a wide range of skills (Collischon, 2020). The literature dedicated to the impact of personality on the gender wage gap in different parts of the wage distribution, especially in low- or middle-income countries, remains scant. We are aware of two such papers analyzing the complicated relationship between personality and the gender gap in different parts of the wage distribution (Collischon, 2021; Briel, Topfer, 2020)—both conducted on the Socio-Economic Panel (SOEP) data for Germany.

In this paper, we use data from a large-scale nationally representative survey—the Russian Longitudinal Monitoring Survey (RLMS-HSE)—for 2011 and 2016. To address non-cognitive skills, we rely on two well-accepted psychological concepts, the Big Five and locus of control, as well as general attitude towards risk. The use of RIF-regressions and the Neumark (1988) modification of Oaxaca-Blinder decomposition method helps us to evaluate the effect of non-cognitive skills on the gender wage gap in various parts of the wage distribution. Previewing our main findings, we find that personality traits explain from 1.9 to 8.1 per cent of the gender wage gap, depending on the personality measure, and appear to be especially significant for the upper part of the wage distribution. The input of non-cognitive skills into the gender wage gap runs primarily through gender differences in endowment rather than returns, and selection into jobs partly mediates the effect of personality. However, even after the inclusion of personality, a large fraction of the gap remains unexplained.

The rest of the paper is organized as follows: Section 2 summarizes the evidence for gender differences in non-cognitive skills and their impact on labour market performance, Section 3 describes our data and empirical strategy, Section 4 presents the results and discussion, and Section 5 concludes.

2. Non-cognitive skills and previous findings

Our empirical investigation is based on several measures of personality. The first one is known as the Big Five (John, Srivastava, 1999) and refers to a well-accepted psychological concept widely used in economics. It gives a brief, yet comprehensive description of personality in five broad dimensions: conscientiousness, openness to experience, extraversion, agreeableness, and neuroticism. There is mounting evidence that personality measured by the Big Five is related to labour market outcomes in terms of wages (Nyhus, Pons, 2005; Brunello, Schlotter, 2011; Lee, Ohtake, 2018; Mueller, Plug, 2006), unemployment (Uysal, Pohlmeier, 2011; Cuesta, Budria, 2017), job satisfaction (Judge et al., 2002), and labour market sorting (Lesner, 2020) in various countries across the world. Conscientiousness reflects such facets as hard work, diligence, and responsibility. It is positively associated with the quality of job performance and, therefore, with

productivity and wages (Nyhus, Pons, 2005; Barrick, Mount, 1991). Although conscientiousness more obviously relates to work more than the other traits, it only possesses half of the explanatory power of cognitive abilities. However, conscientiousness is relevant for all occupations, while cognitive skills are mainly important for white-collar jobs (Almlund et al., 2011). Neuroticism is a trait characterized by emotional instability which negatively affects wages and also leads to a longer duration of unemployment (Uysal, Pohlmeier, 2011). Openness to experience embodies receptivity to new ideas which closely relates to fluid intelligence (Almlund et al., 2011). Extraversion as a trait relates to sociability, talkativeness and assertiveness which are sometimes associated with higher wages and higher chances of employment (Fletcher, 2013; Bode et al., 2016) while agreeableness which includes friendliness, empathy, and tactfulness is a trait that multiplies the effect of other traits (Almlund et al., 2011). Agreeableness implies a wage penalty in Germany (Heineck, Anger, 2010), the US (Mueller, Plug, 2006), and the Netherlands (Nyhus, Pons, 2005), although it entails a premium in Japan (Lee, Ohtake, 2018). Conscientiousness, openness, and neuroticism are considered to be the traits with the greatest impact on the labour market results.

To date, the Big Five taxonomy remains one of the most reliable methods for addressing non-cognitive skills in economic research. It has several considerable advantages over other approaches. First, it is comprehensive, since a wide range of individual traits and patterns of behavior are described from the point of a very limited number of facets. Second, it explains a larger fraction of individual differences in labour market outcomes compared to alternative classifications (Humphries, Kosse, 2017). Finally, the Big Five are relatively stable over time, especially in the working-age population, which removes the question of possible reversed causality (Cobb-Clark, Schurer, 2012).

Although the Big Five is the most common concept used in economics, the choice of empirical instrument is mostly dependent on data availability. Locus of control is another commonly reported psychological concept, which is sometimes used as an alternative to the Big Five. Locus of control is defined as the tendency to assign responsibility for life events either to third parties and circumstances (external locus of control) or to one's own behavior (internal locus of control). Locus of control is significantly correlated with traditional economic preferences such as the discount rate and altruism (Becker et al., 2012) and overlaps with neuroticism from the Big Five (Almlund et al., 2011). Still, locus of control is able to explain various economic and social events on its own. Having a high degree of control over one's life, which corresponds to internal locus of control, means that one tries hard to achieve one's goals, leading to greater productivity and higher wages. Semykina and Linz (2007) report a positive association between locus of control and wages for women but no effect for men. In contrast, Cobb-Clark and Tan (2011) show that

occupation is not related to locus of control for women but external locus of control reduces the probability of holding a managerial position for men and increases probability of being employed in blue-collar jobs. Similarly to the Big Five, locus of control is proven to be relatively stable among working-age adults (Cobb-Clark, Schurer, 2013).

The final measure that we use is attitudes to risk. Inclination towards risk in decision-making represents one's readiness to face uncertainty and its possible adverse effects. In contrast to the previously discussed psychological traits, attitudes to risk have a long-standing history in economics as a key economic preference. Attitudes to risk are mostly seen as an innate trait which can nevertheless be subject to environmental influences, especially at a young age (Dohmen et al., 2011). Although individual inclination towards risk has been proven to remain stable in the short and medium term (Roberts, Del Vecchio, 2000), it still can change throughout one's life due to external shocks (Beine et al., 2020). Psychological personality measures are rarely estimated in a laboratory environment and are mostly assessed via surveys (with a few exceptions, e.g., Cubel et al., 2016), while attitudes to risk are often studied both with experimental and survey measures. Both ways are valid, giving similar estimates (Dohmen et al., 2011). In a labour market setting, risk averse individuals are more inclined to choose stable employment and avoid occupations with greater variance in earnings, including entrepreneurial activity (Dohmen et al., 2011).

In Russia, the relationship between non-cognitive skills and labour market performance has been investigated in several studies (Maksimova, 2019; Rozhkova, 2019; Gimpelson et al., 2020; Gromova, 2021), which are all based on RLMS-HSE data. However, the topic remains under-explored. The results strongly resemble those obtained for high-income countries with openness to experience and neuroticism being strongly linked to performance in terms of wage and employment.

Gender differences in non-cognitive skills

Men and women are systematically reported to differ in terms of their psychological traits. On average, women shy away from competition and perform worse in a competitive environment (Azmat et al., 2016). They also tend to be less efficient in wage-setting, avoid risky investment decisions (Croson, Gneezy, 2009), and demonstrate generally more risk-averse behavior (Eckel, Grossman, 2008). In terms of the Big Five, gender differences in personality are significant, yet dependent on the country context and national wealth (Schmitt et al., 2008). A recent meta-analysis by Murphy et al. (2021) suggests that, in general, women exhibit higher levels of agreeableness, neuroticism, conscientiousness, and extraversion. These differences are small to medium for agreeableness and neuroticism, but small for conscientiousness and extraversion. The difference for openness is negligible. Women also tend to be more external than males on locus of control

measures (Sherman et al., 1997). Evidence also indicates that women are generally more risk averse than men, though recent analysis shows that gender differences in attitudes to risk are smaller than previously thought and in some cases women demonstrate even higher than average risk taking (Nelson, 2015).

Non-cognitive skills and the gender wage gap

The majority of studies measure the effect of personality traits on the gender wage gap at the mean (Mueller, Plug, 2006; Semykina, Linz, 2007; Braakmann, 2009; Nyhus, Pons, 2012). This literature shows that personality traits on average account for 5–10 per cent of the gap (Mueller, Plug, 2006; Braakmann, 2009; Nyhus, Pons, 2012), though in some papers the effect reaches almost 30 per cent (Manning, Swaffield, 2008). The effect mostly runs through differences in endowment rather than differences in returns (Nyhus, Pons, 2012; Mueller, Plug, 2006; Semykina, Linz, 2007).

The impact of the Big Five on the gender wage gap is estimated in (Mueller, Plug, 2006; Braakmann, 2009; Nyhus, Pons, 2012). Agreeableness and neuroticism are the categories which mostly contribute to the reduction of the unexplained part of the gap. The impact of locus of control is estimated in (Semykina, Linz, 2007; Braakmann, 2009; Nyhus, Pons, 2012). This research demonstrates that although this characteristic matters for the wages of individuals, it hardly matters for the gap both in terms of endowments and labour market valuation. Finally, risk preferences may operate through gender differences in job sorting. For high-paying jobs a large share of renumeration is often variable and depends on performance which makes such jobs more risky. General female risk aversion makes such jobs less attractive for women which leads to lower female representation in managerial positions. Experimental studies suggest that women are more likely than men to select a secure job, and such choices account for 40 per cent to 77 per cent of the gender wage gap (Jung et al., 2018). However, evidence that attitudes to risk affect gender wage gaps remains rather scarce.

As for quantile decomposition, Collischon (2021) shows that the unexplained wage gap either remains constant or decreases with the introduction of personality traits. The explanatory contribution drastically increases towards the top of the wage distribution from almost 2 per cent at the 10th percentile to 12 per cent at the 90th percentile. The reduction in the gender gap is mostly driven by agreeableness, neuroticism, and external locus of control, which are often penalized in terms of wages and are more common among women. Briel and Topfer (2020) argue that gender differences in personality do not make a significant contribution to the gender wage gap in most points of the distribution, except for the top.

3. Data and method

Data

We use data from a representative household study, RLMS-HSE, for 2011 and 2016. The dataset contains comprehensive information about socio-economic, demographic, job characteristics, as well as non-cognitive skills. The choice of time periods is motivated by the presence of questions on non-cognitive traits in the study. Examining the Big Five and attitudes to risk separately from locus of control, which appears in earlier waves of the study, serves as an additional robustness check of the link between the gender wage gap and various dimensions of non-cognitive skills.

The survey module dedicated to the Big Five was introduced to RLMS HSE in 2016. It uses an inventory consisting of 24 questions[6] which are also used in STEP by the World Bank (Pierre et al., 2014). Each question is associated with one of the Big Five categories and requires an answer on a scale from 1 (almost never) to 4 (almost always) depending on the frequency with which the facet is observed in the respondent's behavior. The categories are standardized with a mean of zero and a standard deviation of one within the sample. Similarly, the survey module dedicated to locus of control consists of seven questions and appears in RLMS-HSE in 2002–2005 and 2011. In this study, we use data from 2011. These questions are also self-evaluated on a scale from 1 to 4. We construct an integral measure of the *internal locus of control* as an average of the seven questions. The measure is standardized with a mean of zero and a standard deviation of one within the sample. Finally, questions measuring attitudes to risk were introduced to RLMS-HSE in 2016. General attitude towards risk is assessed with the following question: "Some people are always ready to take risks, while others never risk. Imagine a scale from 0 to 10, where 0 means "Not ready to risk at all" and 10 means "Always ready to risk". Where would you put yourself on this scale?". The measure is also standardized with a mean of zero and a standard deviation of one.

As a dependent variable, we use the logarithm of individual wages for the last 30 days at the principal place of employment. The choice of monthly wages is made due to the specifics of Russian labour market where wages are primarily calculated not hourly, but on monthly basis. If the value is missing, it is replaced by the average monthly wage for the last 12 months. In order to eliminate outliers and to reduce the probability of errors, we removed the bottom and top 0.5 per cent of the wage distribution from the sample. In order to control for differences in the length of working hours, we additionally add the logarithm of hours worked for the last 30 days as a control variable.

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[6] We present a detailed overview of the personality questionnaire in Table 1A in the Appendix

Sample

Our sample is restricted to individuals employed full-time, aged 20–60 as non-cognitive skills remain stable over this period (Almund et al., 2011). Workers in the ICT sector, in the armed forces (0 in ISCO classification) and skilled agricultural, forestry and fishery workers (6 in ISCO classification) are excluded from the analysis due to the small number of observations. The final sample contains 5,601 individuals in 2016 and 7,022 individuals in 2011. Women constitute roughly half (53 per cent) of the sample in both years.[7]

Table 1 presents the descriptive statistics for the selected variables by gender. In terms of accumulated human capital, women are more educated compared to men. 37 per cent of females in 2011 and 43 per cent of females in 2016 held a university degree compared to 25 per cent and 30 per cent of males, respectively. About half of men in the samples (53 per cent in 2011 and 46 per cent in 2016) only graduated secondary school, while the percentage is significantly smaller in female subsample (32 per cent in 2011 and 28 per cent in 2016). Women also demonstrate significantly longer period of job tenure (8.35 and 8.29 compared to 6.20 and 6.79 years for men in 2011 and 2016, respectively). However, women on average worked fewer hours during the last 30 days compared to men and received lower mean wages. Figure 1 plots the log monthly wages by gender. The graph for male log wages is notably shifted to the right which suggests a substantial gender wage gap not only at the mean but throughout the wage distribution.

Figure 1. Distribution of the logarithm of wages by gender
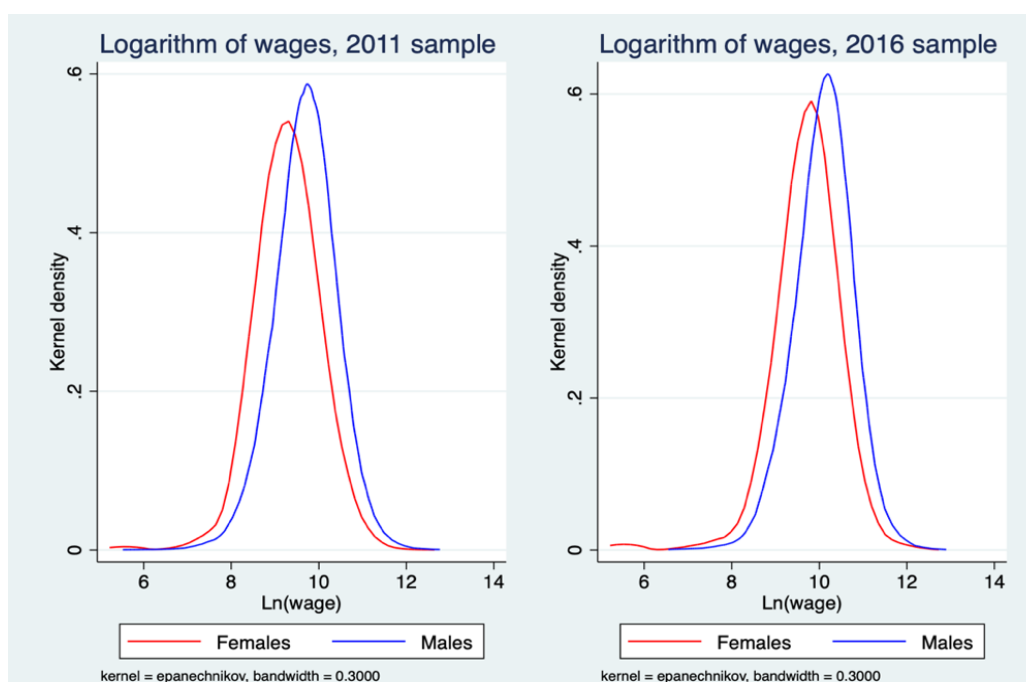
Source: RLMS-HSE, 2011, 2016

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[7] Descriptive statistics for full sample are available in Tables 2A and 3A in the Appendix.

In terms of non-cognitive skills, women demonstrate a significantly higher level of all the Big Five personality categories, but lower level of internal locus of control (-0.150 versus 0.172 in male subsample) which is in line with the literature on the gender differences in personality in various countries (Murphy et al., 2021). Women on average show significantly lower levels of risk inclination (-0.117 versus 0.131 in male sample).

Table 1. Descriptive Statistics by gender, Selected Variables

	Men Mean/ Std.Dev.	Women Mean/ Std.Dev.	Difference	Men Mean/ Std.Dev.	Women Mean/ Std.Dev.	Difference
	2011			**2016**		
Dependent variable						
Log monthly wage	9.694	9.328	-0.365***	10.121	9.790	-0.332***
	(0.662)	(0.671)		(0.615)	(0.614)	
Monthly wage (absolute value in 2011 prices, Russian rubles)	20084	14176	-5908***	19818	14338	-5480***
	(15737)	(11765)		(13877)	(10686)	
Control variables						
Secondary education (1=yes)	0.525	0.321	-0.204***	0.464	0.278	-0.186***
	(0.499)	(0.467)		(0.499)	(0.448)	
Vocational education (1=yes)	0.221	0.308	0.087***	0.239	0.292	0.053***
	(0.415)	(0.462)		(0.427)	(0.455)	
Higher education (1=yes)	0.254	0.370	0.116***	0.296	0.430	0.133***
	(0.435)	(0.483)		(0.457)	(0.495)	
Age (Years)	37.945	39.938	1.994***	38.836	40.362	1.526***
	(11.168)	(10.916)		(10.474)	(10.538)	
Tenure (Years)	6.202	8.348	2.146***	6.787	8.290	1.503***
	(7.323)	(9.104)		(7.462)	(8.859)	
Log Hours worked (last 30 days)	5.231	5.103	-0.128***	5.243	5.129	-0.115***
	(0.385)	(0.411)		(0.364)	(0.375)	
Urban (1=yes)	0.716	0.722	0.006	0.727	0.737	0.010
	(0.451)	(0.448)		(0.445)	(0.440)	
State-owned enterprise (1=yes)	0.390	0.550	0.160***	0.352	0.525	0 .173***
	(0.488)	(0.498)		(0.478)	(0.499)	
Married (1=yes)	0.672	0.523	-0.149***	0.679	0.536	-0.143***

	Men Mean/ Std.Dev.	Women Mean/ Std.Dev.	Difference	Men Mean/ Std.Dev.	Women Mean/ Std.Dev.	Difference
	2011			**2016**		
	(0.469)	(0.500)		(0.467)	(0.499)	
Children under 18 (1=present)	0.474	0.436	-0.038**	0.514	0.458	-0.056***
	(0.499)	(0.496)		(0.500)	(0.498)	
Non-cognitive skills						
Openness	-	-	-	-0.075	0.066	0.141***
				(1.043)	(0.955)	
Conscientiousness	-	-	-	-0.092	0.082	0.173***
				(1.038)	(0.958)	
Extraversion	-	-	-	-0.157	0.140	0.298***
				(1.010)	(0.970)	
Agreeableness	-	-	-	-0.182	0.162	0.344***
				(1.003)	(0.969)	
Neuroticism	-	-	-	-0.123	0.110	0.233***
				(1.017)	(0.971)	
Risk loving	-	-	-	0.131	-0.117	-0.249***
				(0.983)	(1.000)	
Internal locus of control	0.172	-0.150	-0.322***	-	-	-
	(0.986)	(0.988)				
Observations	**3,269**	**3,753**		**2,639**	**2,962**	

Note: comparisons of means are conducted via *t*-tests. Significance levels: *** p<0.001, ** p<0.01, * p<0.05. Source: RLMS-HSE, 2011, 2016

The gender distribution across industries and occupations is uneven. There are more men in such industries as construction, mining, transportation, agriculture, utilities, while women are more represented in trade and services, health, education, public administration, finance, insurance and real estate. Table 2 shows that the three industries with a larger proportion of men (construction, mining, and transportation) demonstrate higher mean wages. Women are more often employed in state-owned entities which also reflects the distribution of women across industries. Such industries as health and education, where female workers traditionally dominate, are mostly state-run.

Table 2. Gender distribution across industries

	Proportion of males in industry		Industry mean monthly wage (absolute value in 2011 prices, Russian rubles)	
	2011	**2016**	**2011**	**2016**
Construction	0.783	0.819	22,272	21,245
Mining	0.691	0.737	21,295	22,704
Transportation	0.683	0.679	20,508	19,798
Agriculture	0.633	0.67	11,022	11,886
Utilities	0.584	0.613	13,941	13,200
Manufacturing	0.501	0.588	16,226	16,567
Others	0.628	0.586	18,453	18,199
Trade and Services	0.377	0.39	16,875	16,241
Public Administration	0.271	0.28	14,827	14,642
Finance, Insurance, Real Estate	0.262	0.279	23,646	23,186
Education	0.191	0.174	12,847	13,420
Health	0.136	0.136	13,207	13,339

Source: RLMS-HSE, 2011, 2016

Personality-based labour market sorting into industries may serve as an additional source of segregation driving up the gender wage gap (Table 3). The highest values of conscientiousness and openness to experience are present among individuals employed in public administration and education, while high extraversion and agreeableness are exhibited by employees in education and finance. Individuals employed in finance also demonstrate the highest mean level of internal locus of control. Construction workers are characterized by the highest inclination towards risk and emotional stability. In contrast, agricultural workers demonstrate systematically low levels of all the Big Five categories, except for neuroticism, and a low level of internal locus of control.

Table 3. Distribution of non-cognitive variables across industries

	Agriculture	Construction	Education	Mining	Finance, Insurance, Real Estate	Health
Openness (2016)	-0.453	-0.040	0.190	0.169	0.168	-0.003
Conscientiousness (2016)	-0.300	0.003	0 .152	-0.044	0.142	0.062
Extraversion (2016)	-0.315	-0.064	0.157	-0.151	0.144	-0.002
Agreeableness (2016)	-0.335	-0.055	0.214	-0.104	0.206	0.128
Neuroticism (2016)	0.054	-0.119	0.013	-0.183	-0.038	0.115

	Manufacturing	Public administration	Trade and services	Transportation	Utilities	Others
Openness (2016)	-0.124	0.208	0.015	-0.058	-0.330	-0.065
Conscientiousness (2016)	-0.041	0.153	-0.064	-0.028	-0.157	0.089
Extraversion (2016)	-0.039	0.061	0.065	-0.002	-0.246	-0.004
Agreeableness (2016)	-0.087	0.142	0.006	-0.084	-0.186	-0.048
Neuroticism (2016)	0.040	-0.033	0.080	-0.081	0.143	-0.119
Risk loving (2016)	0.035	-0.103	0.031	0.075	-0.095	0.045
Internal locus of control (2011)	-0.006	-0.011	0.001	0.045	-0.256	0.220

Above the table, partial rows:

Risk loving (2016)	-0.080	0.090	-0.095	0.061	0.059	-0.147
Internal locus of control (2011)	-0.202	0.121	-0.089	0.073	0.271	-0.135

Source: RLMS-HSE, 2011, 2016

Table 4 demonstrates the proportion of males employed in different occupations. From an occupational perspective, women are concentrated in white-collar jobs (ISCO codes 2–5), while men are concentrated in managerial positions (ISCO code 1) and blue-color jobs (ISCO codes 7–8), except for elementary occupations (ISCO code 9) which are dominated by females. Gender distribution across occupations is stable throughout the period under review.

Table 4. Gender distribution across occupations

	Proportion of males	
	2011	**2016**
Managers (ISCO code 1)	0.541	0.558
Professionals (ISCO code 2)	0.260	0.256
Technicians and associate professionals (ISCO code 3)	0.302	0.324
Clerical support workers (ISCO code 4)	0.178	0.212
Service and sales workers (ISCO code 5)	0.365	0.361
Craft and related trades workers (ISCO code 7)	0.850	0.859
Plant and machine operators, and assemblers (ISCO code 8)	0.851	0.867
Elementary occupations (ISCO code 9)	0.375	0.417

Source: RLMS-HSE, 2011, 2016

As for the distribution of non-cognitive skills across occupations, managers demonstrate much greater mean levels of conscientiousness, openness to experience, extraversion, emotional

stability, inclination towards risk, and internal locus of control compared to other white-collar workers and their blue-collar counterparts (Table 5).

Table 5. Distribution of non-cognitive variables by occupational group

	Managers	Other white-collar professionals (ISCO codes 2-5)	Blue-collar workers (ISCO codes 7-9)
Openness to experience (2016)	0.395	0.110	-0.286
Conscientiousness (2016)	0.385	0.062	-0.192
Extraversion (2016)	0.221	0.082	-0.200
Agreeableness (2016	0.071	0.086	-0.178
Neuroticism (2016)	-0.206	0.006	0.027
Risk loving (2016)	0.256	-0.019	-0.014
Internal locus of control (2011)	0.470	0.015	-0.117

Source: RLMS-HSE, 2011, 2016

Previous research suggests that personality is more relevant as a wage determinant in the upper part of the wage distribution (Collischon, 2020). High-paying jobs usually require a wider array of social and behavioral skills which are predetermined by individual personality traits. There is also evidence that gender wage gaps increase across the wage distribution (Christofides et al., 2013). Our data shows that gender differences in such personality traits as conscientiousness, neuroticism, agreeableness, and extraversion are more pronounced in the top wage decile compared to the bottom (Table 6). We also observe a large gap in personality traits between those workers at the top and at the bottom of wage distribution which indirectly supports the idea of personality-based job sorting.

Table 6. Distribution of non-cognitive variables in 10th and 90th percentile of wage distribution by gender

	Female bottom 10	Male bottom 10	Difference	Female top 10	Male top 10	Difference
Openness to experience (2016)	-0.358	-0.465	0.107	0.428	0.340	0.088
Conscientiousness (2016)	-0.158	-0.285	0.127	0.484	0.246	0.239*
Extraversion (2016)	-0.054	-0.239	0.185*	0.421	-0.004	0.425***
Agreeableness (2016	-0.026	-0.314	0.288***	0.271	-0.027	0.298**
Neuroticism (2016)	0.372	0.059	0.313***	-0.048	-0.436	0.388***
Risk loving (2016)	-0.317	0.030	-0.347***	0.092	0.361	-0.268**
Internal locus of control (2011)	-0.401	-0.213	-0.194*	0.287	0.476	-0.189**

Note: comparisons of means are conducted via *t*-tests. Significance levels: *** $p<0.001$, ** $p<0.01$, * $p<0.05$. Source: RLMS-HSE, 2011, 2016

Table 7 shows that males and females employed in managerial positions also differ significantly in their personality traits. Women, in particular, demonstrate higher levels of neuroticism, extraversion, agreeableness, and external locus of control. However, gender differences in openness, conscientiousness, and risk preferences are statistically insignificant among managers.

Table 7. Distribution of non-cognitive variables in managers by gender

	Female managers	**Male managers**	**Difference**
Openness to experience (2016)	0.461	0.342	0.119
Conscientiousness (2016)	0.460	0.325	0.135
Extraversion (2016)	0.389	0.088	0.301**
Agreeableness (2016	0.276	-0.091	0.367***
Neuroticism (2016)	-0.084	-0.304	0.220*
Risk loving (2016)	0.162	0.331	-0.169
Internal locus of control (2011)	0.311	0.606	-0.295***

Note: comparisons of means are conducted via *t*-tests. Significance levels: *** p<0.001, ** p<0.01, * p<0.05. Source: RLMS-HSE, 2011, 2016

Method

Our empirical strategy is based on the estimation of a Mincer-type equation which can be written as:

$$ln(W) = X\beta + \varepsilon, \tag{1}$$

where *ln(W)* is the logarithm of monthly wage; *X* are explanatory variables. Explanatory variables can be divided into three groups. The first group represents individual characteristics, including level of education (higher education, vocational education, or below as a reference category), age (in years) and age squared, marital status (binary variable which equals to 1 if married and 0, otherwise), presence of minor children (binary variable which equals to 1 if present and 0, otherwise), and type of settlement (binary variable which equals to 1 if urban and 0, otherwise). The second group consists of job characteristics, including industry (categorical variable, where education is a reference category), enterprise ownership (binary variable which equals to 1 if the entity is state-owned), occupation (categorical variable, where elementary occupations are used as a reference category), tenure (in years), and the logarithm of hours worked in the last 30 days. Finally, the third group contains personality traits: the Big Five, attitudes to risk, and locus of control. We also control for the region to account for Russian regional heterogeneity. Categorical variables are normalized to solve the omitted dummy variable problem.

Traditionally, the decomposition method proposed by Oaxaca (1973) and Blinder (1973) is used to establish the individual input of each explanatory variable in the gender wage gap. We use a modification of this method, proposed by Newmark (1988), and estimate three wage regressions: one separate equation for each gender and one pooled regression. This way wage gaps are independent of the reference wage structure. The decomposition equation can be written as:

$$ln(\overline{W}_m) - ln(\overline{W}_f) = (\overline{X}_m - \overline{X}_f)\hat{\beta}_t + \overline{X}_m(\hat{\beta}_m - \hat{\beta}_t) + \overline{X}_f(\hat{\beta}_f - \hat{\beta}_t), \tag{2}$$

where $ln(\overline{W}_m), ln(\overline{W}_f)$ are log of male and female wages, respectively, $\overline{W} = \exp\frac{1}{n}[\sum_{i=1}^{n}ln(W_i)]$ is the geometric mean wage of n individuals, $\overline{X}_m, \overline{X}_f$ are the mean explanatory variables for each gender, and $\hat{\beta}_m, \hat{\beta}_f, \hat{\beta}_t$ are the estimates for the male, female, and pooled samples, respectively.

The first part in the right-hand side of the equation represents explained part of the gap which arises due to the gender difference in the observed characteristics. The remaining parts of the right-hand side of the equation show the unexplained part of the gender wage gap, which arises due to different valuations of the same characteristics possessed by men and women.

This method allows a decomposition of the gender wage gap in mean wages but it cannot be directly used to decompose the pay gap in other parts of the distribution. This problem was solved in a recent method proposed by Firpo et al. (2009). This method gives a decomposition for any statistic of the distribution. The dependent variable Y is replaced by the re-centered influence function $RIF(Y,v)$, where v represents a particular parameter for distribution (median, quantile, dispersion etc.). RIF is obtained by a summation of the influence function and the parameter of a probability distribution. For θ^{th} quantile RIF can be written as:

$$RIF(Y, q_\theta, F_Y) = q_\theta + \frac{\theta - I\{Y \le q_\theta\}}{f_Y(q_\theta)}, \tag{3}$$

where Y is the dependent variable, q_θ is the θth quantile of the dependent variable Y, I is the condition indicator, $f_Y(q_\theta)$ is the variable Y density function at point q_θ.

The estimation of the density function at point q_θ is determined via kernel functions:

$$\hat{f}_Y(\hat{q}_\theta) = \frac{1}{N \cdot h} \sum_{i=1}^{N} k_Y\left(\frac{Y_i - \hat{q}_\theta}{h}\right), \tag{4}$$

where $k_Y(z)$ is a kernel function and h is bandwidth.

Since the expectation of RIF equals the value of distribution parameter, the coefficients of the RIF regression can be estimated via OLS:

$$RIF(Y, v) = \gamma^v X + \varepsilon \tag{5}$$

Based on the estimates of the RIF regression, produced separately for male and female samples, we can decompose the overall gender wage gap into two parts—the endowment effect and returns effect:

$$RIF(\ln(\bar{W}_m), v) - RIF(\ln(\bar{W}_f), v) = (\bar{X}_m - \bar{X}_f)\hat{\gamma}_m^v + \bar{X}_f(\hat{\gamma}_m^v - \hat{\gamma}_f^v)$$

(6)

4. Results

In this section, we report the raw gender wage gap in 2011 and 2016, the portion of the gap explained by individual, job-related, and personality variables, the unexplained portion of the gap, and detailed decompositions of endowment and returns effect for all variables. The results are summarized in Tables 8 and 9.[8]

First of all, the size of the raw gap varies significantly in different parts of the wage distribution. However, unlike high-income countries, the largest gap in Russia is observed in the middle of the distribution. Thereafter it decreases towards the top. Our data suggests that the gender wage gap in Russia decreased slightly over the five years. In 2011, the gender wage gap was 37 per cent at the mean, ranging from 35 per cent in both the 10th and the 90th percentile up to 42 per cent in the 50th percentile. In 2016, the gender wage gap at the mean was 33 per cent, increasing from 27 per cent in the bottom decile of wage distribution up to 41 per cent in the 50th percentile and decreasing afterwards to 33 per cent in the 90th percentile.

Secondly, in decomposition results, where job characteristics are not accounted for, the unexplained part exceeds the raw gap, while the explained part is negative. This happens due to higher levels of observed human capital characteristics that women demonstrate compared to men. Although it might be surprising from the viewpoint of high-income countries, such results are quite common for studies on the gender wage gap in Russia (Khitarishvili, 2019). Once job characteristics, which represent labour market sorting, are accounted for, the explained part becomes positive. Industry compiles a large portion of the gap, implying the persistent importance of horizontal segregation in Russia, especially at the bottom of wage distribution. Horizontal segregation accounts for 24% of the raw gap at the mean, ranging from 21% in the 50th percentile to 84% in the 10th percentile.

Thirdly, non-cognitive skills can serve as a partial explanation for the gender wage gap, although their contribution is small and differs substantially depending on the personality measure. We start off with the models without occupation, industry, and ownership. These models capture the overall effect of non-cognitive skills on the gender wage gap, including possible effects on labour market sorting. When job characteristics are not controlled for, introducing the Big Five

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[8] Detailed results for RIF-regressions are presented in Appendix Tables 1-8B

and attitudes to risk into analysis drives up the explained part of the gap at the mean and in the top percentiles of wage distribution. At the mean, higher levels of openness, conscientiousness, and extraversion possessed by females partly offset the negative effects of neuroticism and risk aversion, both of which significantly increase the gender wage gap. The Big Five and risk preferences jointly explain from 2.4 per cent[9] of the raw gap at the mean and in the 50th percentile to 3.6 per cent in the 90th percentile. In contrast, in the lowest decile the contribution of personality to the gap is negative due to higher female levels of openness. As in previous research, conducted on German data (Collischon, 2020), personality appears to be more relevant to explain the gap at the top of the wage distribution, although the contribution of the Big Five and attitudes to risk in our study is relatively small compared to the existing evidence. Once job characteristics are controlled for, the contribution of personality measured by the Big Five and general risk preferences is reduced to 2.1 per cent of the raw gap at the mean, 1.9 per cent in the 50th percentile, and 2.4 per cent in the 90th percentile suggesting that personality is related to labour market sorting. All the observed changes run through gender differences in endowments. Returns to non-cognitive skills are similar for men and women as the difference is not statistically significant for any trait.

Openness to experience reduces the gender wage gap at the mean by 1.5 per cent due to high endowments among women, although the effect drops to less than 1 per cent when job characteristics are introduced. It is also the only trait statistically significant for the lowest decile of wage distribution, where it reduces the gap by approximately 4 per cent. In contrast, extraversion is only statistically significant at the top of the distribution and the effect remains stable with job controls. Higher levels of extraversion observed among women reduce the gender wage gap by 5 per cent which is expected. High-income jobs require a lot of networking, and extraversion is a useful trait for communication and creating social connections. Extraversion is also positively related to bargaining (Cubel et al., 2016). However, evidence suggests that women benefit less from networking compared to men since they network for social reasons and are less instrumental in career advantages (Biron, Hanuka, 2018).

Conscientiousness is only statistically significant at the mean, though the size of the effect reduces when job is controlled for. Gender differences in neuroticism explain approximately 3 per cent of the gap at the mean and in the 50th percentile of the wage distribution, although they are statistically insignificant for the bottom decile. The effect is slightly reduced when jobs are controlled for. Low-income jobs are characterized by low-skilled physical or intellectual mundane activities for which emotional stability is not needed. Risk inclination is only statistically significant at the mean and in the top decile of the wage distribution but only in models without job controls. As discussed

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[9] The share of the explanation provided by personality is calculated by summing up the contribution of each trait into explained components and dividing the sum by the raw wage gap

previously, high-income positions are usually less stable in terms of renumeration as a large portion of it comes in bonuses. Such positions are associated with stress and responsibility. Risk aversion and neuroticism observed in women hamper successful employment in such jobs. Finally, contrary to previous research (Collischon, 2021), gender differences in agreeableness are not statistically significant for the gap in Russia.

The contribution of personality to the wage gap is significantly larger when locus of control is used as a measure of personality. In models without job characteristics, locus of control accounts for 6.8 per cent of the raw gap at the mean. The share equals 6.3 per cent in the 10th percentile, 4.8 per cent in the 50th percentile, and to 8.1 per cent in the 90th percentile of the wage distribution. Controlling for job characteristics reduces the share of the raw gap explained by personality to 5.2 per cent at the mean, 5.4 per cent at the bottom, 3.6 per cent at the 50th percentile, and 6.1 per cent at the top of wage distribution and the results remain both statistically and economically significant. Moreover, personality accounts for 68 per cent of the explained gap at the top of wage distribution. The calculated share of the gap explained by personality in this case is generally in line with previous literature on Russia (Semykina, Linz, 2007). We also observe that the importance of non-cognitive skills reaches its peak for high-paying jobs at the top of the wage distribution as suggested by (Collischon, 2020, 2021). The effect of personality for locus of control is also observed due to differences in endowments and not due to gender differences in returns which is in line with all previous studies (Nyhus, Pons, 2012; Collischon, 2021). Additionally, we point out that the reduction of the effect of non-cognitive skills when job characteristics are introduced serves as evidence that labour market sorting is closely linked to personality.

Table 8. Decomposition results for the Big Five and risk attitude models

	With industry/occupation/ownership (N=5,601)				No industry/occupation/ownership (N=5,601)			
	Mean	**Q10**	**Q50**	**Q90**	**Mean**	**Q10**	**Q50**	**Q90**
Raw difference	0.332***	0.273***	0.412***	0.331***	0.332***	0.273***	0.412***	0.331***
	(0.016)	(0.032)	(0.018)	(0.027)	(0.016)	(0.032)	(0.018)	(0.027)
Without personality								
Explained	0.080***	0.209***	0.098***	0.041	-0.027*	0.006	-0.000	-0.027
	(0.014)	(0.040)	(0.019)	(0.028)	(0.011)	(0.022)	(0.012)	(0.016)
Unexplained	0.251***	0.064	0.314***	0.290***	0.359***	0.266***	0.412***	0.358***
	(0.015)	(0.047)	(0.022)	(0.035)	(0.014)	(0.035)	(0.018)	(0.027)
With personality								
Explained	0.090***	0.209***	0.109***	0.049	-0.015	0.008	0.012	-0.016
	(0.015)	(0.042)	(0.020)	(0.030)	(0.012)	(0.027)	(0.014)	(0.020)
Unexplained	0.242***	0.063	0.303***	0.282***	0.347***	0.265***	0.400***	0.348***
	(0.016)	(0.049)	(0.023)	(0.036)	(0.014)	(0.038)	(0.019)	(0.029)
Detailed decomposition								
Explained								
Openness	-0.003*	-0.010*	-0.002	0.001	-0.005***	-0.012**	-0.003	-0.001
	(0.001)	(0.004)	(0.002)	(0.003)	(0.001)	(0.005)	(0.002)	(0.003)
Conscientiousness	-0.003*	-0.000	-0.003	-0.002	-0.004**	-0.001	-0.004	-0.003
	(0.001)	(0.005)	(0.002)	(0.003)	(0.002)	(0.005)	(0.002)	(0.003)
Extraversion	-0.003	-0.003	-0.005	-0.018**	-0.005*	-0.003	-0.005	-0.018**
	(0.002)	(0.008)	(0.003)	(0.006)	(0.002)	(0.008)	(0.004)	(0.006)
Agreeableness	0.002	0.007	0.004	0.010	0.004	0.009	0.006	0.013
	(0.002)	(0.010)	(0.004)	(0.007)	(0.003)	(0.010)	(0.004)	(0.007)

Neuroticism	0.008***	0.008	0.011***	0.008	0.010***	0.011	0.012***	0.010*
	(0.002)	(0.006)	(0.003)	(0.004)	(0.002)	(0.006)	(0.003)	(0.004)
Risk loving	0.006**	-0.008	0.003	0.009	0.008***	-0.007	0.004	0.011*
	(0.002)	(0.007)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)	(0.005)
Occupation	0.011	0.028	0.013	-0.029	-	-	-	-
	(0.009)	(0.028)	(0.012)	(0.019)				
Industry	0.080***	0.176***	0.088***	0.079***	-	-	-	-
	(0.008)	(0.031)	(0.014)	(0.021)				
Ownership	0.008**	0.017	0.002	0.007	-	-	-	-
	(0.003)	(0.010)	(0.005)	(0.007)				
Education	-0.037***	-0.030**	-0.031***	-0.033***	-0.048***	-0.030**	-0.030**	-0.051***
	(0.004)	(0.011)	(0.005)	(0.008)	(0.004)	(0.010)	(0.010)	(0.008)
Age	0.005*	0.025***	0.009**	-0.004	0.006*	0.028***	0.009**	-0.003
	(0.002)	(0.007)	(0.003)	(0.003)	(0.003)	(0.007)	(0.003)	(0.003)
Tenure	-0.011***	-0.028***	-0.009**	-0.002	-0.013***	-0.031***	-0.011***	-0.005
	(0.002)	(0.007)	(0.003)	(0.004)	(0.002)	(0.007)	(0.003)	(0.004)
Log hours worked	0.029***	0.032***	0.016***	0.017**	0.033***	0.040***	0.019***	0.021***
	(0.004)	(0.008)	(0.004)	(0.006)	(0.004)	(0.009)	(0.004)	(0.006)
Type of settlement	-0.001	-0.000	-0.001	-0.000	-0.001	-0.001	-0.002	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Married	0.005*	0.013	0.018***	0.010	0.006**	0.019*	0.021***	0.013*
	(0.002)	(0.009)	(0.004)	(0.006)	(0.002)	(0.009)	(0.004)	(0.006)
Minor children	0.000	-0.005	0.002	0.005	0.001	-0.003	0.003	0.005
	(0.001)	(0.004)	(0.002)	(0.003)	(0.001)	(0.004)	(0.002)	(0.003)

Region	-0.007	-0.014	-0.006	-0.008	-0.006	-0.012	-0.005	-0.007
	(0.007)	(0.011)	(0.007)	(0.009)	(0.007)	(0.011)	(0.007)	(0.009)
Unexplained								
Openness	0.000	0.004	-0.000	0.004	-0.000	0.002	-0.000	0.002
	(0.001)	(0.006)	(0.003)	(0.005)	(0.000)	(0.002)	(0.001)	(0.002)
Conscientiousness	-0.000	0.003	0.001	-0.007	0.000	0.001	0.000	-0.003
	(0.002)	(0.008)	(0.004)	(0.007)	(0.000)	(0.003)	(0.002)	(0.003)
Extraversion	-0.000	0.005	0.003	0.005	-0.001	0.002	0.001	0.003
	(0.001)	(0.005)	(0.003)	(0.004)	(0.000)	(0.005)	(0.002)	(0.004)
Agreeableness	0.000	-0.010	-0.003	0.005	0.000	-0.008	-0.002	0.004
	(0.001)	(0.007)	(0.003)	(0.005)	(0.001)	(0.006)	(0.003)	(0.005)
Neuroticism	0.001	0.000	0.000	0.000	-0.000	-0.002	-0.002	-0.003
	(0.002)	(0.000)	(0.000)	(0.001)	(0.000)	(0.004)	(0.002)	(0.003)
Risk loving	-0.001	0.004	0.002	-0.002	-0.000	0.006	0.003	-0.002
	(0.001)	(0.003)	(0.001)	(0.002)	(0.000)	(0.004)	(0.002)	(0.003)
Occupation	-0.007	-0.036	0.004	0.013	-	-	-	-
	(0.008)	(0.028)	(0.014)	(0.023)				
Industry	0.002	-0.074*	-0.019	-0.006	-	-	-	-
	(0.012)	(0.031)	(0.016)	(0.025)				
Ownership	0.017	-0.040	0.029	0.001	-	-	-	-
	(0.015)	(0.040)	(0.021)	(0.034)				
Education	-0.002	0.002	-0.010**	-0.009	-0.003	-0.010	-0.016***	-0.007
	(0.002)	(0.008)	(0.004)	(0.006)	(0.002)	(0.007)	(0.004)	(0.005)
Age	-0.174	-0.382	-0.205	-0.387	-0.125	-0.229	-0.166	-0.240

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(0.189)	(0.476)	(0.242)	(0.386)	(0.198)	(0.482)	(0.246)	(0.390)
Tenure	0.005	0.092*	0.004	-0.025	0.009	0.095**	0.002	-0.021
	(0.013)	(0.037)	(0.018)	(0.029)	(0.013)	(0.036)	(0.018)	(0.029)
Log hours worked	-0.274	-0.756	-0.028	0.239	-0.196	-0.556	0.013	0.256
	(0.272)	(0.433)	(0.220)	(0.351)	(0.284)	(0.435)	(0.222)	(0.352)
Type of settlement	0.050	0.047	0.082	-0.089	0.050	0.059	0.076	-0.076
	(0.035)	(0.089)	(0.046)	(0.073)	(0.038)	(0.090)	(0.046)	(0.074)
Married	0.077***	0.036	0.091***	0.058	0.092***	0.053	0.102***	0.069*
	(0.018)	(0.038)	(0.019)	(0.030)	(0.018)	(0.038)	(0.019)	(0.030)
Minor children	0.013	-0.004	0.016	-0.001	0.024	0.013	0.025	0.005
	(0.014)	(0.034)	(0.017)	(0.028)	(0.015)	(0.035)	(0.018)	(0.028)
Region	-0.020**	0.032	-0.012	-0.044**	-0.017*	0.035	-0.011	-0.042**
	(0.007)	(0.018)	(0.009)	(0.015)	(0.007)	(0.018)	(0.009)	(0.015)
Constant	0.555	1.140	0.347	0.527	0.512	0.804	0.376	0.404
	(0.334)	(0.642)	(0.325)	(0.518)	(0.348)	(0.641)	(0.326)	(0.517)

Robust standard errors in parenthesis
Significance levels: *** $p<0.001$, ** $p<0.01$, * $p<0.05$.
Source: RLMS-HSE, 2016

Table 9. Decomposition results for locus of control models

	With industry/occupation/ownership (N=7,022)				No industry/occupation/ownership (7,022)			
	Mean	**Q10**	**Q50**	**Q90**	**Mean**	**Q10**	**Q50**	**Q90**
Raw difference	0.366***	0.348***	0.416***	0.344***	0.366***	0.348***	0.416***	0.344***
	(0.016)	(0.026)	(0.018)	(0.028)	(0.016)	(0.026)	(0.018)	(0.028)
Without personality								
Explained	0.095***	0.224***	0.075***	0.008	-0.023*	0.027	-0.004	-0.018
	(0.014)	(0.034)	(0.019)	(0.030)	(0.011)	(0.020)	(0.012)	(0.019)
Unexplained	0.271***	0.125**	0.341***	0.336***	0.388***	0.322***	0.419***	0.362***
	(0.015)	(0.040)	(0.022)	(0.037)	(0.013)	(0.030)	(0.018)	(0.029)
With personality								
Explained	0.113***	0.244***	0.090***	0.031	0.003	0.048*	0.015	0.008
	(0.014)	(0.035)	(0.019)	(0.031)	(0.011)	(0.022)	(0.013)	(0.020)
Unexplained	0.252***	0.105*	0.325***	0.313***	0.363***	0.300***	0.400***	0.336***
	(0.015)	(0.041)	(0.023)	(0.037)	(0.014)	(0.031)	(0.018)	(0.029)
Detailed decomposition								
Explained								
Internal locus of control	0.019***	0.019**	0.015***	0.021**	0.025***	0.022**	0.020***	0.028***
	(0.002)	(0.007)	(0.004)	(0.006)	(0.003)	(0.007)	(0.004)	(0.007)
Occupation	0.013	0.047	-0.005	-0.042	-	-	-	-
	(0.008)	(0.025)	(0.013)	(0.021)				
Industry	0.078***	0.146***	0.066***	0.032	-	-	-	-
	(0.007)	(0.026)	(0.013)	(0.022)				
Ownership	0.017***	0.006	0.008	0.016*	-	-	-	-
	(0.003)	(0.008)	(0.004)	(0.007)				

Education	-0.034***	-0.036***	-0.018***	-0.033***	-0.049***	-0.039***	-0.032***	-0.061***
	(0.004)	(0.010)	(0.005)	(0.009)	(0.004)	(0.009)	(0.005)	(0.009)
Age	-0.000	0.017**	0.003	-0.004	0.001	0.020**	0.003	-0.007
	(0.002)	(0.006)	(0.003)	(0.004)	(0.002)	(0.007)	(0.003)	(0.004)
Tenure	-0.009***	-0.018**	-0.006	0.001	-0.009***	-0.020**	-0.006	0.002
	(0.002)	(0.007)	(0.004)	(0.006)	(0.002)	(0.007)	(0.004)	(0.006)
Log hours worked	0.031***	0.042***	0.020***	0.025***	0.034***	0.043***	0.021***	0.028***
	(0.004)	(0.008)	(0.004)	(0.006)	(0.004)	(0.008)	(0.004)	(0.006)
Type of settlement	-0.000	0.000	-0.000	-0.002	-0.000	-0.000	-0.001	-0.002
	(0.000)	(0.001)	(0.000)	(0.003)	(0.001)	(0.001)	(0.001)	(0.003)
Married	0.006**	0.023**	0.012**	0.022**	0.007***	0.026**	0.014***	0.023***
	(0.002)	(0.008)	(0.004)	(0.007)	(0.002)	(0.008)	(0.004)	(0.007)
Minor children	0.001	-0.000	0.003*	0.003	0.001	-0.001	0.003*	0.004
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Region	-0.007	-0.002	-0.006	-0.008	-0.007	-0.002	-0.007	-0.008
	(0.008)	(0.009)	(0.007)	(0.010)	(0.008)	(0.010)	(0.008)	(0.011)
Unexplained								
Internal locus of control	0.000	-0.001	0.000	0.000	-0.001	-0.001	0.003	0.003
	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.004)
Occupation	-0.006	-0.056**	0.013	0.030	-	-	-	-
	(0.007)	(0.021)	(0.014)	(0.022)				
Industry	0.017	-0.012	0.016	0.035	-	-	-	-
	(0.009)	(0.023)	(0.014)	(0.023)				
Ownership	0.046**	0.041	0.056*	0.051	-	-	-	-

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(0.015)	(0.034)	(0.022)	(0.036)				
Education	0.002	0.001	-0.009***	-0.001	0.002	-0.003	-0.009***	0.001
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
Age	-0.035	0.145	-0.179	-0.011	0.048	0.331	-0.096	-0.032
	(0.173)	(0.358)	(0.224)	(0.364)	(0.184)	(0.363)	(0.231)	(0.368)
Tenure	-0.002	0.023	-0.022	0.007	-0.006	0.020	-0.024	0.001
	(0.012)	(0.030)	(0.018)	(0.030)	(0.012)	(0.030)	(0.018)	(0.029)
Log hours worked	-0.176	0.424	-0.239	0.043	-0.296	0.229	-0.345	0.029
	(0.227)	(0.327)	(0.202)	(0.329)	(0.233)	(0.327)	(0.205)	(0.327)
Type of settlement	0.038	-0.010	0.040	0.187*	0.056	0.045	0.051	0.176*
	(0.036)	(0.075)	(0.047)	(0.076)	(0.038)	(0.076)	(0.048)	(0.077)
Married	0.073***	0.086**	0.054**	0.086**	0.080***	0.093**	0.058**	0.092**
	(0.016)	(0.030)	(0.018)	(0.030)	(0.017)	(0.031)	(0.019)	(0.030)
Minor children	0.022	-0.005	0.040*	0.046	0.031*	0.001	0.048**	0.056*
	(0.013)	(0.026)	(0.016)	(0.026)	(0.014)	(0.026)	(0.017)	(0.027)
Region	-0.007	0.024	-0.005	-0.023	-0.008	0.022	-0.007	-0.023
	(0.006)	(0.013)	(0.008)	(0.012)	(0.006)	(0.013)	(0.008)	(0.012)
Constant	0.281	-0.556	0.561	-0.136	0.458	-0.432	0.721*	0.032
	(0.293)	(0.474)	(0.297)	(0.481)	(0.301)	(0.474)	(0.301)	(0.479)

Robust standard errors in parenthesis. Significance levels: *** $p<0.001$, ** $p<0.01$, * $p<0.05$.
Source: RLMS-HSE, 2011

5. Conclusion

Our paper explores the impact of non-cognitive skills on the gender wage gap in Russia and adds to the limited literature on this topic by analyzing the effect of personality across the wage distribution. Our analysis allows us to draw several conclusions. First of all, the results are very dependent on the measurement of non-cognitive skills. Internal locus of control accounts for 4–8 per cent of the gender wage gap, but the contribution is halved when personality is measured as the Big Five and attitudes to risk. However, we observe significant differences across the wage distribution with non-cognitive skills being especially important at the top regardless of the measurement which is in line with previous studies for Germany (Collischon, 2021). We conclude that personality traits are noteworthy in the context of the gender wage gap, although there are other unobserved factors, essential for the gap, which researchers have yet to identify.

Second, the discussion around non-cognitive skills remains limited in Russia. Although the literature highlights the importance of personality for the Russian labour market performance and suggests that gender differences in returns exist (Rozhkova, 2019), our study shows that these differences are statistically insignificant and economically negligible, especially compared to gender differences in endowments. Moreover, horizontal segregation remains one of the major factors of the gender wage gap in Russia. Although non-cognitive skills are closely related to the choice of career path, our results show that once job characteristics are controlled for, the contribution of personality goes down only slightly, suggesting that there are mechanisms other than job sorting that mediate the effect.

Third, since the wage gap due to personality arises because of differences in endowments rather than in returns, policies in education should be applied in order to promote gender equality. The formation and development of non-cognitive skills mainly occurs early in one's life, therefore introducing instruments to promote internal locus of control and emotional stability into formal education might be useful in reducing the gender wage gap and to encourage a more even gender distribution across industries and occupations.

Finally, we recognize two limitations in this study. First, we treat non-cognitive skills as exogenous and use personality measures obtained simultaneously with employment and job characteristics. However, some studies indicate that previous labour market status can affect personality, in particular, openness and emotional stability (Specht et al., 2011). The use of longitudinal data in future research could alleviate this problem. Second, in this research we do not control for cognitive abilities due to data limitations. Previous research (Anger, Heineck, 2006) has revealed that personality traits have an impact on economic results equivalent to that of cognitive skills. Lack of control for cognitive abilities could possibly bias the results for

personality, driving them up. Future research can benefit from controlling both cognitive and non-cognitive characteristics in the gender wage gap context.

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Appendix

Table 1A. Personality questionnaire in RLMS-HSE

The Big Five (2016)	
Do you come up with ideas other people haven't thought of before?	
Are you very interested in learning new things?	**Openness**
Do you enjoy beautiful things?	
When doing a task, are you very careful?	
Do you finish whatever you begin?	
Do you work very hard?	
Do you prefer relaxation more than hard work?	**Conscientiousness**
Do you enjoy working on things that take a very long time (at least several months) to complete?	
Do you work very well and quickly?	
Do you think carefully before you make an important decision?	
Are you talkative?	
Do you like to keep your opinions to yourself?*	**Extraversion**
Are you outgoing and sociable, for example, do you make friends very easily?	
Do you forgive other people easily?	
Are you very polite to other people?	
Are you generous to other people with your time or money?	**Agreeableness**
Do you ask for help when you don't understand something?	
Do people take advantage of you?	
Do you tend to worry?	
Do you think about how the things you do will affect you in the future?	
Are you relaxed during stressful situations? *	**Neuroticism**
Do you get nervous easily?	
Are people mean/not nice to you?	
Do you think about how the things you will do will affect others?*	

Internal locus of control (2011)
I cannot cope with my problems
Sometimes I feel being pushed around in my life
I have little influence over things that happen to me
I can always do what I planned*
I often feel helpless in the face of the challenges of my life
What happens to me in the future depends on me
What I can do won't change my life much

Note: (*) the scale in the marked questions are reversed for the sake of coherence with other components of the category

Table 2A. Descriptive statistics for all variables, 2016

	N	Mean	Std. Dev.	min	max
Secondary education (1=yes)	5601	0.366	0.482	0	1
Vocational education (1=yes)	5601	0.267	0.443	0	1
Higher education (1=yes)	5601	0.367	0.482	0	1
Male (1=yes)	5601	0.471	0.499	0	1
Age	5601	39.643	10.535	20	60
Tenure	5601	7.582	8.264	0	41
Hours worked in the last 30 days	5601	5.183	0.374	1.386	5.886
Urban settlement (1=yes)	5601	0.732	0.443	0	1
Industry					
Manufacturing	5601	0.131	0.337	0	1
Mining	5601	0.086	0.28	0	1
Agriculture	5601	0.032	0.177	0	1
Construction	5601	0.071	0.257	0	1
Transportation	5601	0.088	0.284	0	1
Trade and Services	5601	0.216	0.411	0	1
Utilities	5601	0.033	0.179	0	1
Health	5601	0.086	0.281	0	1
Education	5601	0.137	0.344	0	1
Public Administration	5601	0.026	0.158	0	1
Finance, Insurance, Real Estate	5601	0.031	0.173	0	1
Others	5601	0.063	0.243	0	1
Occupation					
Managers	5601	0.062	0.241	0	1
Professionals	5601	0.184	0.388	0	1
Technicians and Associate Professionals	5601	0.208	0.406	0	1
Clerical Support Workers	5601	0.061	0.238	0	1
Services and Sales Workers	5601	0.163	0.370	0	1
Craft and Related Trades Workers	5601	0.123	0.328	0	1
Plant and Machine Operators and Assemblers	5601	0.137	0.344	0	1
Elementary Occupations	5601	0.062	0.242	0	1
State of ownership (1=public, 0=private)	5601	0.443	0.497	0	1
Married	5601	0.603	0.489	0	1
Children under 18	5601	0.485	0.500	0	1
Openness	5601	0	1	-3.541	1.851

Conscientiousness	5601	0	1	-3.732	2.588
Extraversion	5601	0	1	-2.722	2.219
Agreeableness	5601	0	1	-3.648	2.505
Neuroticism	5601	0	1	-2.757	4.085
Risk loving	5601	0	1	-1.567	2.411
Logarithm of monthly wage	5601	9.946	0.637	6.551	12.899

Table 3A. Descriptive statistics for all variables, 2011

	N	Mean	Std. Dev.	min	max
Secondary education (1=yes)	7022	0.416	0.493	0	1
Vocational education (1=yes)	7022	0.268	0.443	0	1
Higher education (1=yes)	7022	0.316	0.465	0	1
Male (1=yes)	7022	0.466	0.499	0	1
Age	7022	39.010	11.078	20	60
Tenure	7022	7.349	8.39	0	44
Hours worked in the last 30 days	7022	5.162	0.404	1.792	5.886
Urban settlement (1=yes)	7022	0.719	0.450	0	1
Industry					
Manufacturing	7022	0.110	0.313	0	1
Mining	7022	0.086	0.281	0	1
Agriculture	7022	0.047	0.212	0	1
Construction	7022	0.081	0.274	0	1
Transportation	7022	0.094	0.291	0	1
Trade and Services	7022	0.187	0.390	0	1
Utilities	7022	0.036	0.187	0	1
Health	7022	0.086	0.280	0	1
Education	7022	0.140	0.347	0	1
Public Administration	7022	0.031	0.173	0	1
Finance, Insurance, Real Estate	7022	0.024	0.155	0	1
Others	7022	0.077	0.267	0	1
Occupations					
Managers	7022	0.065	0.246	0	1
Professionals	7022	0.195	0.396	0	1
Technicians and Associate Professionals	7022	0.186	0.389	0	1
Clerical Support Workers	7022	0.060	0.237	0	1
Services and Sales Workers	7022	0.158	0.365	0	1
Craft and Related Trades Workers	7022	0.127	0.333	0	1
Plant and Machine Operators and Assemblers	7022	0.145	0.352	0	1
Elementary Occupations	7022	0.065	0.246	0	1
State of ownership (1=public, 0=private)	7022	0.476	0.499	0	1
Married	7022	0.593	0.491	0	1
Children under 18	7022	0.454	0.498	0	1
Internal locus of control	7022	0	1	-4.426	2.539
Logarithm of monthly wage	7022	9.499	0.691	5.521	12.766

Table 1B. RIF-regression results for decomposition at the mean, without job characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled (2016)	Females (2016)	Males (2016)	Pooled (2011)	Females (2011)	Males (2011)
Male (base=yes)	0.347***			0.363***		
	(0.014)			(0.014)		
Education (base=secondary)						
Vocational education	0.120***	0.138***	0.116***	0.112***	0.114***	0.125***
	(0.016)	(0.022)	(0.023)	(0.015)	(0.021)	(0.023)
Higher education	0.314***	0.379***	0.244***	0.336***	0.386***	0.268***
	(0.016)	(0.022)	(0.024)	(0.016)	(0.021)	(0.024)
Age	0.048***	0.050***	0.046***	0.050***	0.048***	0.053***
	(0.005)	(0.007)	(0.008)	(0.005)	(0.007)	(0.007)
Age squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.009***	0.008***	0.009***	0.004***	0.004***	0.003*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log hours worked	0.284***	0.299***	0.262***	0.268***	0.292***	0.235***
	(0.027)	(0.035)	(0.043)	(0.022)	(0.029)	(0.035)
Type of settlement (base=urban)	0.093***	0.060	0.129***	0.075**	0.038	0.116**
	(0.026)	(0.036)	(0.038)	(0.027)	(0.036)	(0.039)
Married (base=yes)	0.045**	-0.011	0.136***	0.049***	-0.002	0.129***
	(0.014)	(0.019)	(0.023)	(0.013)	(0.017)	(0.023)
Minor children (base=present)	0.013	-0.019	0.032	0.022	-0.016	0.053*

	(0.015)	(0.021)	(0.023)	(0.015)	(0.020)	(0.023)
Region	+	+	+	+	+	+
Non-cognitive skills						
Openness	0.034***	0.033**	0.036**			
	(0.008)	(0.011)	(0.011)			
Conscientiousness	0.025**	0.025*	0.021			
	(0.008)	(0.012)	(0.011)			
Extraversion	0.015*	0.009	0.025*			
	(0.007)	(0.010)	(0.010)			
Agreeableness	-0.011	-0.010	-0.015			
	(0.007)	(0.010)	(0.011)			
Neuroticism	-0.042***	-0.038***	-0.045***			
	(0.007)	(0.010)	(0.010)			
Risk loving	0.031***	0.037***	0.022*			
	(0.007)	(0.010)	(0.011)			
Internal locus of control				0.079***	0.079***	0.074***
				(0.007)	(0.009)	(0.010)
Constant	7.689***	7.638***	8.087***	7.516***	7.537***	7.883***
	(0.176)	(0.232)	(0.274)	(0.152)	(0.208)	(0.225)
Observations	**5,601**	**2,962**	**2,639**	**7,022**	**3,753**	**3,269**
R-squared	**0.438**	**0.433**	**0.386**	**0.445**	**0.438**	**0.391**

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table 2B. Regression results for decomposition at the 10th percentile, without job characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled (2016)	Females (2016)	Males (2016)	Pooled (2011)	Females (2011)	Males (2011)
Male (base=yes)	0.265***			0.277***		
Education (base=secondary)						
Vocational education	0.121***	0.244***	0.090	0.175***	0.210***	0.197***
	(0.036)	(0.055)	(0.064)	(0.032)	(0.037)	(0.051)
Higher education	0.285***	0.362***	0.188***	0.282***	0.287***	0.186***
	(0.031)	(0.048)	(0.055)	(0.027)	(0.031)	(0.046)
Age	0.041***	0.042**	0.044	0.063***	0.042***	0.071***
	(0.012)	(0.016)	(0.023)	(0.010)	(0.011)	(0.019)
Age squared	-0.001***	-0.001**	-0.001**	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.011***	0.009***	0.021***	0.011***	0.007***	0.010*
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)
Log hours worked	0.352***	0.457***	0.350***	0.319***	0.288***	0.332***
	(0.048)	(0.068)	(0.089)	(0.041)	(0.043)	(0.072)
Type of settlement (base=urban)	0.018	-0.018	0.063	0.038	0.019	0.081
	(0.056)	(0.075)	(0.104)	(0.054)	(0.057)	(0.100)
Married (base=yes)	0.040	0.036	0.136*	0.060*	-0.003	0.176**
	(0.030)	(0.037)	(0.062)	(0.027)	(0.026)	(0.054)
Minor children (base=present)	-0.067*	-0.076	-0.047	-0.046	-0.016	-0.014

	(0.030)	(0.041)	(0.059)	(0.028)	(0.029)	(0.050)
Region	+	+	+	+	+	+
Non-cognitive skills						
Openness	0.050**	0.063**	0.088**			
	(0.016)	(0.023)	(0.029)			
Conscientiousness	-0.009	-0.008	0.003			
	(0.016)	(0.024)	(0.029)			
Extraversion	0.012	-0.007	0.010			
	(0.014)	(0.019)	(0.026)			
Agreeableness	0.000	0.025	-0.027			
	(0.015)	(0.020)	(0.027)			
Neuroticism	-0.046***	-0.031	-0.046			
	(0.014)	(0.019)	(0.024)			
Risk loving	0.017	0.019	-0.030			
	(0.014)	(0.019)	(0.029)			
Internal locus of control				0.042***	0.029*	0.069**
				(0.013)	(0.014)	(0.023)
Constant	6.644***	5.933***	7.030***	5.909***	6.422***	6.150***
	(0.340)	(0.479)	(0.634)	(0.282)	(0.305)	(0.491)
Observations	**5,601**	**2,962**	**2,639**	**7,022**	**3,753**	**3,269**
R-squared	**0.157**	**0.153**	**0.158**	**0.149**	**0.140**	**0.162**

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table 3B. Regression results for decomposition at the 50th percentile, without job characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled (2016)	Females (2016)	Males (2016)	Pooled (2011)	Females (2011)	Males (2011)
Male (base=yes)	0.416***			0.453***		
	(0.018)			(0.018)		
Education (base=secondary)						
Vocational education	0.085***	0.111***	0.124***	0.108***	0.056*	0.114***
	(0.022)	(0.029)	(0.029)	(0.021)	(0.029)	(0.028)
Higher education	0.298***	0.363***	0.199***	0.321***	0.385***	0.189***
	(0.021)	(0.028)	(0.028)	(0.021)	(0.029)	(0.027)
Age	0.042***	0.041***	0.037***	0.049***	0.044***	0.038***
	(0.007)	(0.009)	(0.009)	(0.007)	(0.009)	(0.009)
Age squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.009***	0.007***	0.007***	0.005***	0.006***	0.003
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Log hours worked	0.189***	0.167***	0.169***	0.176***	0.232***	0.163***
	(0.024)	(0.032)	(0.032)	(0.022)	(0.028)	(0.031)
Type of settlement (base=urban)	0.097**	0.060	0.162***	0.084*	0.029	0.099*
	(0.034)	(0.045)	(0.044)	(0.036)	(0.047)	(0.045)
Married (base=yes)	0.034	-0.041	0.149***	0.064***	-0.018	0.094***
	(0.019)	(0.022)	(0.028)	(0.019)	(0.023)	(0.027)
Minor children (base=present)	0.012	-0.006	0.048	0.025	-0.027	0.083**
	(0.021)	(0.027)	(0.028)	(0.021)	(0.028)	(0.027)

Region	+	+	+	+	+	+
Non-cognitive skills						
Openness	0.041***	0.030*	0.024			
	(0.010)	(0.013)	(0.013)			
Conscientiousness	0.017	0.018	0.023			
	(0.010)	(0.013)	(0.013)			
Extraversion	0.013	0.009	0.018			
	(0.009)	(0.012)	(0.011)			
Agreeableness	-0.012	-0.006	-0.018			
	(0.010)	(0.012)	(0.013)			
Neuroticism	-0.036***	-0.032**	-0.052***			
	(0.009)	(0.012)	(0.012)			
Risk loving	0.039***	0.045***	0.017			
	(0.009)	(0.012)	(0.012)			
Internal locus of control				0.078***	0.083***	0.061***
				(0.009)	(0.012)	(0.012)
Constant	8.267***	8.382***	8.765***	7.964***	7.865***	8.540***
	(0.179)	(0.234)	(0.242)	(0.170)	(0.226)	(0.221)
Observations	**5,601**	**2,962**	**2,639**	**7,022**	**3,753**	**3,269**
R-squared	**0.327**	**0.302**	**0.287**	**0.322**	**0.304**	**0.276**

Robust standard errors in parentheses
*** $p<0.001$, ** $p<0.01$, * $p<0.05$

Table 4B. Regression results for decomposition at the 90th percentile, without job characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled (2016)	Females (2016)	Males (2016)	Pooled (2011)	Females (2011)	Males (2011)
Male (base=yes)	0.339***			0.339***		
	(0.027)			(0.026)		
Education (base=secondary)						
Vocational education	0.093***	0.109**	0.116**	0.062*	0.042	0.073
	(0.028)	(0.039)	(0.039)	(0.027)	(0.037)	(0.042)
Higher education	0.357***	0.409***	0.337***	0.407***	0.430***	0.465***
	(0.031)	(0.042)	(0.044)	(0.033)	(0.045)	(0.052)
Age	0.045***	0.053***	0.041**	0.055***	0.051***	0.051***
	(0.009)	(0.013)	(0.013)	(0.009)	(0.012)	(0.013)
Age squared	-0.001***	-0.001***	-0.000**	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.005**	0.006**	0.004	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Log hours worked	0.149***	0.135**	0.185***	0.195***	0.216***	0.221***
	(0.035)	(0.048)	(0.054)	(0.031)	(0.040)	(0.050)
Type of settlement (base=urban)	0.186***	0.177*	0.075	0.208***	0.063	0.307***
	(0.046)	(0.076)	(0.062)	(0.052)	(0.078)	(0.076)
Married (base=yes)	0.066**	-0.039	0.091*	0.076**	-0.018	0.157***
	(0.025)	(0.038)	(0.039)	(0.026)	(0.035)	(0.043)
Minor children (base=present)	0.088**	0.084	0.095*	0.053	-0.033	0.095*

	(0.029)	(0.045)	(0.041)	(0.029)	(0.043)	(0.045)
Region	+	+	+	+	+	+
Non-cognitive skills						
Openness	0.017	-0.021	0.011			
	(0.015)	(0.022)	(0.020)			
Conscientiousness	0.031*	0.054*	0.019			
	(0.015)	(0.022)	(0.021)			
Extraversion	0.045***	0.042*	0.060**			
	(0.014)	(0.020)	(0.019)			
Agreeableness	-0.046**	-0.061**	-0.039			
	(0.015)	(0.021)	(0.020)			
Neuroticism	-0.040**	-0.010	-0.041*			
	(0.013)	(0.020)	(0.018)			
Risk loving	0.016	0.026	0.044*			
	(0.013)	(0.020)	(0.019)			
Internal locus of control				0.103***	0.109***	0.086***
				(0.013)	(0.019)	(0.020)
Constant	9.291***	9.499***	9.370***	8.866***	9.217***	8.883***
	(0.261)	(0.374)	(0.378)	(0.233)	(0.335)	(0.354)
Observations	**5,601**	**2,962**	**2,639**	**7,022**	**3,753**	**3,269**
R-squared	**0.212**	**0.229**	**0.201**	**0.240**	**0.243**	**0.224**

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table 5B. Regression results for decomposition at the mean controlling for industry and occupation

	(1) Pooled (2016)	(2) Females (2016)	(3) Males (2016)	(4) Pooled (2011)	(5) Females (2011)	(6) Males (2011)
Male (base=yes)	0.242***			0.252***		
	(0.016)			(0.015)		
Education (base=secondary)						
Vocational education	0.100***	0.103***	0.104***	0.071***	0.071***	0.082***
	(0.016)	(0.023)	(0.023)	(0.015)	(0.021)	(0.022)
Higher education	0.234***	0.266***	0.201***	0.240***	0.278***	0.181***
	(0.019)	(0.025)	(0.028)	(0.018)	(0.025)	(0.027)
Age	0.042***	0.045***	0.039***	0.043***	0.042***	0.044***
	(0.005)	(0.007)	(0.007)	(0.005)	(0.006)	(0.007)
Age squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.007***	0.007***	0.007***	0.004***	0.004***	0.003*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log hours worked	0.257***	0.276***	0.224***	0.243***	0.257***	0.223***
	(0.027)	(0.035)	(0.040)	(0.022)	(0.029)	(0.034)
Type of settlement (base=urban)	0.056*	0.022	0.090*	0.019	-0.008	0.045
	(0.025)	(0.033)	(0.036)	(0.025)	(0.034)	(0.038)
Married (base=yes)	0.032*	-0.013	0.109***	0.038**	-0.006	0.113***
	(0.014)	(0.018)	(0.022)	(0.013)	(0.016)	(0.021)
Minor children (base=present)	0.006	-0.014	0.013	0.027	0.002	0.050*
	(0.015)	(0.020)	(0.022)	(0.014)	(0.019)	(0.022)

Industry (base = education)

Manufacturing	0.262***	0.238***	0.384***	0.289***	0.252***	0.308***
	(0.029)	(0.037)	(0.056)	(0.027)	(0.035)	(0.049)
Mining	0.377***	0.282***	0.518***	0.410***	0.364***	0.415***
	(0.032)	(0.046)	(0.056)	(0.029)	(0.041)	(0.050)
Agriculture	0.103*	0.078	0.217**	0.061	0.162**	-0.012
	(0.045)	(0.075)	(0.067)	(0.037)	(0.053)	(0.059)
Construction	0.331***	0.249***	0.457***	0.389***	0.251***	0.416***
	(0.036)	(0.072)	(0.057)	(0.032)	(0.061)	(0.049)
Transportation	0.312***	0.280***	0.438***	0.326***	0.328***	0.318***
	(0.029)	(0.040)	(0.055)	(0.030)	(0.043)	(0.050)
Trade and Services	0.259***	0.235***	0.360***	0.278***	0.237***	0.294***
	(0.028)	(0.035)	(0.055)	(0.027)	(0.034)	(0.050)
Utilities	0.056	0.094	0.134*	0.097**	0.112*	0.054
	(0.042)	(0.059)	(0.068)	(0.037)	(0.047)	(0.062)
Health	0.081**	0.070*	0.179*	0.126***	0.136***	0.099
	(0.029)	(0.033)	(0.077)	(0.026)	(0.029)	(0.068)
Public Administration	0.082	0.117*	0.056	0.169***	0.190***	0.092
	(0.046)	(0.051)	(0.102)	(0.038)	(0.043)	(0.082)
Finance, Insurance, Real Estate	0.293***	0.221***	0.535***	0.409***	0.403***	0.384***
	(0.045)	(0.052)	(0.094)	(0.042)	(0.050)	(0.085)
Others	0.272***	0.210***	0.410***	0.304***	0.273***	0.289***
	(0.033)	(0.045)	(0.059)	(0.028)	(0.039)	(0.051)

Occupation (base = elementary occupations)

Managers	0.559***	0.655***	0.450***	0.567***	0.632***	0.512***
	(0.038)	(0.053)	(0.057)	(0.036)	(0.050)	(0.054)
Professionals	0.408***	0.452***	0.322***	0.397***	0.437***	0.363***
	(0.032)	(0.041)	(0.054)	(0.029)	(0.036)	(0.051)
Technicians and associate professionals	0.273***	0.300***	0.252***	0.287***	0.322***	0.257***
	(0.030)	(0.039)	(0.049)	(0.028)	(0.036)	(0.048)
Clerical support workers	0.156***	0.182***	0.142*	0.163***	0.202***	0.123*
	(0.034)	(0.040)	(0.064)	(0.032)	(0.039)	(0.062)
Service and sales workers	0.116***	0.148***	0.056	0.102***	0.148***	0.050
	(0.030)	(0.038)	(0.052)	(0.027)	(0.036)	(0.046)
Craft and related trades workers	0.252***	0.342***	0.174***	0.288***	0.378***	0.221***
	(0.032)	(0.058)	(0.046)	(0.028)	(0.047)	(0.042)
Plant and machine operators, and assemblers	0.311***	0.251***	0.255***	0.277***	0.244***	0.241***
	(0.031)	(0.056)	(0.045)	(0.028)	(0.047)	(0.042)
State-owned enterprise (1=yes)	0.046**	0.068**	0.030	0.105***	0.157***	0.060**
	(0.016)	(0.024)	(0.022)	(0.016)	(0.023)	(0.022)
Region	+	+	+	+	+	+

Non-cognitive skills

Openness	0.021**	0.019	0.025*			
	(0.008)	(0.011)	(0.011)			
Conscientiousness	0.021**	0.021	0.019			
	(0.008)	(0.012)	(0.011)			

	(1)	(2)	(3)	(4)	(5)	(6)
Extraversion	0.011	-0.001	0.025**			
	(0.007)	(0.009)	(0.009)			
Agreeableness	-0.005	-0.004	-0.009			
	(0.007)	(0.009)	(0.011)			
Neuroticism	-0.036***	-0.033***	-0.039***			
	(0.007)	(0.009)	(0.010)			
Risk loving	0.024***	0.027**	0.017			
	(0.007)	(0.010)	(0.011)			
Internal locus of control				0.061***	0.056***	0.061***
				(0.007)	(0.009)	(0.010)
Constant	7.538***	7.426***	7.881***	7.303***	7.270***	7.637***
	(0.171)	(0.225)	(0.264)	(0.147)	(0.199)	(0.224)
Observations	**5,601**	**2,962**	**2,639**	**7,022**	**3,753**	**3,269**
R-squared	**0.496**	**0.494**	**0.455**	**0.512**	**0.514**	**0.460**

Robust standard errors in parentheses
*** $p<0.001$, ** $p<0.01$, * $p<0.05$

Table 6B. Regression results for decomposition at the 10th percentile controlling for industry and occupation

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled (2016)	Females (2016)	Males (2016)	Pooled (2011)	Females (2011)	Males (2011)
Male (base=yes)	0.133***			0.145***		
	(0.030)			(0.028)		
Education (base=secondary)						
Vocational education	0.105**	0.164**	0.081	0.147***	0.146***	0.172***
	(0.037)	(0.056)	(0.064)	(0.032)	(0.039)	(0.050)
Higher education	0.224***	0.209***	0.191**	0.198***	0.142***	0.178**
	(0.038)	(0.055)	(0.065)	(0.033)	(0.036)	(0.057)
Age	0.037**	0.040**	0.035	0.057***	0.039***	0.058**
	(0.011)	(0.015)	(0.022)	(0.010)	(0.011)	(0.018)
Age squared	-0.001***	-0.001**	-0.001*	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.009***	0.007**	0.018***	0.010***	0.006**	0.009*
	(0.002)	(0.003)	(0.004)	(0.002)	(0.002)	(0.004)
Log hours worked	0.323***	0.427***	0.281**	0.285***	0.244***	0.326***
	(0.048)	(0.069)	(0.087)	(0.040)	(0.042)	(0.071)
Type of settlement (base=urban)	-0.013	-0.050	0.013	-0.011	-0.012	-0.025
	(0.056)	(0.075)	(0.103)	(0.053)	(0.056)	(0.099)
Married (base=yes)	0.020	0.026	0.094	0.047	-0.009	0.155**
	(0.029)	(0.037)	(0.060)	(0.027)	(0.025)	(0.053)
Minor children (base=present)	-0.073*	-0.074	-0.082	-0.036	-0.002	-0.013

	(0.030)	(0.040)	(0.058)	(0.028)	(0.028)	(0.049)

Industry (base = education)

Manufacturing	0.242***	0.264***	0.541***	0.495***	0.297***	0.716***
	(0.062)	(0.079)	(0.155)	(0.057)	(0.057)	(0.135)
Mining	0.253***	0.066	0.701***	0.488***	0.247***	0.769***
	(0.058)	(0.091)	(0.151)	(0.057)	(0.062)	(0.138)
Agriculture	0.095	-0.115	0.413*	0.278**	0.186	0.095
	(0.110)	(0.199)	(0.210)	(0.088)	(0.108)	(0.182)
Construction	0.253***	0.236*	0.650***	0.416***	0.085	0.682***
	(0.063)	(0.098)	(0.154)	(0.061)	(0.076)	(0.136)
Transportation	0.247***	0.226**	0.635***	0.386***	0.169*	0.620***
	(0.061)	(0.083)	(0.150)	(0.061)	(0.068)	(0.139)
Trade and Services	0.220***	0.313***	0.551***	0.483***	0.229***	0.683***
	(0.063)	(0.079)	(0.154)	(0.060)	(0.058)	(0.135)
Utilities	0.091	0.165	0.021	0.358***	0.207*	0.213
	(0.098)	(0.145)	(0.222)	(0.083)	(0.088)	(0.188)
Health	0.002	0.052	0.049	0.155*	0.087	0.226
	(0.071)	(0.070)	(0.247)	(0.066)	(0.053)	(0.201)
Public Administration	0.180	0.136	0.234	0.442***	0.236***	0.449*
	(0.097)	(0.102)	(0.289)	(0.081)	(0.069)	(0.225)
Finance, Insurance, Real Estate	0.178*	0.169*	0.407*	0.346***	0.281***	0.483**
	(0.075)	(0.086)	(0.201)	(0.083)	(0.064)	(0.184)
Others	0.249***	0.125	0.626***	0.488***	0.275***	0.751***

	(0.071)	(0.089)	(0.177)	(0.060)	(0.052)	(0.142)

Occupation (base = elementary occupations)

Managers	0.561***	0.725***	0.670***	0.529***	0.645***	0.291*
	(0.087)	(0.123)	(0.171)	(0.079)	(0.082)	(0.140)
Professionals	0.636***	0.781***	0.705***	0.657***	0.651***	0.313*
	(0.086)	(0.121)	(0.166)	(0.077)	(0.080)	(0.145)
Technicians and associate professionals	0.506***	0.677***	0.627***	0.465***	0.517***	0.186
	(0.083)	(0.117)	(0.163)	(0.076)	(0.080)	(0.140)
Clerical support workers	0.395***	0.523***	0.768***	0.362***	0.369***	0.112
	(0.096)	(0.125)	(0.178)	(0.086)	(0.086)	(0.178)
Service and sales workers	0.294***	0.427***	0.272	0.259**	0.357***	-0.164
	(0.086)	(0.121)	(0.180)	(0.079)	(0.085)	(0.151)
Craft and related trades workers	0.579***	0.747***	0.618***	0.523***	0.543***	0.252
	(0.081)	(0.122)	(0.161)	(0.072)	(0.088)	(0.133)
Plant and machine operators, and assemblers	0.589***	0.536***	0.702***	0.525***	0.342***	0.276*
	(0.082)	(0.155)	(0.158)	(0.072)	(0.101)	(0.134)
State-owned enterprise (1=yes)	0.128***	0.023	0.099	0.088**	0.115***	0.039
	(0.031)	(0.049)	(0.058)	(0.028)	(0.034)	(0.051)
Region	+	+	+	+	+	+

Non-cognitive skills

Openness	0.034*	0.043	0.070*			
	(0.017)	(0.024)	(0.030)			
Conscientiousness	-0.013	-0.011	0.003			

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	(1)	(2)	(3)	(4)	(5)	(6)
	(0.017)	(0.025)	(0.030)			
Extraversion	0.008	-0.019	0.010			
	(0.013)	(0.019)	(0.025)			
Agreeableness	0.005	0.028	-0.021			
	(0.015)	(0.020)	(0.028)			
Neuroticism	-0.040**	-0.026	-0.034			
	(0.014)	(0.019)	(0.025)			
Risk loving	0.012	0.011	-0.035			
	(0.015)	(0.019)	(0.030)			
Internal locus of control				0.025	0.008	0.061**
				(0.013)	(0.014)	(0.023)
Constant	6.241***	5.429***	6.470***	5.419***	6.042***	5.690***
	(0.349)	(0.485)	(0.663)	(0.283)	(0.304)	(0.501)
Observations	**5,601**	**2,962**	**2,639**	**7,022**	**3,753**	**3,269**
R-squared	**0.189**	**0.188**	**0.201**	**0.190**	**0.187**	**0.202**

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table 7B. Regression results for decomposition at the 50th percentile controlling for industry and occupation

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled (2016)	Females (2016)	Males (2016)	Pooled (2011)	Females (2011)	Males (2011)
Male (base=yes)	0.289***			0.336***		
	(0.021)			(0.021)		
Education (base=secondary)						
Vocational education	0.075***	0.074*	0.121***	0.072***	0.029	0.071*
	(0.022)	(0.030)	(0.029)	(0.022)	(0.030)	(0.028)
Higher education	0.259***	0.271***	0.183***	0.257***	0.311***	0.101**
	(0.024)	(0.033)	(0.033)	(0.025)	(0.035)	(0.033)
Age	0.038***	0.037***	0.031***	0.043***	0.039***	0.030***
	(0.007)	(0.009)	(0.009)	(0.007)	(0.009)	(0.009)
Age squared	-0.001***	-0.000***	-0.000***	-0.001***	-0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.007***	0.006***	0.006***	0.005***	0.006***	0.003
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Log hours worked	0.160***	0.147***	0.141***	0.152***	0.203***	0.155***
	(0.023)	(0.033)	(0.031)	(0.022)	(0.029)	(0.031)
Type of settlement (base=urban)	0.056	0.019	0.131**	0.023	-0.018	0.038
	(0.034)	(0.044)	(0.043)	(0.035)	(0.046)	(0.044)
Married (base=yes)	0.021	-0.043*	0.128***	0.052**	-0.023	0.080**
	(0.019)	(0.022)	(0.028)	(0.018)	(0.023)	(0.027)
Minor children (base=present)	0.001	-0.004	0.031	0.035	-0.009	0.082**

	(0.020)	(0.026)	(0.027)	(0.020)	(0.027)	(0.026)
Industry (base = education)						
Manufacturing	0.270***	0.239***	0.269***	0.360***	0.267***	0.206***
	(0.037)	(0.048)	(0.057)	(0.038)	(0.050)	(0.054)
Mining	0.411***	0.307***	0.376***	0.472***	0.409***	0.335***
	(0.039)	(0.059)	(0.059)	(0.040)	(0.058)	(0.054)
Agriculture	0.079	0.099	0.118	0.092	0.163*	-0.022
	(0.059)	(0.082)	(0.076)	(0.049)	(0.073)	(0.060)
Construction	0.366***	0.222**	0.374***	0.517***	0.223**	0.381***
	(0.045)	(0.076)	(0.061)	(0.041)	(0.069)	(0.054)
Transportation	0.361***	0.341***	0.333***	0.390***	0.369***	0.231***
	(0.038)	(0.051)	(0.060)	(0.039)	(0.056)	(0.053)
Trade and Services	0.292***	0.232***	0.241***	0.339***	0.275***	0.223***
	(0.035)	(0.043)	(0.059)	(0.035)	(0.043)	(0.054)
Utilities	0.051	0.044	0.091	0.101*	0.030	-0.048
	(0.053)	(0.074)	(0.071)	(0.049)	(0.065)	(0.063)
Health	0.105**	0.080*	0.095	0.140***	0.127**	0.067
	(0.036)	(0.039)	(0.079)	(0.035)	(0.039)	(0.072)
Public Administration	0.101	0.087	0.041	0.146**	0.209***	0.032
	(0.056)	(0.057)	(0.102)	(0.050)	(0.058)	(0.082)
Finance, Insurance, Real Estate	0.264***	0.156*	0.262**	0.453***	0.411***	0.275***
	(0.055)	(0.062)	(0.080)	(0.057)	(0.066)	(0.081)
Others	0.279***	0.130*	0.271***	0.358***	0.233***	0.170**

	(0.043)	(0.055)	(0.062)	(0.039)	(0.055)	(0.054)

Occupation (base = elementary occupations)

Managers	0.440***	0.551***	0.317***	0.438***	0.443***	0.476***
	(0.047)	(0.059)	(0.065)	(0.047)	(0.063)	(0.062)
Professionals	0.325***	0.397***	0.198**	0.321***	0.353***	0.388***
	(0.042)	(0.051)	(0.062)	(0.040)	(0.048)	(0.061)
Technicians and associate professionals	0.249***	0.299***	0.185**	0.279***	0.265***	0.329***
	(0.040)	(0.048)	(0.057)	(0.038)	(0.046)	(0.056)
Clerical support workers	0.099*	0.157**	-0.001	0.198***	0.148**	0.186*
	(0.047)	(0.053)	(0.091)	(0.046)	(0.053)	(0.079)
Service and sales workers	0.072	0.100*	0.032	0.069	0.080	0.078
	(0.039)	(0.046)	(0.059)	(0.037)	(0.046)	(0.055)
Craft and related trades workers	0.260***	0.335***	0.115*	0.277***	0.334***	0.237***
	(0.042)	(0.079)	(0.053)	(0.041)	(0.075)	(0.050)
Plant and machine operators, and assemblers	0.329***	0.284***	0.188***	0.217***	0.210**	0.264***
	(0.041)	(0.076)	(0.053)	(0.039)	(0.068)	(0.049)
State-owned enterprise (1=yes)	0.031	0.067*	0.011	0.067**	0.151***	0.048
	(0.021)	(0.030)	(0.027)	(0.022)	(0.030)	(0.027)
Region	+	+	+	+	+	+

Non-cognitive skills

Openness	0.032**	0.017	0.017			
	(0.010)	(0.014)	(0.013)			
Conscientiousness	0.014	0.016	0.021			

	(0.010)	(0.014)	(0.014)			
Extraversion	0.010	-0.000	0.018			
	(0.008)	(0.011)	(0.011)			
Agreeableness	-0.007	0.000	-0.013			
	(0.009)	(0.012)	(0.013)			
Neuroticism	-0.030***	-0.027*	-0.048***			
	(0.009)	(0.012)	(0.012)			
Risk loving	0.034***	0.037**	0.013			
	(0.009)	(0.012)	(0.012)			
Internal locus of control				0.064***	0.065***	0.048***
				(0.009)	(0.012)	(0.012)
Constant	8.129***	8.182***	8.653***	7.734***	7.594***	8.296***
	(0.177)	(0.232)	(0.246)	(0.169)	(0.220)	(0.223)
Observations	**5,601**	**2,962**	**2,639**	**7,022**	**3,753**	**3,269**
R-squared	**0.370**	**0.348**	**0.324**	**0.370**	**0.353**	**0.328**

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table 8B. Regression results for decomposition at the 90th percentile controlling for industry and occupation

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled (2016)	Females (2016)	Males (2016)	Pooled (2011)	Females (2011)	Males (2011)
Male (base=yes)	0.284***			0.268***		
	(0.031)			(0.031)		
Education (base=secondary)						
Vocational education	0.058*	0.072	0.093*	0.003	0.004	0.021
	(0.029)	(0.042)	(0.040)	(0.029)	(0.040)	(0.043)
Higher education	0.226***	0.286***	0.208***	0.244***	0.290***	0.271***
	(0.036)	(0.052)	(0.049)	(0.038)	(0.052)	(0.061)
Age	0.037***	0.049***	0.030*	0.048***	0.043***	0.045***
	(0.009)	(0.013)	(0.012)	(0.009)	(0.012)	(0.012)
Age squared	-0.000***	-0.001***	-0.000*	-0.001***	-0.001**	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.003	0.005	0.002	-0.001	-0.001	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Log hours worked	0.126***	0.101*	0.148**	0.165***	0.189***	0.197***
	(0.034)	(0.048)	(0.051)	(0.031)	(0.041)	(0.051)
Type of settlement (base=urban)	0.152***	0.158*	0.038	0.160**	0.018	0.277***
	(0.045)	(0.074)	(0.061)	(0.052)	(0.078)	(0.076)
Married (base=yes)	0.058*	-0.041	0.067	0.067**	-0.019	0.145***
	(0.025)	(0.038)	(0.038)	(0.025)	(0.035)	(0.043)
Minor children (base=present)	0.083**	0.090*	0.088*	0.052	-0.017	0.090*

	(0.029)	(0.045)	(0.040)	(0.029)	(0.042)	(0.044)

Industry (base = education)

Manufacturing	0.199***	0.149	0.245**	0.196***	0.181*	0.070
	(0.054)	(0.079)	(0.091)	(0.053)	(0.074)	(0.099)
Mining	0.410***	0.351**	0.434***	0.345***	0.414***	0.195*
	(0.068)	(0.117)	(0.098)	(0.061)	(0.106)	(0.099)
Agriculture	0.125*	0.233*	0.172	0.098	0.142	0.104
	(0.063)	(0.101)	(0.097)	(0.057)	(0.075)	(0.101)
Construction	0.363***	0.162	0.406***	0.434***	0.405**	0.221*
	(0.076)	(0.152)	(0.101)	(0.070)	(0.136)	(0.103)
Transportation	0.294***	0.319**	0.307**	0.336***	0.442***	0.161
	(0.063)	(0.104)	(0.095)	(0.060)	(0.102)	(0.101)
Trade and Services	0.221***	0.214**	0.230*	0.196***	0.113	0.035
	(0.053)	(0.075)	(0.094)	(0.054)	(0.075)	(0.103)
Utilities	-0.016	0.009	0.023	0.030	0.120	0.023
	(0.062)	(0.111)	(0.087)	(0.063)	(0.114)	(0.103)
Health	0.112*	0.114	0.146	0.124**	0.155**	0.099
	(0.048)	(0.064)	(0.125)	(0.045)	(0.058)	(0.141)
Public Administration	0.007	0.066	-0.080	0.096	0.209*	0.034
	(0.069)	(0.095)	(0.125)	(0.069)	(0.091)	(0.160)
Finance, Insurance, Real Estate	0.390***	0.472***	0.707***	0.363***	0.452***	0.457*
	(0.094)	(0.122)	(0.199)	(0.095)	(0.135)	(0.212)
Others	0.235***	0.365***	0.228*	0.179**	0.390***	-0.016

	(0.066)	(0.109)	(0.097)	(0.057)	(0.097)	(0.099)

Occupation (base = elementary occupations)

Managers	0.635***	0.754***	0.550***	0.702***	0.793***	0.712***
	(0.082)	(0.126)	(0.108)	(0.076)	(0.114)	(0.111)
Professionals	0.256***	0.339***	0.305**	0.337***	0.309***	0.430***
	(0.057)	(0.073)	(0.098)	(0.052)	(0.065)	(0.100)
Technicians and associate professionals	0.104*	0.205***	0.118	0.159***	0.130*	0.207**
	(0.045)	(0.060)	(0.072)	(0.046)	(0.059)	(0.077)
Clerical support workers	-0.018	0.094	-0.184	-0.032	-0.032	0.029
	(0.054)	(0.070)	(0.099)	(0.055)	(0.071)	(0.125)
Service and sales workers	0.004	0.124*	-0.062	0.000	0.050	0.082
	(0.039)	(0.054)	(0.065)	(0.040)	(0.053)	(0.062)
Craft and related trades workers	-0.050	0.184	-0.048	0.007	0.118	0.082
	(0.047)	(0.109)	(0.059)	(0.049)	(0.101)	(0.056)
Plant and machine operators, and assemblers	0.047	0.037	0.068	0.062	0.065	0.133*
	(0.047)	(0.072)	(0.060)	(0.047)	(0.089)	(0.057)
State-owned enterprise (1=yes)	-0.002	0.043	0.042	0.149***	0.191***	0.099*
	(0.034)	(0.052)	(0.042)	(0.033)	(0.054)	(0.043)
Region	+	+	+	+	+	+

Non-cognitive skills

Openness	0.002	-0.033	-0.008			
	(0.016)	(0.022)	(0.021)			
Conscientiousness	0.025	0.050*	0.015			

	(1)	(2)	(3)	(4)	(5)	(6)
	(0.016)	(0.023)	(0.021)			
Extraversion	0.039**	0.029	0.060***			
	(0.013)	(0.020)	(0.018)			
Agreeableness	-0.039**	-0.057**	-0.030			
	(0.015)	(0.021)	(0.020)			
Neuroticism	-0.035**	-0.004	-0.035			
	(0.013)	(0.020)	(0.018)			
Risk loving	0.006	0.016	0.036			
	(0.014)	(0.020)	(0.019)			
Internal locus of control				0.081***	0.081***	0.068**
				(0.014)	(0.020)	(0.021)
Constant	9.378***	9.391***	9.465***	8.817***	9.109***	8.836***
	(0.254)	(0.364)	(0.376)	(0.231)	(0.330)	(0.358)
Observations	**5,601**	**2,962**	**2,639**	**7,022**	**3,753**	**3,269**
R-squared	**0.242**	**0.256**	**0.246**	**0.274**	**0.279**	**0.252**

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

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