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WHAT LIES BEHIND THE GENDER WAGE GAP IN SERBIA?

ABSTRACT: *Large gender inequalities have persisted in the Serbian labour market. One of the key indicators of labour market inequality is the gender pay gap. This paper examines the gender pay gap in Serbia based on data from the Survey of Income and Living Conditions. Our findings show that on average women earn far less than men, a gap that has increased slightly over time. The paper offers an in-depth analysis of this gender pay gap in Serbia by decomposing the gender pay gap into an explained part related to difference in characteristics and an unexplained part related to differences in returns attributable to these characteristics. In addition, it provides an estimate of selection effects on the gender pay gap using an innovative methodology that corrects for sample selection bias.*

KEY WORDS: *gender pay gap, discrimination, selection into employment, Serbia*

JEL CLASSIFICATION: C21, J16, J70

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1. INTRODUCTION

Gender inequality in the labour market has long been identified as a problem for public policy in Serbia (Krstić & Reilly 2000; Reva 2012). The Gender Equality Index (GEI) quantifies gender equality in the EU and is published by the European Institute of Gender Equality.[1] The GEI is a composite indicator based on the core domains of work, money, knowledge, time, power, and health, and two satellite domains, violence and intersecting inequality. In 2014 it was calculated for the first time for Serbia. In 2016 the GEI for Serbia was 55.8 (Babović 2018), compared to an average of 66.2 in the EU28,[2] putting it in 22nd place when compared to the 28 EU countries. The difference between Serbia and the EU28 is most pronounced in the domains of power, money, and time use. Although Serbia's GEI increased between 2014 and 2016 the difference between Serbia and the EU countries is still high. The latest National Strategy for Gender Equality in Serbia for 2016–2020 (Official Gazette RS No 4/2016) states that gender discrimination persists due to the huge difference between the official principles and their practical implementation.

Given that gender discrimination in many domains is persistent in Serbia, the aim of this paper is to examine whether there is discrimination in wages between women and men. The gender pay gap is one of the most important indicators of women's access to economic opportunities. In Serbia the labour force activity and employment rates of women are low compared to those of men, while the gap is much larger than the equivalent gap in EU countries. Although the gender gap between labour market indicators has narrowed since 2008, it remains extremely high. According to the latest Labour Force Survey (LFS), in 2018 the female employment rate was 40.3%, 15.1 percentage points lower than the male employment rate (55.4%). At the same time the female activity rate was 46.7% or 16.2 percentage points lower than the male activity rate (62.9%). A European Commission report for Serbia argues that women are the most discriminated group in the labour market after Roma people (European Commission 2016).

This research contributes to the literature in three ways: (1) it provides an update on the gender pay gap in Serbia based on Survey of Income and Living Conditions

[1] https://eige.europa.eu/gender-equality-index/about

[2] GEI ranges between 1 (total inequality) and 100 (total equality).

(SILC) data for 2014 and 2015, whereas previous research refers to 2013 (Žarković-Rakić & Vladisavljević 2016); (2) it offers an in-depth analysis of the gender pay gap in Serbia, as the decomposition of the gender pay gap into that related to difference in characteristics (explained) and that related to differences in returns attributable to these characteristics (unexplained) was not explored in the latest research; and (3) it provides an estimate of selection effects on the gender pay gap using innovative methodology for correcting for sample selection bias.

This paper is organized as follows. Section 2 reviews existing literature on the gender pay gap in Serbia, section 3 describes the methodology applied, while section 4 reviews the survey data used and provides summary statistics for wages by employees' personal and job characteristics. Section 5 reports the main empirical results and the final section concludes the paper.

2. LITERATURE REVIEW

Becker (1957) analysed discrimination as a consequence of race, religion, gender, social class, and personality. He explored different aspects of discrimination and set the theoretical framework for analysing economic aspects of discrimination. Since this is an empirical work, we will focus on empirical research dealing with the gender pay gap in Serbia.

Before reviewing the empirical literature on the gender pay gap, it is important to define the different ways the gender pay gap is estimated. In the literature on wage inequality the unadjusted gender pay gap is defined as the difference in average log wages between men and women. The unadjusted gender pay gap does not take into consideration individual and job characteristics such as education, labour market experience, occupation, sector of economic activity, etc. The adjusted gender pay gap is the gap in wages between men and women that remains unexplained when individual and labour market characteristics are taken into account. Therefore, the adjusted gender pay gap is also called the unexplained part of the gap.[3] Eurostat defines the gender pay gap in its unadjusted

[3] The terms unadjusted and adjusted gender pay gap are used in many empirical studies, e.g., Avlijaš et al. (2013); Krstić (2002), Anić (2019); Perugini, Žarković, & Vladisavljević (2018); etc.

form as the difference in the average gross hourly wage between males and females as a percentage of the average gross hourly male wage. The indicator has been defined as unadjusted because it gives an overall picture of gender inequality in terms of pay and measures a concept that is broader than the concept of equal pay for equal work. It is calculated for businesses with ten and more employees by using the Structure of Earnings Survey (SES).[4] Eurostat publishes data on the unadjusted gender pay gap for EU countries. The Statistical Office of the Republic of Serbia (SORS) conducted a pilot research Structure of Earnings Survey in 2014 and calculated the gender pay gap based on the Eurostat methodology. According to the 2014 SES, women in Serbia earn 8.7% less than men (RZS 2017).

The first research on the gender pay gap in Serbia dates back to the 1990s. Krstić & Reilly (2000) estimate the gender pay gap in FR Yugoslavia (consisting of two republics, Serbia and Montenegro) using LFS data for the period 1995–1998 and Juhn, Murphy, & Pierce (1993) decomposition. The unadjusted gender pay gap for hourly wages increased from 10.1% in 1995 to 14.8% in 1998. The adjusted gender pay gap also increased, from 10.7% in 1995 to 16.1% in 1998. The explained part of the gap was rather small, –0.6% and –1.3% in 1995 and 1998, respectively, indicating that the entire gender pay gap was the consequence of discrimination and unobservables (the unadjusted and adjusted gender pay gap were almost equal). Summary results from the literature review of the gender pay gap in Serbia are presented in Table 1.

Using LFS data, Kecmanovic & Barrett (2011) estimate the gender pay gap in 2001 and 2005, covering the first period of transition in Serbia. They find that the adjusted pay gap decreased from 17.2% in 2001 to 10.5% in 2005. Blunch & Sulla (2011) and Reva (2012) investigate the period 2008–2009, capturing the first effects of the economic crisis on the gender pay gap. Their findings suggest that the gender pay gap reduced as a consequence of the economic crisis, since the sectors most affected by the crisis had a higher share of male employees (e.g., construction). Using the UNDP Social Inclusion Survey in 2010, Blunch (2010) examines the gender pay gap in Serbia and other countries such as Kazakhstan, Macedonia, Moldavia, Tajikistan, and Ukraine. He estimates the adjusted wage gap in Serbia to be 20%.

[4] https://ec.europa.eu/eur/ostat/statistics-explained/index.php/Gender_pay_gap_statistics

Avlijaš, Ivanović, Vladisavljević, & Vujić (2013) analyse the gender pay gap in the three ex-Yugoslav republics, Serbia, Macedonia, and Montenegro, covering the pre-crisis, crisis, and post-crisis period (2008–2011) using LFS data. In Serbia the unadjusted gender pay gap amounted to 3.3%. The explained part of the gap was negative (–7.7%), as women's better individual and labour market characteristics narrowed the pay gap between men and women. The adjusted gender pay gap was 11%, as the returns to observed characteristics favour men relative to women and widen the gap.

Most researchers use LFS data to estimate the gender pay gap, while a recent study uses SILC data. Žarković-Rakić & Vladisavljević (2016) examine women's access to economic opportunities in Serbia using SILC data for 2013. The authors estimate the Mincer wage equation by the ordinary least squares method (OLS). The unadjusted gender pay gap amounts to 4.5% and the adjusted gender pay gap to 13.8%.

Žarković-Rakić, Vladisavljević, Prokić, & Poljak (2018) investigate how fiscal consolidation influences the gender pay gap, comparing the gender pay gap using LFS data for 2014 and 2015. The authors find that fiscal consolidation slightly reduced the adjusted gender pay gap from 14.5% in 2014 to 13.2% in 2015, although the unadjusted gender pay gap was almost unchanged.

It is not possible to directly compare the current gender pay gap with the gender pay gap in the 1990s due to the different datasets, explanatory variables, methodologies, and economic backgrounds. Bearing in mind all these limitations, we may conclude that the unadjusted gender pay gap is lower than it was in the 1990s. The explained part of the gap remains negative but is much higher (in absolute terms) than it used to be. The structure of the gap has changed. During the 1990s the mean difference in wages was mainly the consequence of discrimination (and unobservables), whereas nowadays it is due to both difference in characteristics and discrimination. These two effects work in opposite directions. The difference in characteristics reduces the mean difference in wages between men and women due to women having better individual and labour market characteristics. On the other hand, discrimination and unobservables increase the mean difference in wages between the two gender groups.

Table 1: Literature review of the gender pay gap in Serbia

Authors	Period	Data	Methodology	Dependent variable	Unadjusted gap	Adjusted gap (unexplained part)
Krstić & Reilly (2000)	1995–1998	LFS	Juhn, Murphy, and Pierce decomposition	Hourly wage	10.1% in 1995 14.8% in 1998	10.7% in 1995 16.1% in 1998
Blunch (2010)	2010	UNDP Social Inclusion Survey	Blinder–Oaxaca decomposition	Monthly wage	12.4%	20%
Kecmanovic & Barrett (2011)	2001–2005	LFS	Blinder–Oaxaca decomposition	Hourly wage	14.4% in 2001 5.4% in 2005	17.2% in 2001 10.5% in 2005
Blunch & Sulla (2011)	October 2008 –October 2009	LFS	Mincer wage equation, OLS method	Monthly wage	–	17.5% in 2008 13.3% in 2009
Reva (2012)	April 2008– October 2009	LFS	Blinder–Oaxaca decomposition	Monthly wage	9.2% in 2008 4.6% in 2009	15.6% in 2008 11.7% in 2009
Avlijaš, Ivanović, Vladisavljević, & Vujić (2013)	2008–2011	LFS	Blinder–Oaxaca decomposition	Hourly wage	3.3%	11%
Žarković-Rakić & Vladisavljević (2016)	2013	SILC	Mincer wage equation, OLS method	Hourly wage	4.5%	13.8%
Žarković-Rakić et al. (2018)	2014– 2015	LFS	Blinder–Oaxaca decomposition	Monthly wage	10.8% in 2014 10.5% in 2015	14.5% in 2014 13.2% in 2015

Source: Authors' presentation

3. METHODOLOGY

We analyse the gender pay gap for employees using the Mincer wage equation (Mincer 1974) and Oaxaca-Blinder decomposition (Oaxaca 1973 and Blinder 1973). When estimating the gender pay gap, we take into account selection effects. A selection equation is estimated by multinomial probit using Bourguignon et al.'s methodology (Bourguignon, Fournier, & Gurgand 2007) instead of the Heckman approach (Heckman 1979), as is the case for previous research on Serbia.[5] This methodology allows us to take into account that selection into the two different types of employment – wage employment and self-employment – might differ.

Starting with the Mincer wage equation (Mincer 1974), the unadjusted and adjusted gender pay gap are estimated as follows. The dependent variable Y is the log hourly net wage. X is the vector of explanatory variables and G is the gender binary variable (1 if female, 0 if male) with parameter γ. ε is the error term. β is the vector of parameters that measure the effect of each explanatory variable (except gender) in the wage regression. $\hat{\gamma}$ is the estimated gender pay gap, which is obtained by estimating Equation 1 using OLS. $\hat{\gamma}$ is the estimated unadjusted gender pay gap if gender is the only explanatory variable in the model, while it is estimated adjusted gender pay gap if other explanatory variables are included.

$$Y = X'\beta + \gamma G + \varepsilon \tag{1}$$

This is a so-called pooled model, where one equation is estimated for both men and women. The main disadvantage of estimating a pooled model is that it is not possible to analyse the influence of explanatory variables on wages and gap. The alternative way is to estimate separate equations by gender, where in the following equations m stands for male, f for female:

$$Y_m = X_m^{'}\beta_m + \varepsilon_m \tag{2}$$

[5] Previous research on Serbia has used the Heckman selection approach (e.g., Avlijaš et al. 2013). The dependent variable for the selection equation was binary, taking the value of 1 for working and 0 for not working.

$$Y_f = X_f^{'}\beta_f + \varepsilon_f \tag{3}$$

Denote $E(Y_m)$ and $E(Y_f)$ as the expected values of males' (Y_m) and females' (Y_f) wages, respectively. Assuming the expected value of the error term is 0, the expected values of males' and females' wages are as follows:

$$E(Y_m) = E(X_m)^{'}\beta_m \tag{4}$$

$$E(Y_f) = E(X_f)^{'}\beta_f \tag{5}$$

Unadjusted gender pay gap (R) is defined as the difference in expected males' and females' wages.

$$R = E(Y_m) - E(Y_f) = E(X_m)^{'}\beta_m - E(X_f)^{'}\beta_f \tag{6}$$

Oaxaca-Blinder twofold and threefold decomposition are the most common techniques for decomposing the gender pay gap (Oaxaca 1973 and Blinder 1973). Oaxaca (1973) investigates gender wage differences in the absence of discrimination. He assumes that the distribution of wages for females is the same as for males, and vice versa. The gender pay gap can be estimated as follows:

$$\hat{R} = \Delta\overline{X}^{'}\hat{\beta}_f - \overline{X}_m^{'}\Delta\hat{\beta} \tag{7}$$

$$\hat{R} = \Delta\overline{X}^{'}\hat{\beta}_m - \overline{X}_f^{'}\Delta\hat{\beta} \tag{8}$$

The female wage distribution is used for males in Equation 7 and the male wage distribution is used for females in Equation 8. The first part of both equations is gender wage differences due to difference in characteristics, and the second part of both equations is due to difference in coefficients (i.e., discrimination). The difference in characteristics is weighted by female coefficients in Equation 7 and male coefficients in Equation 8. The difference in coefficients is weighted by mean values of observables for males in Equation 7 and for females in Equation 8. Twofold decomposition can be defined as follows:

$$R = \left[E\left(X_m\right) - E\left(X_f\right) \right]' \beta^* + \left[E\left(X_m\right)' \left(\beta_m - \beta^*\right) + E\left(X_f\right)' \left(\beta^* - \beta_f\right) \right] \quad (9)$$

$$Q = \left[E\left(X_m\right) - E\left(X_f\right) \right]' \beta^* \quad (10)$$

$$U = \left[E\left(X_m\right)' \left(\beta_m - \beta^*\right) + E\left(X_f\right)' \left(\beta^* - \beta_f\right) \right] \quad (11)$$

$$R = Q + U \quad (12)$$

β^* is a non-discrimination vector. Q is the part of the gender difference in average wages that is explained by individual characteristics, e.g., education, work experience, occupation, sector of economic activity, etc. U is the unexplained part, which is mostly interpreted as discrimination, but it is important to note that it also includes all the unobservable characteristics. Jann (2008) suggests that β^* is the estimated coefficient from the pooled model with a gender dummy included as the explanatory variable.[6]

Selection into the labour force might not be random; therefore, the unobservables that determine the observed wage are not independent from the decision of whether or not to work. Estimating the wage equation without taking into account selection effects may give biased results. This is well documented both theoretically and empirically in Heckman's pioneering work (Heckman 1979).

The Heckman selection procedure is mostly used to take into account selection effects into employment vs. non-employment. In this paper we go one step further, and instead of dealing with the decision of whether or not to work we take into account that the employed are nonrandomly selected into two different employment types, employees and the self-employed. The dependent variable for the selection equation in the Heckman model is binary and the selection equation is estimated by probit or logit. Since we want to estimate the gender pay gap for employees taking into account different employment types, the dependent variable in the selection equation has three labour market statuses: employee, self-employed, and non-employed (unemployed and inactive). The selection equation

[6] For a literature review on the non-discriminatory vector, see Jann (2008).

is estimated by multinomial probit using Bourguignon et al.'s (2007) methodology. Bourguignon et al. (2007) compare three different models to estimate selection effects: Lee (1983), Dubin & Mcfadden (1984), and Dahl (2002). They use Monte Carlo simulation to investigate the characteristics of models when assumptions do not hold. The three methods differ in the constraints imposed. The constraints relate to linearity and the covariation matrix of errors of the outcome and selection equations. Bourguignon et al. (2007) suggest a modification of the Dubin-Mcfadden method. They drop the constraint that the sum of the correlation coefficients of the equations' error terms is equal to 0 and assume that the error terms are normally distributed. They show that this modification preforms better than Lee and Dahl's method, and also better than the original Dubin-Mcfadden method. We present the Bourguignon et al. (2007) method below. They consider the following model:

$$y_1 = x\beta_1 + u_1 \tag{13}$$

$$y_j^* = z\gamma_j + \eta_j,\ j = 1, 2, 3 \tag{14}$$

where y_1 and y_j^* are outcome and selection equations, respectively, with the corresponding error terms u_1 and η_j. Assuming that $E(u_1 \mid x,z) = 0$ and $Var(u_1 \mid x,z) = \sigma^2$, η_j are independent and identically distributed with Gumbel distribution, u_1 is not parametrically defined. Vector *z* is a vector of explanatory variables for all alternatives in the selection equation. Vector x is a vector of determinants of the outcome equation. The authors assume that the model is non-parametrically identified by exclusion of some of the variables in z from the variables in x.[7] Vectors of coefficients in the outcome and selection equations are denoted as β_1 and γ_j, respectively. The outcome equation is the wage equation, whereas the dependent variable for the selection equation in our case is labour market status defined as employee, self-employed, and unemployed/inactive.[8] The outcome variable is observed if and only if category 1 is chosen, without loss

[7] In the forthcoming equations everything is implicitly conditional on x and z, which is omitted for notational simplicity.

[8] In general, the economic agent chooses between a finite number of alternatives based on utilities y_j^*.

of generality, which happens when $y_1^* > max_{j \neq 1}\left(y_j^*\right)$. Γ and ε_1 are defined as follows:

$$\Gamma = \left\{z\gamma_1, z\gamma_2, z\gamma_3\right\} \tag{15}$$

$$\varepsilon_1 = max_{j \neq 1}\left(y_j^* - y_1^*\right) \tag{16}$$

Biased correction can be based on the conditional mean of u_1, as in the Heckman model. The conditional mean of u_1 is a function of Γ, $E\left(u_1 \mid \varepsilon_1 < 0, \Gamma\right) = \lambda\left(\Gamma\right)$. The selectivity corrected outcome equation is:

$$y_1 = x_1\beta_1 + \lambda\left(\Gamma\right) + w_1 \tag{17}$$

Consistent estimation of β_1 is based on Equation 17, whereas w_1 is a residual that is mean independent. Bourguignon et al.'s (2007) methodology is implemented in STATA as the *selmlog* command.

We estimate the gender pay gap for employees with and without selection effects. The adjusted gender pay gap with selection is the gender coefficient in the wage equation estimated according to Bourguignon et al. (2007).

4. DATA

We use 2014 and 2015 data from the Survey of Income and Living Conditions (SILC), which the Statistical Office of the Republic of Serbia conducted in Serbia for the first time in 2013, based on EU-SILC methodology. The SILC contains data on wages, labour market status, and individual and household characteristics. It was conducted on a representative sample of 6,055 households/19,094 individuals in 2014 and 5,680 households/15,520 individuals in 2015. The data is representative at the national level and is expressed by the degree of urbanisation and region.

Our sample for wages consists of employees aged 18–64. The sample for selection consists of individuals aged 18–64 excluding students, pensioners, women with infants, disabled persons, unpaid family members, agriculture workers (defined

as persons having income from agriculture activity),[9] and the self-employed with employees.[10]

The dependent variable in this analysis is net hourly wage. The wage measure is based on employees' monthly wages and salaries under different types of contract, vacation and overtime pay, profit sharing, bonuses and productivity premia, and allowances paid for transport or for work done in remote locations, but excludes income taxes and social security conditions.[11] The hourly wage is obtained by dividing the monthly wage by the usual number of hours worked in the reference month.

As explanatory variables of hourly wages we use a large set of individual and job characteristics, including gender, work experience and work experience squared, education (primary or less, secondary, tertiary), occupation (1. managers; 2. professionals and armed forces; 3. technicians and associate professionals; 4. clerical support workers; 5. service and sales workers; 6. skilled agriculture, forestry, and fishery workers; 7. craft and related trades workers; 8. plant and machine operators and assemblers; 9. elementary occupations), type of contract (labour contract, other contract types, without contract),[12] type of employment (part-time/full-time),[13] sector of economic activity (agriculture is sector A, industry is sectors B–F, and services are sectors G–U, NACE Rev 2. classification), size of the firm in which the individual is employed defined by the number of

[9] Exclusion of these categories of workers is a standard practice, since their labour supply is inelastic.

[10] The self-employed with employees are excluded since their wage determination differs significantly from that of employees. This research is part of the broader research analysing the gender pay gap for the employed and self-employed. We decided to focus only on the employed and to present the results for the self-employed in another paper. Although we do not analyse the gender pay gap for the self-employed, we decided to keep selection into self-employment as one of the three labour market statuses in the selection equation.

[11] There is no wage variable in the SILC that excludes the mentioned items. We use the PY010N SILC variable, i.e., employee cash or near-cash income.

[12] Labour contract includes permanent and temporary labour contracts, other contract types consisting of contracts for performing temporary and periodical jobs, copyright contracts, contracts for the supply of services, and other non-specified contract types. Employees without any contract are informally employed.

[13] We use the OECD definition for working part time: part-time employees are those whose main job is less than 30 hours per week. https://data.oecd.org/emp/part-time-employment-rate.htm

employees (1–10, 11–19, 20–49, and 50+ employees), firm ownership sector (private, public, other[14]), degree of residential urbanisation (dense, intermediate, thinly-populated), and region (Belgrade, Vojvodina, Šumadija and West Serbia, South and East Serbia). Mean values for these employee labour market characteristics are presented in the Appendix (Table A1). Employed women on average have higher educational attainment and work in more senior jobs than men (e.g., professionals, technicians and associate professionals, clerical support workers), but not in the most senior jobs (i.e., managerial occupations). Women have around 2 years less working experience than men. Women work more frequently in the services sector than in industry or agriculture compared to men. Women are less likely to work without a contract than men. The share of women employed in the Belgrade region and in urban areas is higher than that of men.

Table A2 in the Appendix presents the mean values of the explanatory variables in the selection equations. The variables that we assume influence employment probability but do not directly influence employee wages are the number of children (aged 1–7 and 8–18), the dependency ratio (ratio of the number of dependents to the number of working-age household members), being the household head, the amount of pensions per adult equivalent in a household (in 000 RSD), marital status, age, and age squared.

The average log hourly wages by different labour market characteristics are presented in Table A3 in the Appendix. The results are as expected. Wages increase with the level of education. Managers have the highest average wage among all occupations. Wages are higher in the public than in the private sector and increase with firm size. On average wages are highest in the service sector and lowest in agriculture. According to the type of employment and contract, part-time workers and those with labour contracts have the highest average wage. On average, wages are highest in the Belgrade region and in densely populated areas.

5. RESULTS

The Oaxaca-Blinder technique with twofold decomposition (Table 2) is used to decompose the gender pay gap; detailed decomposition is presented in the Appendix Table A6. The gender pay gap taking into account selection effects is

[14] Other ownership types are mixed ownership, socially owned enterprises, cooperatives, etc.

presented in Table 3 and the estimated selection equation is presented in the Appendix Table A7.

Table A4 presents the estimated log hourly wage equation with gender as the only explanatory variable, while Table A5 presents the estimated log hourly wage equation with the following explanatory variables: gender, education, work experience, occupation, region, degree of residential urbanisation, sector of economic activity, firm size, firm ownership type, contract type, and working part-time. The unadjusted gender pay gap amounted to 3.5% in 2014 and 5.7% in 2015 and was statistically significant at the 10% significance level in 2014. Taking into account individual and job characteristics, the adjusted gender pay gap amounted to 10.5% in 2014 and 12.5% in 2015.

Results for the log hourly wage equation are as expected (Table A5) and in line with the descriptive analysis (Table A3 in the Appendix). The hourly wage increases with education level and with work experience, but at a decreasing rate. There is no statistically significant difference between the hourly wages of managers and professionals in 2015, whereas managers do earn statistically significantly more than professionals (and the armed forces) in 2014. Wages in all other occupations are lower than those of professionals (and the armed forces) in both years. Wages are higher in Belgrade and densely populated areas than in other Serbian regions and intermediate and thinly populated areas. The difference between densely and intermediate populated areas is only significant in 2015. Wages increase with firm size. On average, wages are higher in the public than in the private sector in both years, whereas other ownership types have lower wages than the private sector in 2015. There is no statistically significant difference between average wages for different contract types (labour contracts or other contracts), whereas wages are lower for informal workers (i.e., those without contracts) than for workers with labour contracts. Wages are higher for part-time than for full-time jobs on average, but only around 2% of employees work part-time. This result is unusual, since the part-time wage rate is usually lower than the full-time wage rate. A possible explanation for this result is the small sample size of part-time workers. In addition, using usual hours of work – which are all that is available in SILC data – to calculate the hourly wage rate instead of actual hours of work may overestimate the part-time work.

Table 2 presents the results of the Oaxaca-Blinder decomposition. The explained part of the gap is negative, amounting to –7.1% in 2014 and –6.7% in 2015. The negative explained part of the gender pay gap suggests that the characteristics of employed women, such as education level, are better than the characteristics of employed men. Taking into account labour market and individual characteristics, the adjusted gender pay gap (i.e., the unexplained part of the gap) is bigger than the unadjusted gender pay gap, amounting to 10.5% in 2014 and 12.5% in 2015. Our results show that women in Serbia earn less than men, even though they have better qualifications and work in better-paid occupations. The increase in adjusted gender pay gap between 2014 and 2015 is not statistically significant. Our results suggest that the adjusted gender pay gap in 2014 and 2015 was slightly lower than in 2013, when it amounted to 13.8% (Žarković-Rakić & Vladisavljević 2016).

The following variables have a statistically significant influence on the explained part of the gap in both years: education, occupation, region, degree of urbanisation, sector of economic activity, ownership type, and contract type. Also, firm size has a statistically significant influence on the explained part of the gap in 2014, and work experience in 2015. Working part-time does not have a statistically significant influence on the explained part.

The variables that reduce the explained part of the gap, i.e., that have negative coefficients, are: education, occupation, firm ownership sector, contract type, degree of urbanisation, and region. Women's education level is higher than men's and they are also more likely to work in better-paid occupations, which narrows the explained part of the gap. Women are more likely to work in the public sector and to hold jobs with a labour contract (instead of other contracts or without a contract), where the wages are higher (see Table A1 and Table A3 in the Appendix). The proportion of employed women is slightly higher in densely populated and intermediate populated areas, but significantly lower in thinly populated areas compared with the proportion of men, which narrows the explained part of the gap. Also, the proportion of employed women is higher than that of men in the Belgrade region, i.e., the region with the highest average wage. On the other hand, the proportion of employed women is lower than that of men in South and East Serbia, the region with the lowest average wage. Region narrows the explained component. The variables that increase the explained part of the

gap (i.e., positive coefficients) are: sector of economic activity, firm size, and work experience. The fact that employed women on average have less working experience increases the explained part of the gap in 2015. The two variables with the biggest influence on the explained part of the gap are occupation and education. Occupation explains 43.7% of the explained part of the gap in 2014 and 43.3% in 2015. Education explains 32.4% of explained part of the gap in 2014 and 37.3% in 2015.

Only a few variables have a statistically significant influence on the unexplained part of the gap in 2015, whereas none of the variables influence it in 2014. Occupation and firm ownership sector increase the unexplained part of the gap in 2015.[15] The unexplained part of the gender pay gap is mostly attributed to discrimination, but it is important to remember that it includes all the unobserved variables.

[15] Occupation and education are highly correlated variables. We did a robustness check without occupation. Excluding occupation, the estimated coefficient for education is higher in both the explained and unexplained parts of the gender pay gap compared with the baseline estimation. Education has a negative and statistically significant influence on the unexplained part of the gap when occupation is excluded, indicating that women are better paid than men with the same level of education.

Table 2: Oaxaca-Blinder decomposition, 2014 and 2015

	2014		2015	
Log male wage	5.199***	(0.013)	5.188***	(0.015)
Log female wage	5.164***	(0.015)	5.131***	(0.015)
Difference in log wages	0.035*	(0.020)	0.057***	(0.021)
Explained part	–0.071***	(0.015)	–0.067***	(0.015)
Unexplained part	0.105***	(0.016)	0.125***	(0.017)
Explained part decomposition				
Education	–0.023***	(0.005)	–0.025***	(0.005)
Work experience	0.002	(0.003)	0.005**	(0.002)
Occupation	–0.031***	(0.009)	–0.029***	(0.011)
Region	–0.008**	(0.004)	–0.006**	(0.003)
Degree of urbanisation	–0.006***	(0.002)	–0.007***	(0.002)
Sector of economic activity	0.008**	(0.003)	0.015***	(0.004)
Firm size	0.004**	(0.002)	0.002	(0.002)
Firm ownership sector	–0.010***	(0.003)	–0.018***	(0.004)
Contract type	–0.004**	(0.002)	–0.004**	(0.002)
Part-time/full-time	–0.002	(0.003)	–0.001	(0.002)
Unexplained part decomposition				
Education	–0.013	(0.012)	–0.013	(0.015)
Work experience	0.062	(0.039)	0.032	(0.044)
Occupation	–0.001	(0.025)	0.063**	(0.028)
Region	–0.000	(0.002)	0.001	(0.003)
Degree of urbanisation	–0.003	(0.003)	0.000	(0.004)
Sector of economic activity	0.042	(0.028)	0.034	(0.035)
Firm size	0.001	(0.004)	0.001	(0.004)
Firm ownership sector	0.022	(0.036)	0.109***	(0.026)
Contract type	0.035	(0.060)	0.036	(0.064)
Part-time/full-time	–0.006	(0.004)	0.001	(0.004)
Constant	–0.035	(0.085)	–0.139	(0.090)
N	3,576		3,476	

Notes: Negative values reduce the gender pay gap, whereas positive values increase it. Robust standard errors (S.E.). *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' calculation.

Table 3 presents the log hourly wage equation corrected for selection effects (Equation 17). The adjusted gender pay gap taking into account selection effects is estimated using the *selmlog* procedure. We will first summarise the main results for the selection equation presented in Appendix Table A7. Inactivity is the base category. Women have a lower probability than men of being both wage-employed and self-employed compared to inactive. The probability of being wage employed is higher for those with secondary and tertiary education than for those with primary education. The probability of being self-employed is higher for those with tertiary education than for those with primary education. The probability of being wage-employed and self-employed vs. inactive increases with age, but at a decreasing rate. Number of children (aged 1–7) does not influence the probability of being employed, but increases the probability of being self-employed vs. inactive in 2014.

The adjusted gender pay gap taking into account selection effects is actually the estimated coefficient for the gender variable in Equation 17. Selection variables are not significant in 2014; therefore the gender pay gap with and without selection is almost equal (10.0% with selection and 10.5% without selection). Selection into wage employment and inactivity is statistically significant in 2015. The adjusted gender pay gap is lower in 2015 when selection is considered (9.7% versus 12.5%, respectively). Therefore, selection explains part of the gender pay gap in 2015.

Table 3: Log hourly wage equation with selection effects, 2014 and 2015

	2014		2015	
Variable	Coefficient	S.E.	Coefficient	S.E.
Female	–0.100***	(0.025)	–0.097***	(0.026)
Education				
Secondary education	0.027	(0.042)	0.124**	(0.053)
Tertiary education	0.185***	(0.059)	0.236***	(0.071)
Work experience				
Work experience	0.011***	(0.003)	0.005	(0.003)
Work experience squared	–0.000*	(0.000)	–0.000	(0.000)
Occupation				
Managerial	0.112***	(0.043)	0.038	(0.045)
Technicians and associate professionals	–0.141***	(0.026)	–0.180***	(0.028)
Clerical support workers	–0.280***	(0.027)	–0.251***	(0.030)

Service and sales workers	–0.413***	(0.027)	–0.397***	(0.030)
Skilled agriculture, forestry, and fishery workers	–0.434***	(0.104)	–0.306*	(0.185)
Craft and related trades workers	–0.385***	(0.031)	–0.392***	(0.034)
Plant and machine operators, and assemblers	–0.305***	(0.032)	–0.343***	(0.033)
Elementary occupations	–0.490***	(0.033)	–0.471***	(0.033)
Region				
Vojvodina	–0.125***	(0.023)	–0.032	(0.022)
Šumadija and West Serbia	–0.182***	(0.023)	–0.101***	(0.025)
South and East Serbia	–0.201***	(0.023)	–0.167***	(0.025)
Degree of urbanisation				
Intermediate populated area	–0.014	(0.017)	–0.035**	(0.018)
Thinly populated area	–0.039*	(0.023)	–0.053**	(0.022)
Sector of economic activity				
Industry	0.040	(0.042)	0.095**	(0.045)
Services	0.003	(0.041)	–0.007	(0.045)
Firm size				
Number of employed 11–19	0.052***	(0.020)	0.073***	(0.019)
Number of employed 20–49	0.082***	(0.021)	0.041*	(0.022)
Number of employed 50+	0.098***	(0.018)	0.090***	(0.020)
Firm ownership sector				
Public ownership	0.146***	(0.016)	0.168***	(0.017)
Other ownership	0.083*	(0.047)	–0.059	(0.045)
Contract type				
Other contract types	–0.095**	(0.047)	–0.086*	(0.049)
Without contract	–0.178***	(0.035)	–0.175***	(0.040)
Part-time/Full-time	0.523***	(0.056)	0.510***	(0.053)
Selection effects				
Selection into wage employment	–0.163	(0.128)	0.341**	(0.135)
Selection into self-employment	0.022	(0.281)	0.277	(0.300)
Selection into inactivity	0.054	(0.274)	0.953***	(0.278)
Constant	5.382***	(0.125)	5.468***	(0.136)
N	3,576		3,476	
Adjusted R2	0.429		0.375	

Notes: The base categories are as follows: primary education, professionals and armed forces, Belgrade region, densely populated area, agriculture, number of employed 1–10, private ownership type, labour contract. Robust standard errors (S.E.). *** p<0,01, ** p<0,05, * p<0,1.
Source: Authors' calculation

6. CONCLUSIONS

This paper analyses the gender pay gap in Serbia using SILC data for 2014 and 2015 and Oaxaca-Blinder decomposition methodology. The selection effect on the gender pay gap is estimated using the methodology proposed by Bourguignon et al. (2007).

Our findings suggest that discrimination is the key reason for the gender pay gap, along with some other unobservable factors. If women and men had the same characteristics the gap would have been 10.5% in 2014 and 12.5% in 2015. However, women on average have better characteristics than men in respect of factors such as education and occupation, and these female advantages reduced the actual gender pay gap to 3.5% in 2014 and 5.7% in 2015. We find that selection into wage employment, self-employment, and inactivity had no impact on the gender pay gap in 2014, but reduced it by 2.8 percentage points in 2015. Hence, we conclude that selection into wage employment and self-employment versus inactivity explains part of the gender pay gap in 2015.

These findings demonstrate that the gender pay gap continues to be relatively large and persistent in Serbia. The National Strategy for Gender Equality recognises that although discrimination is prohibited by law, gender discrimination persists and implementation of the law is inadequate. We believe that policymakers should continuously monitor the gender pay gap. The gap is persistent due to the discrimination effect. A new National Strategy for Gender Equality should be prepared, since the last strategy is due to end in 2020.

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APPENDIX

Table A1: Mean values of explanatory variables for wage equation, by gender, 2014 and 2015

	2014		2015	
Variable	Female	Male	Female	Male
Education				
Primary	0.081	0.105	0.067	0.100
Secondary	0.566	0.633	0.567	0.647
Tertiary	0.353	0.262	0.367	0.252
Work experience (in years)				
Work experience	16.3	17.6	16.1	17.8
Work experience squared	363.3	424.8	364.8	436.4
Occupation				
Managerial	0.020	0.035	0.016	0.038
Professionals and armed forces	0.206	0.133	0.200	0.128
Technicians and associate professionals	0.162	0.099	0.161	0.103
Clerical support workers	0.171	0.076	0.165	0.070
Service and sales workers	0.207	0.178	0.201	0.157
Skilled agriculture, forestry, and fishery workers	0.004	0.005	0.000	0.003
Craft and related trades workers	0.075	0.209	0.074	0.198
Plant and machine operators, and assemblers	0.032	0.181	0.031	0.207
Elementary occupations	0.122	0.084	0.152	0.097
Region				
Belgrade	0.215	0.176	0.218	0.186
Vojvodina	0.286	0.302	0.270	0.275
Šumadija and West Serbia	0.302	0.296	0.297	0.310
South and East Serbia	0.197	0.227	0.214	0.229

Degree of urbanisation				
Densely populated area	0.413	0.348	0.395	0.339
Intermediate populated area	0.322	0.303	0.316	0.289
Thinly populated area	0.265	0.349	0.289	0.372
Sector of economic activity				
Agriculture	0.025	0.034	0.015	0.038
Industry	0.230	0.392	0.245	0.404
Services	0.746	0.573	0.740	0.558
Firm size (number of employees)				
1–10	0.302	0.261	0.337	0.308
11–19	0.188	0.203	0.221	0.264
20–49	0.164	0.156	0.176	0.159
50+	0.346	0.380	0.266	0.269
Firm ownership				
Private ownership	0.486	0.552	0.499	0.567
Public ownership	0.501	0.422	0.485	0.401
Other ownership	0.013	0.026	0.016	0.032
Contract type				
Labour contract	0.951	0.930	0.954	0.941
Other contract types	0.015	0.023	0.021	0.020
Without contract	0.034	0.047	0.026	0.040
Part-time	0.015	0.013	0.021	0.015

Source: Authors' calculation

Table A2: Mean values for explanatory variables for selection equation, by gender, 2014 and 2015

	2014		2015	
Variable	Female	Male	Female	Male
Education				
Primary	0.236	0.181	0.234	0.193
Secondary	0.540	0.631	0.548	0.624
Tertiary	0.224	0.187	0.218	0.184
Age	41.9	41.2	42.2	41.5
Age squared	1,896	1,854	1,919	1,879
Marital status	0.716	0.628	0.731	0.635
Number of children aged 1–7	0.221	0.240	0.217	0.226
Number of children aged 8–18	0.430	0.348	0.429	0.347
Dependency ratio	0.477	0.453	0.483	0.451
Household head	0.271	0.297	0.277	0.293
Pensions per adult equivalent in 000 RSD	4.937	4.706	4.872	4.721
Degree of urbanisation				
Densely populated area	0.327	0.313	0.299	0.295
Intermediate populated area	0.295	0.294	0.276	0.273
Thinly populated area	0.379	0.392	0.425	0.431
Region				
Belgrade	0.178	0.162	0.160	0.154
Vojvodina	0.291	0.299	0.275	0.278
Šumadija and West Serbia	0.313	0.297	0.329	0.324
South and East Serbia	0.218	0.242	0.237	0.244

Source: Authors' calculation

Table A3: Average log hourly wages for females and males, by employee characteristics, 2014 and 2015

	2014		2015	
	Female	Male	Female	Male
Total	5.164	5.199	5.131	5.188
Education				
Primary	4.691	4.905	4.755	4.898
Secondary	4.968	5.086	4.944	5.080
Tertiary	5.526	5.544	5.423	5.513
Occupation				
Managerial	5.971	5.714	6.032	5.648
Professionals and armed forces	5.625	5.670	5.554	5.649
Technicians and associate professionals	5.329	5.376	5.246	5.361
Clerical support workers	5.181	5.156	5.136	5.203
Service and sales workers	4.808	4.990	4.843	4.992
Skilled agriculture, forestry, and fishery workers	4.842	5.058	–	5.116
Craft and related trades workers	4.755	5.056	4.821	5.049
Plant and machine operators, and assemblers	4.953	5.097	4.946	5.042
Elementary occupations	4.779	4.920	4.802	4.917
Region				
Belgrade	5.383	5.368	5.259	5.318
Vojvodina	5.112	5.155	5.143	5.166
Šumadija and West Serbia	5.055	5.120	5.041	5.155
South and East Serbia	5.031	5.144	4.994	5.075
Degree of urbanisation				
Densely populated area	5.318	5.338	5.251	5.325
Intermediate populated area	5.069	5.188	5.081	5.164
Thinly populated area	4.955	5.024	4.937	5.033
Sector of economic activity				
Agriculture	4.941	5.007	5.116	4.931

Industry	5.017	5.138	5.014	5.151
Services	5.213	5.246	5.166	5.227
Firm size (number of employees)				
1–10	4.963	5.075	4.984	5.051
11–19	5.168	5.175	5.150	5.166
20–49	5.235	5.174	5.200	5.223
50+	5.306	5.306	5.255	5.350
Firm ownership				
Private ownership	4.970	5.048	4.950	5.045
Public ownership	5.348	5.388	5.309	5.405
Other ownership	5.270	5.264	5.170	4.989
Contract type				
Labour contract	5.185	5.223	5.144	5.210
Other contract types	5.010	5.089	5.008	4.985
Without contract	4.611	4.763	4.637	4.770
Part-time/Full-time				
Full-time	5.150	5.194	5.122	5.180
Part-time	5.975	5.520	5.579	5.686

Source: Authors' calculation

Table A4: Log hourly wage equation, explanatory variable gender, 2014 and 2015

	2014		2015	
Variable	Coefficient	S.E.	Coefficient	S.E.
Female	**–0.035***	(0.020)	**–0.057*****	(0.021)
Constant	5.199***	(0.013)	5.184***	(0.015)
N	3,576		3,506	
R2	0.001		0.003	

Notes: Robust standard errors (S.E.). *** p<0,01, ** p<0,05, * p<0,1.

Source: Authors' calculation

Table A5: Log hourly wage equation, all explanatory variables, 2014 and 2015

	2014		2015	
Variable	Coefficient	S.E.	Coefficient	S.E.
Female	–0.105***	(0.016)	–0.125***	(0.018)
Educational level				
Secondary education	0.114***	(0.024)	0.084***	(0.031)
Tertiary education	0.312***	(0.031)	0.260***	(0.036)
Work experience				
Work experience	0.016***	(0.003)	0.012***	(0.003)
Work experience squared	–0.000***	(0.000)	–0.000***	(0.000)
Occupational level				
Managerial	0.159**	(0.079)	0.149	(0.103)
Technicians and associate professionals	–0.151***	(0.030)	–0.190***	(0.031)
Clerical support workers	–0.293***	(0.028)	–0.264***	(0.030)
Service and sales workers	–0.444***	(0.030)	–0.400***	(0.034)
Skilled agriculture, forestry, and fishery workers	–0.429***	(0.101)	–0.275*	(0.152)
Craft and related trades workers	–0.401***	(0.034)	–0.389***	(0.038)
Plant and machine operators, and assemblers	–0.324***	(0.035)	–0.372***	(0.039)
Elementary occupations	–0.499***	(0.034)	–0.489***	(0.035)
Region				
Vojvodina	–0.137***	(0.023)	–0.041*	(0.024)
Šumadija and West Serbia	–0.209***	(0.022)	–0.119***	(0.023)
South and East Serbia	–0.219***	(0.023)	–0.194***	(0.025)
Degree of urbanisation				
Intermediate populated area	–0.027	(0.017)	–0.060***	(0.019)
Thinly populated area	–0.075***	(0.018)	–0.079***	(0.021)
Sector of economic activity				
Industry	0.059	(0.047)	0.088	(0.056)
Services	0.008	(0.046)	–0.012	(0.056)
Firm size				
Number of employed 11–19	0.042*	(0.022)	0.060***	(0.022)
Number of employed 20–49	0.064**	(0.025)	0.046*	(0.026)

Number of employed 50+	0.089***	(0.021)	0.110***	(0.025)
Firm ownership sector				
Public ownership	0.138***	(0.019)	0.164***	(0.024)
Other ownership	0.069	(0.058)	–0.132**	(0.053)
Contract type				
Other contract types	–0.085	(0.074)	–0.071	(0.081)
Without contract	–0.201***	(0.050)	–0.191***	(0.064)
Part-time/full-time	0.590***	(0.139)	0.475***	(0.104)
Constant	5.211***	(0.064)	5.209***	(0.074)
N	3,576		3,476	
Adjusted R2	0.466		0.400	

Notes: The base categories are as follows: primary education, professionals and armed forces, Belgrade region, densely populated area, agriculture, number of employed 1–10, private ownership type, labour contract. Robust standard errors (S.E.). *** p<0,01, ** p<0,05, * p<0,1.
Source: Authors' calculation

Table A6: Oaxaca–Blinder detailed decomposition, 2014 and 2015

	2014		2015	
Log male wage	5.199***	(0.013)	5.188***	(0.015)
Log female wage	5.164***	(0.015)	5.131***	(0.015)
Difference in log wages	0.035*	(0.020)	0.057***	(0.021)
Explained part	–0.071***	(0.015)	–0.067***	(0.015)
Unexplained part	0.105***	(0.016)	0.125***	(0.017)
Explained part				
Education				
Primary	–0.003**	(0.002)	–0.004***	(0.001)
Secondary	–0.002**	(0.001)	–0.003**	(0.001)
Tertiary	–0.018***	(0.003)	–0.018***	(0.004)
Work experience				
Work experience	0.021***	(0.007)	0.023***	(0.007)
Work experience squared	–0.019***	(0.006)	–0.017***	(0.007)
Occupation				
Senior officials and managers	0.005*	(0.003)	0.010***	(0.004)
Professionals and armed forces	–0.020***	(0.004)	–0.018***	(0.005)
Technicians and associate professionals	–0.006***	(0.002)	–0.003*	(0.002)

Clercal support workers	0.003	(0.002)	0.001	(0.003)
Service and sales workers	0.005*	(0.003)	0.008***	(0.003)
Skilled agricultural, forestry, and fishery workers	–0.000	(0.000)	–0.000	(0.000)
Craft and related trades workers	–0.017***	(0.003)	–0.017***	(0.004)
Plant and machine operators, and assemblers	–0.009**	(0.004)	–0.020***	(0.005)
Elementary occupations	0.008***	(0.003)	0.009***	(0.003)
Region				
Belgrade	–0.006**	(0.003)	–0.004**	(0.002)
Vojvodina	0.000	(0.000)	0.001	(0.001)
Šumadija and West Serbia	0.000	(0.001)	–0.001	(0.001)
South and East Serbia	–0.002*	(0.001)	–0.002	(0.002)
Degree of urbanisation				
Densily populated area	–0.003***	(0.001)	–0.004***	(0.001)
Intermediate populated area	0.000	(0.000)	0.000	(0.000)
Thinly populated area	–0.003***	(0.001)	–0.003**	(0.001)
Sector of economic activity				
Agriculture	–0.000	(0.000)	–0.001	(0.001)
Industry	0.006*	(0.003)	0.009***	(0.003)
Services	0.002	(0.003)	0.006*	(0.004)
Firm size (number of employees)				
1–10	0.002*	(0.001)	0.001	(0.001)
11–19	–0.000	(0.000)	0.000	(0.000)
20–49	–0.000	(0.000)	0.000	(0.000)
50+	0.002**	(0.001)	0.000	(0.001)
Firm ownership				
Private ownership	–0.004**	(0.002)	–0.001	(0.002)
Public ownership	–0.005**	(0.002)	–0.014***	(0.004)
Other ownership	0.000	(0.000)	–0.002**	(0.001)
Contract type				
Labour contract	–0.003**	(0.001)	–0.002*	(0.001)
Other contracts	0.000	(0.001)	–0.000	(0.000)
Without contract	–0.001	(0.001)	–0.002*	(0.001)
Part-time	–0.002	(0.003)	–0.001	(0.002)

Unexplained part				
Education				
Primary	0.004	(0.003)	0.003	(0.003)
Secondary	–0.005	(0.012)	–0.006	(0.014)
Tertiary	–0.011	(0.010)	–0.010	(0.012)
Work experience				
Work experience	0.172**	(0.086)	0.166*	(0.097)
Work experience squared	–0.110**	(0.051)	–0.134**	(0.058)
Occupation				
Senior officials and managers	–0.009**	(0.004)	–0.008	(0.006)
Professionals and armed forces	–0.001	(0.010)	0.013	(0.010)
Technicians and associate professionals	–0.007	(0.007)	0.010	(0.008)
Clercal support workers	–0.007	(0.005)	0.010	(0.006)
Service and sales workers	0.002	(0.009)	0.011	(0.011)
Skilled agricultural, forestry and fishery workers	0.001	(0.001)	0.000	(0.000)
Craft and related trades workers	0.013**	(0.006)	0.013**	(0.005)
Plant and machine operators, and assemblers	0.001	(0.004)	0.003	(0.003)
Elementary occupations	0.006	(0.005)	0.011*	(0.006)
Region				
Belgrade	–0.003	(0.008)	0.006	(0.009)
Vojvodina	–0.001	(0.006)	–0.007	(0.007)
Šumadija and West Serbia	0.003	(0.006)	0.004	(0.006)
South and East Serbia	0.000	(0.005)	–0.002	(0.005)
Degree of urbanisation				
Densily populated area	–0.008	(0.009)	0.001	(0.010)
Intermediate populated area	0.010*	(0.006)	0.002	(0.006)
Thinly populated area	–0.004	(0.005)	–0.002	(0.006)
Sector of economic activity				
Agriculture	–0.003*	(0.002)	–0.001	(0.001)
Industry	0.019*	(0.010)	0.015	(0.012)
Services	0.026	(0.025)	0.021	(0.030)
Firm size (number of employees)				

1–10	0.015*	(0.008)	0.006	(0.009)
11–19	0.005	(0.005)	–0.006	(0.007)
20–49	–0.008	(0.005)	0.002	(0.006)
50+	–0.011	(0.008)	–0.002	(0.008)
Ownership type				
Private ownership	–0.009	(0.022)	0.035*	(0.019)
Public ownership	0.032	(0.020)	0.077***	(0.017)
Other ownership	–0.001	(0.001)	–0.004***	(0.001)
Contract type				
Labour contract	0.035	(0.060)	0.036	(0.065)
Other contracts	–0.001	(0.002)	–0.001	(0.002)
Without contract	0.001	(0.003)	0.001	(0.003)
Part-time	–0.006	(0.004)	0.001	(0.004)
Constant	–0.035	(0.085)	–0.139	(0.090)
N	3,576		3,476	

Notes: Negative values reduce the gender pay gap, whereas positive values increase it. Robust standard errors (S.E.). *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' calculation.

Table A7: Selection equation, *selmlog* procedure, 2014 and 2015

	2014		2015	
	Coefficient	S.E.	Coefficient	S.E.
Selection into wage employment				
Female	–0.439***	(0.050)	–0.400***	(0.050)
Education				
Secondary education	1.134***	(0.070)	1.212***	(0.071)
Tertiary education	2.025***	(0.087)	2.054***	(0.088)
Age				
Age	0.237***	(0.017)	0.225***	(0.017)
Age squared	–0.003***	(0.000)	–0.003***	(0.000)
Married	0.241***	(0.068)	0.277***	(0.069)
Number of children				
Number of children aged 1–7	0.026	(0.057)	–0.033	(0.059)
Number of children aged 8–18	–0.009	(0.047)	–0.013	(0.047)
Dependency ratio	–0.121*	(0.065)	–0.039	(0.064)
Household head	–0.023	(0.055)	–0.002	(0.055)

Pensions per adult equivalent, in RSD	–0.004	(0.003)	–0.003	(0.004)
Degree of urbanisation				
Intermediate populated area	–0.007	(0.065)	0.004	(0.066)
Thinly populated area	–0.197***	(0.063)	–0.239***	(0.062)
Region				
Vojvodina	–0.044	(0.077)	–0.154*	(0.080)
Šumadija and West Serbia	–0.097	(0.076)	–0.368***	(0.077)
South and East Serbia	–0.322***	(0.080)	–0.379***	(0.081)
Constant	–5.190***	(0.333)	–5.002***	(0.335)
Selection into self-employment				
Female	–1.167***	(0.102)	–1.301***	(0.112)
Education				
Secondary education	0.174	(0.110)	–0.025	(0.116)
Tertiary education	0.532***	(0.156)	0.352**	(0.168)
Age				
Age	0.181***	(0.034)	0.195***	(0.037)
Age squared	–0.002***	(0.000)	–0.002***	(0.000)
Married	0.010	(0.128)	0.254*	(0.144)
Number of children				
Number of children aged 1–7	0.265**	(0.105)	–0.137	(0.133)
Number of children aged 8–18	0.105	(0.084)	0.109	(0.088)
Dependency ratio	–0.079	(0.114)	–0.017	(0.122)
Household head	0.103	(0.103)	–0.085	(0.114)
Pensions per adult equivalent, in RSD	0.006	(0.005)	0.015**	(0.006)
Degree of urbanisation				
Intermediate populated area	0.094	(0.137)	0.117	(0.149)
Thinly populated area	0.466***	(0.123)	0.291**	(0.133)
Region				
Vojvodina	0.558***	(0.172)	0.146	(0.183)
Šumadija and West Serbia	0.548***	(0.170)	0.219	(0.175)
South and East Serbia	0.074	(0.182)	–0.019	(0.186)
Constant	–6.740***	(0.703)	–6.644***	(0.771)
N	8,308		8,200	
Pseudo R2	0.097		0.101	

Notes: The reference categories are: primary education, Belgrade region, densely populated area, inactivity. Robust standard errors (S.E). *** p<0,01, ** p<0,05, * p<0,1.

Source: Authors' calculation.