Occupation Segregation and Gender Earnings Differentials in Slovenia

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Abstract

In communist Europe, households needed at least two breadwinners to maintain a stable household income. Due to the relatively equal wage rate between men and women, there was a small, if any, wage gap between the two genders. Women and men chose different industries to work in due to their physical and mental capabilities, which most times would segregate the workforce based on gender—thus, occupational segregation. After the fall of communism, these economies transitioned to a market based one. In this transition, wages become less standard and the wage gap between men and women became apparent. In some transition economies, occupational segregation has been shown to account for some of this gap. This study conducts an analysis on Slovenia's gender wage gap. To date, there have been few studies on the late transition economies and none with a focus on Slovenia. Using the Oaxaca-Blinder regression analysis of wage differentials, it studies Slovenia's economy using a sample from the Statistical Register, which contains 53,494 persons from 2001. The study proves that in Slovenia there is occupational segregation amongst most industries and that this difference cannot significantly account for any proportion of the overall gender wage gap.

I. Introduction

In centrally planned European economies, female labor was needed to fuel the intense industrial drives most countries implemented. Authorities encouraged women to enter the labor force with guarantees of equal pay for work and generous maternity benefits that exceeded the norm in Western countries. As a result, the female participation rates in Eastern Europe and the Soviet Union reached extremely high levels – over 80% of women were employed in the majority of these countries (Brainerd 2000). During the early 1990's, the transition from a centrally planned to a market economy in Eastern Europe and the former Soviet Union led to profound changes in the labor market. The rigid system of employment and wages has been replaced with a decentralized and flexible structure (Ogloblin 1999). Given the rapid market transition, many Eastern European and Soviet countries saw a dramatic increase in gender wage inequality. Most of these countries observed a 30% difference in wages during the early stages of transition (Ogloblin 1999).

Many recent research studies have analyzed the gender-specific wages during the early-transition of former centrally planned economies. Orazem and Vodopivec (1995) investigated the immediate impact of early pro-market reforms in Slovenia from 1987-1991. Newell and Reilly (1996) focused on the gender pay gap and by examining data from the Russian Longitudinal Monitoring Survey. Brainerd (2000) tied the results together and contrasted female relative wages under Communism and the early transition for seven transition economies. The papers try to account for the possible wage gap by looking at many personal and firm characteristics. These studies show that during the early period the gender wage gap diminished in Eastern Europe but the gap widened in Russia and Ukraine due to increases in wage dispersions. The data presented in the

papers previously mentioned, however, do not attempt to attribute the gap to possible occupational segregation. Only a handful of studies have empirically examined the earnings differentials with an emphasis on the "feminization" of occupations, thus occupational segregation. This means that the jobs stereotypically held by women in the old controlled economy are still occupied by females. Specifically, Oglobin (1999) and Jurajda (2003) observe the potential of occupational segregation in Russia and Czech Republic/Slovakia, respectively.

Since the early-transition period, there has been little written about the full effect of transitioning to a decentralized economy. Additionally, there has been a lack of empirical analysis of recent data. The present study adds to the papers by Oglobin and Jurajda by examining data collected from Slovenia. I attempt to find and explain key determinants for the gender earnings differentials in the Slovene economy. It is plausible that the lower pay in "female" industries and occupations is determined by the personal and firm characteristics. My hypothesis is that in Slovenia, part of the wage differentials between men and women can be explained by the "feminization" of certain occupations.

This study decomposes the late-transition gender wage gap into parts attributable to occupational segregation. This analysis is based on data from Slovenia in 2001, which comprises of a 7½ percent sample drawn from the register of employees that enterprises are required to submit to the Statistical Office. Included in the data set are: earnings; sex; education; age; martial status; region of location of firm where employed; size of firm where employed; ownership of enterprise where employed; occupation; industry of operation; and share of women among all employed persons in the occupation. Similar to Jurajda's (2003) study of Czech and Slovak workers, the late-transition wage structure is

described using wage regressions controlling not only for gender and other personal and firm characteristics but also for segregation measured by the fraction of women employed in the occupation of the worker. The estimated coefficients are then used with the explanatory variables by gender to calculate an Oaxaca-Blinder gender wage gap differential. I find that occupational segregation, while present in Slovenia, does not contribute to the overall wage differential between men and women[2].

Section II of this paper examines the existing literature on gender wage differentials. Section III provides an in-depth description of the Oaxaca-Blinder mean wage gap model and my modifications for this study. Section IV details the data collected by the survey in Slovenia. Section V delineates the empirical specifications for my study. Section VI presents the results of this study. Section VII provides a short conclusion and draws on the implications of the results given previous gender wage differential theory.

II. Literature Review

There has been much literature that analyzes wage differentials across gender and the consequences associated with them. All the literature uses regression analysis to control for gender and other personal characteristics that may affect wages. However, initial studies on gender pay gaps were based mainly on data for the United States and other developed countries. After Eastern Europe and the Soviet Union abandoned their centralized governments, focus on gender wage differentials shifted to transition economies. Economists discovered that wage differentials did exist in transition economies and began analyzing the situation—looking for the cause for these

[2] This study does find that occupational segregation matters in Plant & Machine Operators. Specifics on this finding is described in detail in Section VI of this paper.

differentials. General studies on personal and firm characteristics were conducted to locate the cause of the gap. However, there is still relatively little empirical analysis on occupational segregation as a cause for wage differentials. No study to date has looked to explain the Slovenia gender wage differential through occupational segregation.

The first notable article that broke down male/female and black/white wage disparities was written by Oaxaca (1973). In this article, Oaxaca studied urban labor economics and developed earnings functions of males, females, blacks, and whites based on a large set of explanatory variables, such as: education, experience, health, occupation, and region. Discrimination could be accounted for by the residual left after adjusting the wage gap for differences between the two factions. He cautioned that running regressions with too few variables could lead to statistical bias by treating the groups as closer substitutes in the market than they actually are. His findings showed that 94% of the black-white wage gap and 78% of the male-female wage gap could be attributed to discrimination.

Other attempts to dig deeper into the wage differential occurred in the U.S. Borjas (1983) measures race and wage differentials across the federal sector of the United States using data from the Central Personnel Data File. His findings indicate that there is a positive correlation between wage differentials those based on gender. In fact, his findings show that gender has more of a consequence on wages than race does. Even so, a number of other Economists such as Turn (1991), Cross et al. (1990) and James and Delcastillo (1991) looked at race at cities across the United States and found that controlling for race does slightly explain wage differentials between different groups. However, since these studies also had a relatively small number of testers, it was difficult

to make macro conclusions based on their results. Studies like these fostered a curiosity about wage differentials between other demographic groups. For example, Groshen (1991) used U.S. matched-employer employee data to simultaneously gauge the different types of segregation on gender wage gaps. Her findings indicate that both the person's gender and various forms of gender segregation are important in accounting for the U.S. gender wage differential.

Neumark (1996) conducted a small-scale study on sexual discrimination in the workforce. The study sent two male and two female *college* students to apply for the same job in restaurants. The results showed that men were hired at higher priced restaurants, while women were offered jobs at lower-paying ones. This study is interesting because it demonstrates that there may be an occupational segregation that occurs within an industry—allowing men an opportunity to obtain higher paying jobs than women.

The equality of men and women was one of the asserted advantages of a Communist system. Women were compelled to work in an economy with set wages. After the fall of Communism in Eastern Europe, economists began investigation on womens' wages in transition economies. Newell and Reilly (1996) and Brainerd (2000) tie together the employment and wage effect in these nations. Brainerd's analysis indicates that during the early transition wage differentials increased in former Soviet countries but diminished in other Eastern European economies. Newell and Reilly (2000) conducted a follow-up analysis that showed during the mid-transition period, the wage-differential between genders remained constant throughout the 1990s.

Orazem and Vodopivec (1995) is the only paper that directly discusses the returns

to education, experience, and gender in Slovenia. In their study, they expected females, who had a female-male wage ratio of .88 to fall after the transition to a decentralized economy. Their findings indicate, however, that the ratio actually increased to .9 by 1991. This study controlled for human capital, ethnicity, part-time status, and industry of employment. Their study did not, however, account for occupational segregation. Economists believed that wage differentials should increase (i.e. a wage ratio decrease) after the transition, thus their results drastically differed from previous studies conducted in the former Soviet Union and other Eastern European countries.

Ogloblin (1999) is the first study to attempt to capture the occupational segregation effect on wages in transition economies. Using data collected from 1994-1996, his findings indicate that he could not explain gender differences in education and experience alone. Instead, he controlled for firm ownership and class occupation. Ogloblin was able to account for over 80% of the wage gap by occupational segregation. Conversely, Jurajda (2003) applied Ogloblin's technique to the Czech Republic and Slovakia and found that occupational segregation does not significantly account for the gender wage gap. This finding stirred controversy about the impact of occupational segregation on wage differentials.

The present study adds to previous empirical analysis in several ways. First, my data set is more recent than any other that has been analyzed to date. This is important because instead of looking at mid-transition periods of former centralized economies, this study can analyze the late-period to see if effects are still lasting. Thus we can see if there is occupational segregation and if it contributes to the gender wage gap. This allows me to critique and improve Orazem and Vodopivec's (1995) early analysis of Slovenia's

gender wage differential. The data set also includes more variables than that considered by Orazem and Vodipivec. Controlling for more variables will allow a more comprehensive and accurate depiction of the wage differential. In addition, this study will also permit a comparison with the findings of Oglobin (1999) and Jurajda (2003). Whether consistent with either Oglobin or Jurajda, the results of this paper can be used to create policy or suggest methods to better understand the dynamics of gender and potentially correct the wage differential caused by it.

One possible error that may occur from my study that is not pertinent to the other studies it that the sample is restricted to persons who were employed. Thus, we cannot do a separate exercise on the determinants of who is employed. There is thus the possibility of sample selection bias. Empirical evidence on the importance of sample selection bias is far from overwhelming. Still, the results can be revealing. This error will be discussed in greater detail in a later section.

III. Theoretical Framework

Wages can be determined from many sources, such as: age, education, experience and occupation. These are typically considered normal explanatory variables. In a perfectly competitive economy, persons who provide labor services to the market and who are equally as productive with similar characteristics should be treated equally. "Equally" means that these persons receive similar wages or face the same demands for their services at a given wage (Blank 1999). However, this is not observed in the labor market. There are wage differentials and controlling for characteristics shared by all of society only explains part of it. Two interpretations can arise from the observation of

wage differences. First, the differences could occur from characteristics that affect productivity but cannot be observed by the study. Alternatively, the unexplained differential could arise from statistical discrimination in the labor market. Statistical discrimination occurs when employers have imperfect information about the skills or behaviors of certain minority participants of the labor force.

Looking specifically at gender, several studies have shown that men and women often have very different occupational distributions – potentially leading to occupational segregation. Occupational segregation can exist when the distribution of certain occupations within one demographic group is very different from the other. With gender, there might be female-dominated occupations and male-dominated occupations.

There can be two interpretations if men and women have choices about which fields they go into. One is that there is no problem with the labor market – occupational preferences form naturally and respect the market economy. The other is that there is discrimination in the market before an individual even enters the labor pool. Society pushes down on female wages and points them to lower paying occupations (Ehrenberg and Smith 2003). For example, women, who are thought to be nurturing and caring, would not have the same competitive drive as men. Therefore, management would rather promote a man versus a woman. Another consideration is that women, recognizing potential scenarios where they must leave the labor force for some time—child-birth—will choose occupations with lower rates of return to experience and lower penalties for their withdrawal.

For transition economies, this segregation is incredibly important. During the controlled regime, women could work in separate parts of the economies and receive

equal wages to men and therefore would not realize a wage differential. However, when the labor market shifted, women often were categorized to less prestigious, lower paying jobs. If occupational segregation can help explain wage differentials then the government can help steer policy to reduce this wage gap, i.e. help women get into fields not typically open to them.

IV. Data

This paper examines data on employees from the Statistical Register of Employment in Slovenia. This register includes all persons who have pension and disability insurance or are employed in the territory of the Slovenia. Employment can be temporary or permanent, full time or part time. Persons in employment are persons in paid employment in enterprises and organizations, persons in paid employment by self-employed persons, and individual private entrepreneurs. The data from the Statistical Register of Employment is used as the primary source on monthly statistics on employed persons for national and international users, in labor statistics, and in the national accounts system. The Statistical Register of Employment is updated regularly on an annual basis. The persons mentioned above are required to fill out the survey. The Statistics Office created a special data set containing a 7 1/2 percent stratified random sample by region of all employees included in the Statistical Register in 2001. Self-employed persons were not included in the sample. In all, the sample includes 53,494 persons. However, in the case of 10,371 persons, i.e. about 19% of the original sample, there were one or more missing values because the forms were not completely filled out[3].

[3] Based on one-way frequency distribution tables: the value for sex was missing in 3,200 cases, information

Thus, the effective number of observations in the sample is 43,123.

The data set includes information on annual earnings, education, age, gender, marital status, hours usually worked per week, if permanent or temporary worker, ownership of enterprise where employed, size of enterprise where employed, location of firm, occupation of worker, and industry of operation of enterprise. From the basic information contained in the Statistical Register, the Statistics Office created a new variable to show the share of women among all employed persons in the occupation in which the individual was engaged.

Like all data sets, this data set suffers from several weaknesses. The data set does not contain any information on the quality of education, family background, skill related job characteristics (e.g. if the individual received job training, physical requirements for the job)—variables that are likely to have direct impact of earnings and may be correlated with some of the other variables that are included in the study. Thus, the coefficients on the observed variables may be biased. Another potential source of bias is sample selection bias since the sample is restricted to employees only—typically, correction for sample selection bias would need the estimation of one equation to determine who is employed, and then estimate a wage function conditional on wage employment. The nature of the data set does not allow for correction of sample selection bias. It is not also easy to say to what extent the elimination of cases which involved missing variables results in bias.

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on marital status was missing in 2,579 cases, information on age was missing in 2,554 cases, and information on location of firm was missing in 1,614 cases.

Mean Values of Variables

Table 1 (below) displays the mean values of the variables available in the data set. As shown on the first line of the table, the average monthly earnings of women are 22,234 Tolar or 13.46 percent lower than those of men. This difference, which is statistically significant at the 1 percent level, can be partly attributed to differences between the two sexes in several characteristics that are associated with earnings, as noted below.

Table 1: Mean Values of Variables

	All sexes		Males		Females	
	Mean	Std. error	Mean	Std. error	Mean	Std. error
Monthly Earnings (Y in Tolar)	184,620	624.2477	195,432	938.8727	173,198	807.5270
LnY	11.9481	0.0029	12.0136	0.0038	11.8790	0.0044
Education						
Below elementary	0.0627	0.0012	0.0722	0.0017	0.0527	0.0015
Elementary	0.1638	0.0018	0.1482	0.0024	0.1804	0.0027
Secondary	0.6044	0.0024	0.6419	0.0032	0.5648	0.0034
Higher professional	0.0691	0.0012	0.0495	0.0015	0.0899	0.0020
University	0.0999	0.0014	0.0883	0.0019	0.1123	0.0022
Age						
25 years or below	0.0718	0.0012	0.0841	0.0019	0.0588	0.0016
26 to 35 years	0.3129	0.0022	0.3045	0.0031	0.3218	0.0032
36 to 45 years	0.3365	0.0023	0.3087	0.0031	0.3658	0.0033
45 to 55 years	0.2583	0.0021	0.2652	0.0030	0.2511	0.0030
56 years or more	0.0205	0.0007	0.0375	0.0013	0.0025	0.0003
Unmarried person dummy	0.3669	0.0023	0.4210	0.0033	0.3097	0.0032
Permanent worker dummy	0.7838	0.0020	0.7912	0.0027	0.7759	0.0029
Size of enterprise						
Less than 10 workers	0.1749	0.0018	0.2019	0.0027	0.1464	0.0024
10 to 49 workers	0.1503	0.0017	0.1560	0.0024	0.1443	0.0024
50 to 99 workers	0.1061	0.0015	0.0844	0.0019	0.1290	0.0023
100 to 249 workers	0.1287	0.0016	0.1259	0.0022	0.1317	0.0023
250 workers or more	0.4400	0.0024	0.4319	0.0033	0.4485	0.0034
Location of enterprise (Region)						
North east Slovenia	0.3299	0.0023	0.3284	0.0032	0.3315	0.0033
South east Slovenia	0.0802	0.0013	0.0794	0.0018	0.0810	0.0019
Central & North west Slovenia	0.4887	0.0024	0.4914	0.0034	0.4858	0.0035
West and South west Slovenia	0.1012	0.0015	0.1007	0.0020	0.1018	0.0021
Proportion in occupation female						
≤ 20 percent	0.2439	0.0019	0.4382	0.0031	0.0307	0.0011
> 20 but ≤ 40 percent	0.1912	0.0017	0.2685	0.0027	0.1005	0.0020
> 40 but ≤ 60 percent	0.1392	0.0015	0.1378	0.0021	0.1389	0.0023
> 60 but ≤ 80 percent	0.1837	0.0017	0.1029	0.0019	0.2756	0.0029
> 80 percent	0.2420	0.0019	0.0527	0.0014	0.4544	0.0033
Occupation						
Manager	0.0418	0.0010	0.0586	0.0016	0.0240	0.0011
Professional	0.1067	0.0015	0.0826	0.0018	0.1321	0.0023
Technician	0.1750	0.0018	0.1575	0.0024	0.1935	0.0027
Clerk	0.1211	0.0016	0.0671	0.0017	0.1781	0.0026
Service and sales	0.1298	0.0016	0.0881	0.0019	0.1740	0.0026
Craft and related	0.1347	0.0016	0.2277	0.0028	0.0365	0.0013
Plant and machine operator	0.1886	0.0019	0.2222	0.0028	0.1531	0.0025
Elementary (Unskilled) occupations	0.0955	0.0014	0.0839	0.0019	0.1077	0.0021
Industry						
Manufacturing	0.3413	0.0023	0.3837	0.0033	0.2966	0.0032
Electricity	0.0154	0.0006	0.0234	0.0010	0.0070	0.0006
Construction	0.0565	0.0011	0.0953	0.0020	0.0155	0.0009
Wholesale and retail	0.1451	0.0017	0.1301	0.0023	0.1610	0.0025
Hotels and restaurants	0.0341	0.0009	0.0229	0.0010	0.0460	0.0014
Financial intermediation	0.0281	0.0008	0.0164	0.0009	0.0404	0.0014
Transport and storage	0.0671	0.0012	0.0989	0.0020	0.0335	0.0012
Real estate	0.0677	0.0012	0.0722	0.0017	0.0629	0.0017
Public administration	0.0655	0.0012	0.0619	0.0016	0.0692	0.0018
Education	0.0738	0.0013	0.0305	0.0012	0.1195	0.0022
Health	0.0760	0.0013	0.0399	0.0013	0.1142	0.0022
Other social and personal services	0.0294	0.0008	0.0250	0.0010	0.0341	0.0013
Female dummy	0.4863	0.0024				
N	43123		22153		20970	

[1] Sample restricted to employees in non-primary occupations and in civilian employment. That is, employees in the army, agriculture, fisheries, and mining were not included. These excluded sectors accounted for 2 percent of *employees* in Slovenia in 2001.

Personal characteristics

Women have an advantage with respect to educational attainment. A higher proportion of women (20.2 percent) than men (13.8 percent) have studied beyond the secondary level. The differences with regard to experience, which can be approximated by age, are less distinct. Men have a higher proportion in the upper age groups and in the lowest age group. A higher proportion of men than women are unmarried, perhaps reflecting social tendencies where women tend to marry at an earlier age than men.

Enterprise characteristics and job segregation

A higher proportion of men than women are employed in small enterprises, whereas women have a larger representation in mid-sized (50 to 99 employees) enterprises. Women have a marginal edge over men in the proportion working in the largest enterprises (more than 100 employees).

Occupation segregation, measured at the one-digit occupation level[4], is quite high. The Duncan segregation index[5], which measures the proportion of workers who would have to change occupations in order for gender equality to be attained in occupation distribution, is 0.301. A higher proportion of women than men work as technicians and associated professionals, clerks, and as service and sales workers. Whereas, men have a higher proportion engaged in craft and related trades and as plant and machine operators. The importance of skilled white-collar occupations (managers and professionals in the aggregate) is broadly similar for men and women.

[4] Here, one digit occupation level is the general categories of occupations listed in Table 1, such as: Manufacturing, Electricity, Construction, etc.

[5] The Duncan segregation index is computed as follows: $SI=0.5*Sum[Abs(P_m-P_w)]$, where P_m and P_w are the proportion of men and women, respectively, employed in a particular occupation or industry.

A dimension of occupational segregation is provided by the distribution of the proportion of women in the worker's three-digit level occupation category[6]. As one of the panels in Table 1 shows, men tend to be employed in male-dominated occupations while women tend to be employed in female-dominated occupations. The concentration of the distribution for the two sexes is similar. About 44 percent of men work in occupations where more than 80 percent of the workers are men, and 45 percent of women work in occupations where more than 80 percent of the workers are women.

There is also considerable segregation within one-digit occupation categories. One dimension is shown by the distribution of men and women across three-digit occupation categories. Table 2, prepared specially by the statistics office, distinguishes the top ten occupations for both men and women as classified by the three-digit ISCO88 code. As observed in some other countries (Terrell (1989)), women in Slovenia are crowded in a smaller number of occupations than men. As the Table 2 below shows, one half of the women employees are engaged in a total of eight three-digit occupations, whereas only one third of men are engaged in a total of eight three-digit occupation categories. Only one of the occupations—shop salespersons—was common to the list of top ten occupations for the two sexes.

[6] Three digit occupations refer to the ISO88 code, Table 2 reflects this categorization, which can be seen on page 17

Table 2: Occupational Crowding of Wage Employees by Sex

Male employees Top 10 occupation categories at the 3-digit level	ISCO88 code	Percent of **male** wage employees engaged in given occupation	Share of **males** among all employees in given occupation (in percent)
Physical and engineering science technicians	311	7.1	79.9
Machinery mechanics and fitters	723	5.5	97.8
Motor vehicle drivers	832	5	99.0
Building frame and related trade workes	712	4.5	99.3
Finance and sales associate professionals	341	3.4	54.7
Mining and construction laborers	931	3.0	99.0
Shop salespersons	522	3.0	27.4
Protective service workers	516	2.9	92.3
Material-recording and transport clerks	413	2.8	80.4
Directors and chief executives	121	2.6	77.5
Total: top 8 occupation groups		34.4	
top 10 occupation groups		39.8	
Female employees Top 10 occupation categories at the 3-digit level	ISCO88 code	Percent of **female** wage employees engaged in given occupation	Share of **females** among all employees in given occupation (in percent)
Shop salespersons	522	9.1	72.6
Secretaries and keyboard-operating clerks	411	7.6	90.6
Cleaners and launderers	913	6.2	88.6
Textile and leather-products machine operators	826	6.2	84.1
Numerical clerks	412	5.4	90.5
Primary and pre-primary education teaching professionals	233	4.9	83.1
Housekeeping and restaurant service workers	512	4.9	68.4
Administrative associate professionals	343	4.7	84.4
Nursing professionals	323	4.3	92.4
Assemblers	341	3.2	45.3
Total: top 8 occupation groups		49.0	
top 10 occupation groups		56.5	

Source: Special tabulation provided by the Statistics Office based on the Statistical Register of Employment

Industrial segregation in Slovenia, computed by the Duncan Index at 0.258, is smaller than in western industrial countries (0.291 to 0.426[7]) and in some transition countries (0.32–0.33 in Poland and Russia). Men have higher representation than women in manufacturing, construction, and transport and communication. Whereas, a higher proportion of women than men are employed in the education and health sectors. A more disaggregated of industrial segregation is not possible because of data limitations.

To sum up, whereas women have an advantage over men, with respect to education and enterprise size, they are disadvantaged with respect to occupational

[7] As per Blau and Kahn (1996): inclusive of countries like the United States, U.K., West Germany, etc.

segregation. We will now determine through econometric analysis to what extent these differences in characteristics explain the gender earnings differential.

V. Empirical Specifications

The human capital framework suggests that earnings differentials reflect real differences in human characteristics. It assumes that there is a perfectly competitive labor market and unhindered labor mobility. This can be calculated by the regression of all personal and firm characteristics shown below:

$$\ln(Y) = \alpha_1 X + \alpha_2 F + \varepsilon \qquad \textbf{(1)}$$

where X is a vector of personal characteristics, F is the vector of firm characteristics, and ε is the random error term.

Economists recognize, however, that earnings differentials also arise because of differences in quality of schooling, native ability, and motivation. The earnings function is the outcome of an interaction of the forces demand and supply. Hence, it has become customary to estimate an expanded model with a set of family and environmental background variables, which control for equal opportunities during lifetime, and a set of demand or structural variables, which control for market conditions, included among the explanatory variables. The choice of the background and structural variables is largely governed by data availability and the objective of the study. In various studies, the list has included one or several of the following variables: background characteristics – race, ethnicity, occupation of parents, education of parents; and structural characteristics – region, union membership, occupation, and industry. Thus, we can write the expanded earnings function as follows:

$$\ln(Y) = \alpha_1 X + \alpha_2 F + \alpha_3 B + \alpha_4 S + \varepsilon \quad \textit{(2)}$$

Where B is the vector of background characteristics and S is the vector of structural characteristics.

With suitable data in hand, the standard approach for examining differentials is based on Oaxaca (1973) – Blinder (1973) methodology:

$$\ln(W_i) = \alpha X'_i - \varepsilon, \quad \textit{(3)}$$

where $\ln(W_i)$ is the natural logarithm of monthly earnings of a full-time hired employee i, X'_i is a vector of explanatory variables, i.e. observed characteristics, α is the coefficient of the vector, and ε is the error term. Equation 2 is then used to decompose the aggregate pay differential. The components are explained by workers' productivity-related characteristics and the unexplained, which is often attributed to discrimination. This methodology can be used to decompose the gender wage differential in Slovenia, breaking down wage equations for males and females.

The general earnings functions for men and women, respectively, can be found in equations 3 and 4. By comparing the coefficients on the explanatory variables in the two regressions, I can decompose the earnings gap into explained and unexplained portions:

$$\ln(W_m) = \alpha_m X'_m - \varepsilon_m \quad \textit{(4)}$$

$$\ln(W_f) = \alpha_f X'_f - \varepsilon_f, \quad \textit{(5)}$$

After taking the mean of each variable, the equations have the form:

$$\overline{\ln(W_m)} = \alpha_m \overline{X'_m} \quad \textit{(6)}$$

$$\overline{\ln(W_f)} = \alpha_f \overline{X'_f} \quad \textit{(7)}$$

Following Oaxaca's procedure, the equations are separated[8] to write an equation

[8] Separated here refers to the mathematical logic to subtract one side from the other to make the equations

for the mean wage differential as a function of personal characteristics and slope coefficients of males and females. The following equation separates wage equations for males (m) and females (f), shown in equations 5 and 6, and expresses the mean log wage difference as:

$$\overline{\ln(W_m)} - \overline{\ln(W_f)} = \alpha_m \overline{X'_m} - \alpha_f \overline{X'_f} \qquad \textbf{(8)}$$

where $\ln(W_m)$ and $\ln(W_f)$ are the mean log wages of men and women, respectively; X'_m and X'_f signify the array of mean productivity-related characteristics of men and women; and α_m and α_f are male and female coefficients estimates in the Ordinary Least-Squares (OLS) regression. The term $\alpha_m X'_f$ can be added and subtracted to equation 7 preserving the equality:

$$\overline{\text{Ln}(W_m)} - \overline{\ln(W_f)} = \alpha_m \overline{X'_m} - \alpha_f \overline{X'_f} + \alpha_m \overline{X'_f} - \alpha_m \overline{X'_f} \qquad \textbf{(9)}$$

The terms of equation 8 can be regrouped to write the wage differential as a function of the difference in mean values of each explanatory variable and the difference in the slope coefficients of each respective explanatory variable:

$$\overline{\ln(W_m)} - \overline{\text{Ln}(W_f)} = \alpha_m(\overline{X'_m} - \overline{X'_f}) + \overline{X'_f}(\alpha_m - \alpha_f) \qquad \textbf{(10)}$$

The first term on the right hand side of the equation 9 represents the part of the total logarithmic wage difference that occurs because of the difference in average characteristics across gender. The second term is usually construed as discrimination, but also accounts for possible unobserved personal-characteristics. The coefficients of this equation (α) may be interpreted as prices of skills workers may have associated with the worker individual characteristic, X.

The comparisons of these coefficients are interesting for policy. In a perfect world, the coefficients for persons with the same characteristics would be equal due to an

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equal zero and setting them equal to each other.

equal-employment-opportunity and anti-discrimination labor market. Since this is not always the case, these findings can be important to help shape anti-segregation laws to close gender-wage differentials.

VI. Results

Earnings function analysis

I have estimated the following four alternative specifications of earnings function:

Specification 1: ln(Y) = f(education, age)

Specification 2: ln(Y) = f(education, age, marital status, if work permanent, location of firm)

Specification 3: ln(Y) = f(education, age, marital status, if work permanent, location of firm, occupation, industry)

Specification 4: ln(Y) = f(education, age, marital status, if work permanent, location of firm, occupation, industry, occupation feminization)

Specification 1 is a pure human capital model. Specification 2 includes additional characteristics of the individual and the nature of the job. Specification 3 adds the occupation and the industry of the individual. Specification 4 adds occupation feminization. By doing this we can see if the additional variables influence wages. For each specification, I estimated earnings functions for the pooled sample of men and women, and separately for men and women. The dependent variable is the natural logarithm of monthly earnings.

A review of the results presented in Tables 3-6, seen below, shows that the

goodness of fit (R-square and adjusted R-square) improves significantly as additional variables are added to the earnings function. For the pooled sample, I tested the improvement in fit from additional explanatory variables using the conventional analysis of variance. Specifically,

$$F = \frac{\frac{(X - Y)}{(K - M)}}{\frac{Z}{(N - K)}}$$

where N = total number of observations

K = number of parameters in the extended specification

M = number of parameters in the shortened specification

X = Regression sum of squares of extended specification

Y = Regression sum of squares of shortened specification

Z = Residual sum of squares of extended specification

Tables 3-6 include four columns: all sexes, all sexes inclusive of the female dummy, all males, and all females. All sexes inclusive of a female dummy will help us show that a female, all things equal, receive a lower wage. The test for this hypothesis is done below.

Table 3: Regression Analysis of Earnings—Specification 1, Basic Human Capital Model

	All sexes		All sexes		Males		Females	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	11.0344	0.0135	11.0936	0.0134	11.1709	0.0159	10.8120	0.0223
Education dummies[1]								
Elementary	0.0545	0.0114	0.0733	0.0113	0.0492	0.0140	0.1102	0.0181
Secondary	0.3071	0.0103	0.3130	0.0102	0.2534	0.0122	0.3945	0.0169
Higher professional	0.6900	0.0133	0.7262	0.0132	0.6515	0.0179	0.8069	0.0201
University	0.9493	0.0124	0.9731	0.0123	0.9883	0.0154	1.0018	0.0196
Age dummies[2]								
26 to 35 years	0.4147	0.0100	0.4282	0.0099	0.4587	0.0119	0.4146	0.0164
36 to 45 years	0.6736	0.0100	0.6919	0.0098	0.6338	0.0119	0.7624	0.0162
46 to 55 years	0.7777	0.0103	0.7872	0.0102	0.7040	0.0123	0.8932	0.0169
56 years or more	0.9748	0.0192	0.9112	0.0190	0.8476	0.0192	1.2994	0.0741
Female dummy			-0.1694	0.0048				
R square	0.3159		0.3349		0.3529		0.3191	
Adjusted R square	0.3158		0.3348		0.3527		0.3188	
F-statistic	2498.02		2421.12		1516.470		1231.280	
Reg. sum of square	4988.8052		5288.739		2502.8877		2713.810	
d.f.	8		9		8		8	
Residual sum of square	10803.572		10503.6375		4589.3456		5791.9822	
df.	43277		43276		22245		21023	
N	43286		43286		22254		21032	

[1] The omitted category was below elementary education.

[2] The omitted category was 25 years or below in age.

Not statistically significant at the 5 percent level.

All variables not marked with # are significant at the 1 percent level, using a two-tailed test.

Table 4: Regression Analysis of Earnings—Specification 2

	All sexes		All sexes		Males		Females	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	11.0855	0.0161	11.1794	0.0160	11.3588	0.0192	10.8078	0.0257
Education dummies[1]								
Elementary	0.0744	0.0108	0.0948	0.0107	0.0779	0.0130	0.1254	0.0174
Secondary	0.3276	0.0098	0.3350	0.0097	0.2693	0.0114	0.4183	0.0163
Higher professional	0.6855	0.0127	0.7232	0.0126	0.6413	0.0166	0.8015	0.0194
University	0.9277	0.0120	0.9537	0.0118	0.9538	0.0145	0.9819	0.0190
Age dummies[2]								
26 to 35 years	0.3338	0.0098	0.3381	0.0097	0.3465	0.0114	0.3483	0.0163
36 to 45 years	0.5364	0.0104	0.5381	0.0102	0.4434	0.0122	0.6394	0.0169
46 to 55 years	0.6218	0.0109	0.6119	0.0107	0.4883	0.0128	0.7509	0.0178
56 years or more	0.7973	0.0190	0.7085	0.0188	0.5982	0.0190	1.1209	0.0715
Unmarried person dummy	0.0149	0.0053	-0.0110	0.0053 *	-0.0737	0.0066	0.0424	0.0082
Permanent worker dummy	0.2204	0.0059	0.2137	0.0058	0.1993	0.0074	0.2167	0.0089
Location (Region) dummy[3]								
North east Slovenia	-0.0934	0.0082	-0.0925	0.0081	-0.1146	0.0101	-0.0659	0.0125
South east Slovenia	-0.0638	0.0108	-0.0648	0.0106	-0.0717	0.0133	-0.0475	0.0164
Central & North west Slovenia	0.0238	0.0079	0.0230	0.0078	0.0091	0.0098 #	0.0395	0.0121
Size of enterprise dummy[4]								
Less than 10 workers	-0.3333	0.0065	-0.3478	0.0064	-0.3684	0.0077	-0.3269	0.0106
10 to 49 workers	-0.1377	0.0069	-0.1438	0.0067	-0.1744	0.0084	-0.1135	0.0106
50 to 99 workers	-0.1072	0.0078	-0.0932	0.0077	-0.1303	0.0106	-0.0616	0.0111
100 to 249 workers	-0.0962	0.0072	-0.0957	0.0071	-0.1163	0.0090	-0.0704	0.0109
Female dummy			-0.1806	0.0046				
R square	0.3851		0.4062		0.4493		0.3741	
Adjusted R square	0.3848		0.4059		0.4489		0.3736	
F-statistic	1593.92		1644.04		1067.07		738.69	
Reg. sum of square	6081.48		6414.23		3186.40		3181.66	
d.f.	17		18		17		17	
Residual sum of square	9710.90		9378.15		3905.84		5324.1329	
df.	43268		43267		22236		21014	
N	43286		43286		22254		21032	

[1] The omitted category was below elementary education.

[2] The omitted category was 25 years or below in age.

[3] The omitted category was West and South west Slovenia

[4] The omitted category was enterprises with 250 workers or more.

Table 5: Regression Analysis of Earnings—Specification 3

	All sexes		All sexes		Males		Females	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	11.0902	0.0169	11.2053	0.0168	11.3702	0.0204	10.8413	0.0267
Education dummies[1]								
Elementary	0.0600	0.0106	0.0763	0.0104	0.0657	0.0127	0.0858	0.0168
Secondary	0.2294	0.0102	0.2210	0.0100	0.2026	0.0116	0.2128	0.0173
Higher professional	0.4245	0.0141	0.4381	0.0139	0.4347	0.0181	0.3948	0.0219
University	0.6072	0.0148	0.6168	0.0145	0.7139	0.0180	0.5129	0.0234
Age dummies[2]								
26 to 35 years	0.3014	0.0096	0.3035	0.0094	0.3179	0.0112	0.3070	0.0157
36 to 45 years	0.4923	0.0102	0.4915	0.0100	0.4082	0.0120	0.5794	0.0164
46 to 55 years	0.5655	0.0107	0.5528	0.0105	0.4461	0.0126	0.6703	0.0173
56 years or more	0.7233	0.0186	0.6383	0.0184	0.5511	0.0187	1.0451	0.0688
Unmarried person dummy	0.0126	0.0052 *	-0.0121	0.0051 *	-0.0690	0.0065	0.0346	0.0079
Permanent worker dummy	0.1997	0.0058	0.1938	0.0057	0.1795	0.0073	0.1947	0.0087
Location (Region) dummy[3]								
North east Slovenia	-0.0932	0.0080	-0.0904	0.0078	-0.1170	0.0100	-0.0511	0.0120
South east Slovenia	-0.0596	0.0106	-0.0555	0.0104	-0.0731	0.0131	-0.0240	0.0159 #
Central & North west Slovenia	-0.0009	0.0078 #	-0.0035	0.0076 #	-0.0173	0.0097 #	0.0174	0.0117 #
Size of enterprise dummy[4]								
Less than 10 workers	-0.3276	0.0071	-0.3318	0.0070	-0.3571	0.0086	-0.3118	0.0114
10 to 49 workers	-0.1172	0.0070	-0.1241	0.0069	-0.1491	0.0087	-0.1016	0.0107
50 to 99 workers	-0.0939	0.0081	-0.0918	0.0079	-0.1051	0.0107	-0.0816	0.0117
100 to 249 workers	-0.0749	0.0072	-0.0762	0.0071	-0.0904	0.0091	-0.0563	0.0107
Occupation dummy[5]								
Manager	0.4609	0.0148	0.4301	0.0145	0.3498	0.0167	0.6129	0.0269
Professional	0.3568	0.0133	0.3575	0.0130	0.2618	0.0172	0.4980	0.0197
Technician	0.2477	0.0098	0.2587	0.0097	0.2017	0.0123	0.3565	0.0151
Clerk	0.1255	0.0102	0.1828	0.0101	0.0951	0.0145	0.2748	0.0149
Service and sales	0.0374	0.0103	0.0711	0.0102	0.0456	0.0139	0.1281	0.0151
Craft and related	0.1174	0.0098	0.0627	0.0097	0.0420	0.0112	0.0958	0.0211
Plant and machine operator	0.0448	0.0091	0.0328	0.0090	0.0373	0.0111	0.0272	0.0146 #
Industry dummy[6]								
Electricity	0.1208	0.0185	0.0827	0.0182	0.0791	0.0189	0.0420	0.0410 #
Construction	0.0605	0.0106	0.0173	0.0104 #	0.0148	0.0105 #	-0.0257	0.0285 #
Wholesale and retail	-0.0343	0.0081	-0.0306	0.0080	-0.0295	0.0099	-0.0411	0.0130
Hotels and restaurants	-0.0824	0.0139	-0.0639	0.0137	-0.1205	0.0204	-0.0341	0.0191 #
Financial intermediation	0.2070	0.0146	0.2274	0.0143	0.2223	0.0226	0.2090	0.0194
Transport and storage	0.1171	0.0097	0.0667	0.0096	0.0469	0.0103	0.0757	0.0204
Real estate	-0.0316	0.0102	-0.0385	0.0100	-0.0786	0.0122	-0.0064	0.0165 #
Public administration	0.1008	0.0105	0.0941	0.0103	0.1302	0.0133	0.0228	0.0160 #
Education	-0.0127	0.0107 #	0.0401	0.0105	-0.0457	0.0178	0.0370	0.0147 *
Health	0.0810	0.0093	0.1241	0.0092	0.0405	0.0147	0.1419	0.0129
Other social and personal services	0.0945	0.0139	0.1064	0.0137	0.1294	0.0183	0.0812	0.0203
Female dummy			-0.2032	0.0050				
R square	0.4196		0.4413		0.4762		0.4236	
Adjusted R square	0.4191		0.4409		0.4754		0.4227	
F-statistic	891.82		947.41		575.4		440.74	
Reg. sum of square	6621.448		6964.427		3372.8208		3602.7913	
d.f.	35		36		35		35	
Residual sum of square	9158.641		8815.663		3709.9212		4901.4098	
df.	43174		43173		22152		20986	
N	43210		43210		22188		21022	

[1] The omitted category was below elementary education.
[2] The omitted category was 25 years or below in age.
[3] The omitted category was West and South west Slovenia
[4] The omitted category was enterprises with 250 workers or more.
[5] The omitted category was elementary (unskilled) occupations.
[6] The omitted category was manufacturing.

Not statistically significant at the 5 percent level.
* Significant at the 5 percent level, using a two-tailed test.
All variables not marked with # or * are significant at the 1 percent level, using a two-tailed test.

Table 6: Regression Analysis of Earnings—Specification 4

	All sexes		All sexes		Males		Females	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	11.0128	0.0175	11.1971	0.0181	11.3301	0.0240	10.8232	0.0275
Education dummies[1]								
Elementary	0.0681	0.0105	0.0767	0.0104	0.0675	0.0127		0.0168
Secondary	0.2266	0.0101	0.2202	0.0100	0.2007	0.0116		0.0173
Higher professional	0.4322	0.0141	0.4355	0.0139	0.4358	0.0181		0.0219
University	0.6014	0.0148	0.6111	0.0146	0.7047	0.0181		0.0234
Age dummies[2]								
26 to 35 years	0.2979	0.0096	0.3024	0.0094	0.3181	0.0112	0.3071	0.0157
36 to 45 years	0.4865	0.0101	0.4898	0.0100	0.4082	0.0120	0.5795	0.0164
46 to 55 years	0.5555	0.0107	0.5510	0.0105	0.4458	0.0127	0.6707	0.0173
56 years or more	0.6971	0.0185	0.6369	0.0183	0.5502	0.0187	1.0436	0.0687
Unmarried person dummy	0.0054	0.0052 #	-0.0122	0.0051 *	-0.0692	0.0065	0.0342	0.0079
Permanent worker dummy	0.1975	0.0058	0.1944	0.0057	0.1797	0.0073	0.1952	0.0087
Location (Region) dummy[3]								
North east Slovenia	-0.0916	0.0080	-0.0891	0.0078	-0.1145	0.0100	-0.0487	0.0120
South east Slovenia	-0.0572	0.0105	-0.0540	0.0104	-0.0719	0.0131	-0.0213	0.0159 #
Central & North west Slovenia	-0.0017	0.0077 #	-0.0025	0.0076 #	-0.0147	0.0097 #	0.0186	0.0117 #
Size of enterprise dummy[4]								
Less than 10 workers	-0.3254	0.0071	-0.3312	0.0070	-0.3566	0.0086	-0.3113	0.0114
10 to 49 workers	-0.1163	0.0070	-0.1245	0.0069	-0.1484	0.0087	-0.1031	0.0107
50 to 99 workers	-0.0905	0.0081	-0.0923	0.0079	-0.1042	0.0107	-0.0824	0.0117
100 to 249 workers	-0.0759	0.0072	-0.0764	0.0071	-0.0892	0.0091	-0.0574	0.0107
Occupation dummy[5]								
Manager	0.4601	0.0154	0.4496	0.0152	0.3617	0.0176	0.6255	0.0279
Professional	0.3778	0.0137	0.3651	0.0135	0.2569	0.0179	0.5079	0.0203
Technician	0.2698	0.0101	0.2687	0.0100	0.2121	0.0131	0.3583	0.0152
Clerk	0.1768	0.0105	0.1882	0.0104	0.0901	0.0148	0.2898	0.0154
Service and sales	0.0638	0.0117	0.0661	0.0115	0.0060	0.0155 #	0.1402	0.0174
Craft and related	0.0621	0.0104	0.0564	0.0102	0.0341	0.0116	0.1186	0.0217
Plant and machine operator	0.0398	0.0092	0.0301	0.0091	0.0293	0.0112	0.0359	0.0149 *
Industry dummy[6]								
Electricity	0.0978	0.0185	0.0807	0.0183	0.0766	0.0189	0.0483	0.0410 #
Construction	0.0293	0.0107	0.0124	0.0106 #	0.0092	0.0107 #	-0.0181	0.0286 #
Wholesale and retail	-0.0406	0.0082	-0.0372	0.0081	-0.0377	0.0100	-0.0402	0.0131
Hotels and restaurants	-0.0670	0.0139	-0.0667	0.0137	-0.1369	0.0206	-0.0276	0.0192 #
Financial intermediation	0.2231	0.0146	0.2217	0.0144	0.2194	0.0228	0.2125	0.0196
Transport and storage	0.0765	0.0099	0.0621	0.0098	0.0447	0.0105	0.0782	0.0205
Real estate	-0.0379	0.0103	-0.0389	0.0101	-0.0749	0.0124	0.0013	0.0166 #
Public administration	0.0844	0.0107	0.0854	0.0105	0.1346	0.0138	0.0180	0.0161 #
Education	0.0259	0.0112 *	0.0409	0.0110	-0.0381	0.0182 *	0.0485	0.0154
Health	0.1140	0.0097	0.1223	0.0096	0.0348	0.0149 *	0.1514	0.0135
Other social and personal services	0.1055	0.0139	0.1047	0.0137	0.1297	0.0183	0.0844	0.0205
Proportion in occupation female dummy[7]								
≤ 20 percent	0.1721	0.0080	0.0237	0.0090	0.0521	0.0139	-0.0182	0.0204 #
> 20 but ≤ 40 percent	0.0985	0.0079	-0.0142	0.0085 #	0.0323	0.0140 *	-0.0222	0.0130 #
> 40 but ≤ 60 percent	0.0916	0.0085	0.0185	0.0086 *	0.0294	0.0150 *	0.0515	0.0118
> 60 but ≤ 80 percent	0.0481	0.0086	0.0172	0.0085 *	0.1050	0.0160	0.0012	0.0111 #
Female dummy			-0.2007	0.0058				
R square	0.4261		0.4417		0.4774		0.4245	
Adjusted R square	0.4256		0.4412		0.4765		0.4234	
F-statistic	821.81		853.99		518.84		396.85	
Reg. sum of square	6723.7259		6970.769		3381.50		3610.09	
d.f.	39		40		39		39	
Residual sum of square	9056.3636		8809.32		3701.245		4894.11	
df.	43170		43169		22148		20982	
N	43210		43210		22188		21022	

[1] The omitted category was below elementary education.
[2] The omitted category was 25 years or below in age.
[3] The omitted category was West and South west Slovenia
[4] The omitted category was enterprises with 250 workers or more.
[5] The omitted category was elementary (unskilled) occupations.
[6] The omitted category was manufacturing.
[7] The omitted category was feminization of more than 80 percent.

Not statistically significant at the 5 percent level.
* Significant at the 5 percent level, using a two-tailed test.
All variables not marked with # or * are significant at the 1 percent level, using a two-tailed test.

Table 7 displays the analysis of variance results of improvement in fit from the additional explanatory variables. The computed F-statistic of the various specification comparisons are all greater than the critical F-ratio at the 1 percent significance level.

Table 7: Analysis of variance results of improvement
In fit from additional explanatory variables

	Computed F-Ratio	Critical F-Ratio (1% level)
Specification 2 compared with Specification 1	576.95	2.41
Specification 3 compared with Specification 2	149.70	1.88
Specification 4 compared with Specification 3	7.77	3.52

Source: Calculated from Tables 3-6.

Thus, for the pooled sample, the explained variation in earnings increases from 33 percent in the simple human capital model (Specification 1) to 44.2% in the fully extended model (Specification 4). Specification 2 and 3 confirm that the introduction of marital status, job security, location of firm, occupation and industry results in a significant improvement in the goodness in fit for the explanatory power. A comparison of Specifications 3 and 4 indicates that although the improvement in fit is significant at the 1 percent level, the increase in the explained variation is extremely small, suggesting that occupation feminization is not a major factor in explaining gender differences in earnings in Slovenia. This is at odds with the results obtained in western countries and some transition countries. In the discussion that follows, I focus on the findings of Specification 4 (Table 6).

In the pooled equation for Specification 4, when a dummy variable for women is included, the coefficient on that variable is negative and significant at the 1 percent level:

being a woman reduces earnings by 18.2 percent[9]—much more than the simple observed differential in average earnings of 13.46 percent. To allow for the likely event that the difference in earnings between men and women is affected by more than just a shift in the intercept, we estimate sex-specific earnings functions. Earnings functions estimated separately for men and women indicate that the wage determination process is different between genders. We test the null hypothesis $\beta_{men} = \beta_{women}$ with a stability (Chow) test for the sex-specific regressions:

$$F^* = \frac{[\Sigma e^2_{pooled} - (\Sigma e^2_{men} + \Sigma e^2_{women})] / K}{(\Sigma e^2_{men} + \Sigma e^2_{women}) / (N_{men} + N_{women} - 2K)}$$

The computed F-statistic is 57.83, greater than the critical F ratio at the 1 percent level of 1.59. Thus, I am able to reject the null hypothesis that pay structure for men and women is the same.

I now discuss the salient differences between genders in the importance of the various factors on earnings. For both men and women, the relationship between education and earnings is nonlinear: the incremental benefit from education rises with additional education acquired. The returns to education are higher for women than for men up to the elementary school level. Beyond the elementary school level, the incremental returns from additional education are higher for men than for women as shown in Table 8 below. Thus, additional two years of higher professional education increases earnings relative to secondary education by 26.5% (on average 13.25% for each year) for men and 19.7% (on average 9.8% for each year) for women. Obtaining four years of university education

[9] The relative effect of a dummy variable on earnings in a semi-logarithmic specification is given by 100*[exp(c)-1], where c is the coefficient of the dummy variable. See Halvorsen and Palmquist (1980).

increases earnings relative to secondary education by 65.5% (on average 15.4% for each year) for men and 34.2% (on average 8.5% for each year) for women.

Table 8: Incremental Returns to Education (in percent)

Reference Level	Base Level	Years of additional education	Men	Women
Elementary	Below Elementary		7.0	9.1
Secondary	Elementary	5	14.2	13.4
Higher Professional	Secondary	2	26.5	19.7
University	Secondary	4	65.5	34.2

Source: Table 6

The finding on age differs from that in western industrial countries and that in most transition economies where typically a concave age-earnings profile prevails. In Slovenia, earnings increase with age throughout. This finding also receives support from a recent study by Vodopivec (2004). According to Vodopivec, the observed pattern suggests a heavy influence of the institutional setup on wages. In particular, regulations on collective agreements mandate an increase in the basic wage with work experience.

Another surprising finding is that the age-earnings profile is steeper for women than for men, suggesting that the return to experience is higher for women. Normally, it is expected that women will have a flatter age-earnings profile because of the likelihood of women interrupting their work experience on account of child bearing or because they may prefer to be engaged in activities which give them flexibility to take time off to look after family matters. The contrary finding for Slovenia may be an indication that perhaps collective agreements are stronger in the industries where women have a greater representation or that the internal labor market is stronger for women—that is, they are in jobs where there many steps in the job ladder. It is not possible to test these conjectures with the available data.

Marital status has a significant but opposite influence on earnings of men and

women. Unmarried men are paid 6.7 percent less than their married counterparts. Several other studies have found a similar result (e.g., Sorensen (1990) for the United States, and Adamcik and Bedi (2003) for Poland). The common explanations are that married men have greater attachment to the labor market because of their family obligations, and that marriage is a proxy for unmeasured attributes of productivity. Whereas, in the case of women, unmarried persons are paid 3.5 percent more than those who are married. It is possible that for women marriage is not associated with greater attachment to the labor market. Married women are likely to put more emphasis on domestic duties and to economize on the efforts they devote to market work.

As might be expected, being a permanent worker has a premium on earnings, and the effect is stronger for women. Permanent workers earn 19.7 percent more than temporary workers among men, while the earnings differential is 21.6 percent among women.

For both sexes, earnings rise progressively as the size of the enterprise increases. For example, men who work in enterprises with fewer than 10 workers have 70 percent lower earnings than employees in establishments with 250 or more workers (the omitted group). The earnings differential relative to the omitted group narrows to 8.5 percent for male employees in establishments with 100–249 workers. Among women, the corresponding earnings differentials for these two enterprise size groups are 73 percent and 5.5 percent, respectively. Higher earnings in larger enterprises are likely to reflect the influence of labor unions, the desire of employers to minimize labor turnover, on-the-job training opportunities and the operation of internal labor markets.

Occupation and industry affiliation have significant impact on the earnings of

both men and women. Systematic earnings differences between occupations and industry reflect specific skill variations or compensating wage differentials resulting from differences in job characteristics. It is particularly striking that in Slovenia the occupation-specific effects for women are higher than those for men, especially in white collar and service occupations. For managers and professionals, the gender differences in the coefficients are as large as 30 log points[10] (or about 35%) in favor of women. Among semi-skilled white collar occupations (clerks and technicians), the earnings differentials are 15–20 log points (16-22%) in favor of women. While these findings are interesting, they are not easily explained.

The gender differences in the industry-specific effects are smaller than in the case of occupation-specific effects. Also, the differences do not systematically favor women. The salient gender differences are as follows: in hotels and restaurants, real estate, education, and health sectors, the coefficients for women are about 7–12 log points (7-13%) higher than those for men. However, in public administration and in other social and personal services, men have an advantage of 4.5–12.5 (4-13%) log points over women.

As noted earlier, occupation feminization has a weak, though significant, direct effect on earnings in Slovenia. For men, the coefficients on all the dummies representing up to 80 percent feminization are positive and significant (in relation to the base omitted category of 80–100 percent feminization). This is to be expected, but the ordering of the coefficients—the coefficient of the 60–80 percent feminization dummy is higher than for lower levels of feminization—is not consistent with expectations. For women, only the

[10] Log points means the result in the difference of log values of individual variables. Also see footnote 9 on converting into percentages.

dummy for 40–60 percent feminization is significant. These findings are in sharp contrast to the results obtained in other countries and not easily explained. The results suggest that although there is a tendency in Slovenia for women to be streamlined into female-dominated occupations, the institutional arrangements are such that there is no marked penalty associated with employment in female-dominated occupations.

Decomposition of observed earnings differentials

Having estimated the wage equations, I decompose the observed earnings gap between men and women into two components: (i) that due to gender differences in characteristics ("explained" difference); and (ii) that due to gender differences in the coefficients of the wage equations ("unexplained" difference), caused by discrimination and omitted variables. I also calculate how much of the "explained" difference can be ascribed to specific set of characteristics. I do not undertake a similar breakdown for the "unexplained" difference because, as Oaxaca and Ransom (1999) have shown, the separate contributions of sets of dummy variables to the "unexplained" difference are not invariant with respect to the choice of the left-out reference groups.

Following the standard practice, the decomposition is based on three alternative assumptions: first, that the earnings function for men also applies to women; second, that the earnings function for women also applies to men; and third, that a weighted average of the separately estimated wage structures for men and women represents the non-discriminatory wage structure. The decompositions predicated on the earnings function for men and women provide the upper and lower bound of the estimates. The non-discriminatory wage structure should lie somewhere in between. I have used the

proportion of men and women in the sample as weights for calculating the non-discriminatory wage structure.

The results of the decomposition exercise are shown in Table 9:

Table 9. Decomposition of Gender Earnings Differential

	Based on earnings function for men	Based on earnings function for women	Based on weighted average
Total difference	0.1346	0.1346	0.1346
Difference in characteristics	-0.0448	-0.0764	-0.0602
Education	-0.0212	-0.0144	-0.0179
Age	-0.0033	0.0075	0.0020
Unmarried person	-0.0077	0.0038	-0.0021
Permanent worker	0.0027	0.0030	0.0029
Region	0.0004	0.0003	0.0003
Size of firm	-0.0163	-0.0145	-0.0154
Occupation	-0.0098	-0.0354	-0.0223
Industry	0.0019	-0.0152	-0.0064
Feminization of occupation	0.0085	-0.0114	-0.0012
Difference in coefficients	0.1795	0.2110	0.1948
Male advantage			0.1019
Female advantage			0.0914

Source: Calculated from Table 1 and Table 6.

The most striking finding is that the contribution of the "unexplained" difference (due to difference in coefficients) exceeds the observed earnings gap. The "explained" difference is negative—that is, men would actually earn less than women by 0.045–0.06 log points on the basis of the given differences in characteristics. The main sources of the negative "explained" gap are education, size of establishment, and occupation. Women's advantage in educational attainment results in earnings differential of 0.018–0.021 log points in favor of women. In addition, having a smaller proportion employed in smaller size establishments contributes to a wage differential of about 0.015 log points in women's favor. Similarly, by virtue of having a higher proportion than men employed as

technicians and clerks instead of manual occupations, women have an advantage in earnings of 0.01–0.2 log points. Further breakdown of these results will continue in the next subsection.

Specific Occupation Results

Even though occupational segregation does not explain significant differences in the gender wage differential amongst the entire working population, it is not apparent that this is the case within specific occupations. In particular, in this data set men and women have significant numbers in Unskilled Workers, 8.3% and 10.8% respectively, Technicians, 15.8% and 19.3% respectively, and Plant & Machine Operators, 22.2% and 15.3% respectively.

The results of the three categories, which have relatively equal numbers of males and females, reveal some interesting findings. In the three categories that were analyzed, the overall female dummy variable is much higher than our 13.46% mark for the overall population. This indicates that for the other occupations not examined in detail in this analysis have a lower difference. However, given that the percentages of males and women are quite low, such as managers (5% for males 2% for females), in each of the other categories in the data set, it would be difficult to conclude the significance of occupational segregation. The study finds that while occupational segregation does not contribute significantly to the gender differential of Unskilled Workers and Technicians, it plays a significant role in Plant & Machine Operators[11].

In order to fully analyze this factor, we must look at the mean value of variables

[11] The mean value of variables for Unskilled Workers and Technicians are listed in Appendix A (Tables A1 and A2, respectively). Regression analysis has also been conducted and placed in Appendix A for Unskilled Workers and Technicians (Tables A3 and A4, respectively).

for Plant & Machine Operators. Table 10 lists the mean value of variables for Plant & Machine Operators. Occupational segregation can be shown through viewing the section in each table listed: proportion in occupation female. Occupational segregation is present in Plant & Machine Operators: 54% of males worked in occupations that had 80% or more males and 44% of females worked in occupations that had 80% or more females. Therefore, given these results, we can perform the same regression exercises that we conducted for the entire data sample.

Table 10: Mean Value of Variables within Plant & Machine Operators

	All Plant & Machine Operators		Male Plant & Machine operators		Female Plant & Machine operators	
	Mean	Std Error	Mean	Std error	Mean	Std error
Education						
Below elementary	0.1489	0.0039	0.1413	0.0050	0.1607	0.0065
Elementary	0.3116	0.0051	0.2265	0.0060	0.4425	0.0088
Secondary	0.5370	0.0055	0.6296	0.0069	0.3946	0.0086
Higher professional	0.0018	0.0005	0.0022	0.0007	0.0012	0.0006
University	0.0006	0.0003	0.0004	0.0003	0.0009	0.0005
Age						
25 years or below	0.0626	0.0027	0.0725	0.0037	0.0473	0.0037
26 to 35 years	0.3005	0.0051	0.3028	0.0065	0.2971	0.0081
36 to 45 years	0.3351	0.0052	0.3066	0.0066	0.3790	0.0086
45 to 55 years	0.2878	0.0050	0.2955	0.0065	0.2759	0.0079
56 years or more	0.0140	0.0013	0.0227	0.0021	0.0006	0.0004
Unmarried person dummy	0.3408	0.0052	0.4021	0.0070	0.2463	0.0076
Permanent worker dummy	0.8007	0.0044	0.7936	0.0058	0.8116	0.0069
Location of enterprise (Region)						
North east Slovenia	0.3940	0.0054	0.3688	0.0069	0.4329	0.0087
South east Slovenia	0.1306	0.0037	0.1194	0.0046	0.1479	0.0063
Central & North west Slovenia	0.3555	0.0053	0.3797	0.0069	0.3183	0.0082
West and South west Slovenia	0.1198	0.0036	0.1322	0.0048	0.1009	0.0053
Size of enterprise						
Less than 10 workers	0.1149	0.0035	0.1526	0.0051	0.0570	0.0041
10 to 49 workers	0.0984	0.0033	0.1164	0.0046	0.0707	0.0045
50 to 99 workers	0.0818	0.0030	0.0814	0.0039	0.0825	0.0049
100 to 249 workers	0.1628	0.0041	0.1449	0.0050	0.1903	0.0069
250 workers or more	0.5421	0.0055	0.5048	0.0071	0.5995	0.0086
Proportion in occupation female						
≤ 20 percent	0.3479	0.0053	0.5430	0.0071	0.0476	0.0038
> 20 but ≤ 40 percent	0.1515	0.0040	0.1842	0.0055	0.1012	0.0053
> 40 but ≤ 60 percent	0.1474	0.0039	0.1307	0.0048	0.1732	0.0067
> 60 but ≤ 80 percent	0.1474	0.0039	0.0923	0.0041	0.2323	0.0075
> 80 percent	0.2057	0.0045	0.0498	0.0031	0.4457	0.0088

The regression analysis of earnings on Plant & Machine Operators can be seen in Table 11 (below). The female dummy here again is negative and significant, which confirms the final groups wage gap. The differential is 25.1% which is much higher than our overall sample. Each coefficient is significant and positive. This concludes that there is in fact occupational segregation amongst Plant & Machine Operators.

Table 11: Regression Analysis of Earnings on Plant & Machine Operators

	All Plant & Machine Operators		All Plant & Machine Operators		Male Plant & Machine Operators		Female Plant & Machine Operators	
	Coefficient	Std Error	Coefficient	Std Error	Coefficient	Std Error	Coefficient	Std Error
Constant	11.20645	0.025709	11.42738	0.026232	11.39211	0.033627	11.17271	0.044135
Education dummies[1]								
Elementary	0.012078	0.012333 #	0.03258	0.011899	0.024825	0.015362 #	0.026408	0.018813
Secondary	0.130266	0.011967	0.121717	0.011525	0.13493	0.013761	0.069929	0.020421
Higher professional	0.330703	0.089496	0.356188	0.086155	0.312044	0.094091	0.419521	0.179999
University	0.300599	0.154152 #	0.355121	0.148404 *	0.132481	0.219029 #	0.536034	0.206159
Age dummies[2]								
26 to 35 years	0.267994	0.017417	0.265262	0.016767	0.265826	0.018815	0.265083	0.032731
36 to 45 years	0.369682	0.018326	0.372306	0.017641	0.326818	0.020166	0.42156	0.033722
46 to 55 years	0.401724	0.019165	0.395905	0.01845	0.340197	0.021036	0.460043	0.035363
56 years or more	0.449154	0.037078	0.394595	0.035757	0.34571	0.035445	0.216309	0.253773
Unmarried person dummy	0.013771	0.00893 #	-0.018265	0.008688 *	-0.055584	0.010231	0.037049	0.015584
Permanent worker dummy	0.118095	0.010257	0.116639	0.009874	0.120953	0.01161	0.103107	0.017634
Location (Region) dummy[3]								
North east Slovenia	-0.127486	0.012746	-0.119493	0.012273	-0.124419	0.014221	-0.108099	0.02262
South east Slovenia	-0.060999	0.015434	-0.055729	0.014858	-0.057605	0.017696	-0.074863	0.02639
Central & North west Slovenia	-0.020146	0.012861 #	-0.022043	0.01238 #	0.007777	0.014235 #	-0.074003	0.023093
Size of enterprise dummy[4]								
Less than 10 workers	-0.290217	0.012965	-0.303482	0.012491	-0.34953	0.013389	-0.160315	0.029115
10 to 49 workers	-0.195023	0.013392	-0.207008	0.0129	-0.229246	0.014514	-0.175176	0.025258
50 to 99 workers	-0.117321	0.014339	-0.126097	0.013807	-0.14543	0.016688	-0.10554	0.023706
100 to 249 workers	-0.10556	0.010807	-0.106594	0.010403	-0.115549	0.013195	-0.092187	0.01662
Proportion in occupation female dummy[5]								
≤ 20 percent	0.331677	0.01113	0.14412	0.013013	0.218044	0.021191	0.161733	0.030568
> 20 but ≤ 40 percent	0.226079	0.013045	0.086429	0.013708	0.169819	0.022579	0.047845	0.022076
> 40 but ≤ 60 percent	0.292335	0.013075	0.198117	0.013122	0.278458	0.023392	0.173859	0.018158
> 60 but ≤ 80 percent	0.153155	0.013214	0.095682	0.012919	0.193464	0.024852	0.069409	0.016721
Female dummy			-0.251699	0.009912				
R square	0.285		0.3376		0.3192		0.1782	
Adjusted R square	0.2832		0.3358		0.3163		0.1728	
F-statistic	154.32		188.29		109.81		32.92	
Reg. sum of square	381.996		452.4291		219.6116		86.91995	
d.f.	21		22		21		21	
Residual sum of square	958.2967		887.8636		468.4561		400.8954	
d.f.	8130		8129		4919		3189	
N	8152		8152		4941		3211	

[1] The omitted category was below elementary education.
[2] The omitted category was 25 years or below in age.
[3] The omitted category was West and South west Slovenia
[4] The omitted category was enterprises with 250 workers or more.
[5] The omitted category was feminization of more than 80 percent.

Not statistically significant at the 5 percent level.
* Significant at the 5 percent level, using a two-tailed test.
All variables not marked with # or * are significant at the 1 percent level, using a two-tailed test.

Given the regression results, we can decompose the wages further to attribute percentages to specific characteristics. Table 12 (below) displays the decomposition of wages for men as an illustration of the pertinent differences—no material change in the conclusion will apply if we were to apply the female earnings function or the weighted average method of calculating decomposition. The earnings differential between male and female workers who work as plant and machine operators is 30 log points or

approximately 35%[12]. Of this difference, 6.27 log points (6.5%) is explained by differences in characteristics between male and female. The remainder, 23.73 log points (26.8%) is unexplained, which is very large.

Table 12: Summary of Decomposition for Plant & Machine Operators

log y - male	11.89223
log y - female	11.59133
Total difference	0.3009
Due to characteristics (Explained)	0.062689
Education	0.026587
Age	-0.007877
Marital status	-0.00866
permanent status	-0.00218
Region	0.0101
Enterprise size	-0.038477
Occupational feminization	0.083196
Due to coefficients(Unexplained)	0.238211

Source: Calculated from Table 10 and 11

As Table 12 indicates, males have a better educational qualification and account for about 2 log points (2.7%). Occupational segregation explains about 8 log points (8.7%), which is quite large and significant. This is contrary to our general findings for the entire population and the two other occupation-specific groups we looked at. A possible explanation for this could be because Plant & Machine Operators is generally classified as a male-profession males could accept more risky job positions and therefore get paid a higher compensation for it. Women, however, have the advantage in enterprise size, and decrease male earnings by 3.85 log points (3.8%). This leaves a large unexplained differential of 26.8%. As noted in the aggregate exercise it might reflect differences in unmeasured characteristics of men and women, and to some extent discrimination.

[12] 11.89223, the log Y for male, minus 11.59133, the log Y for females

Summary of Findings

The principal findings of this thesis are that there are significant gender differentials in earnings in Slovenia and that the role of "unexplained" factors is substantial. The lower earnings of women cannot be explained by gender differences in measured human capital endowments. Also, although there is a high degree of segregation of jobs along gender lines, this does not contribute much to lower earnings of women relative to men.

One would be temped to conclude from the dominance of "unexplained" difference that gender discrimination is pervasive in Slovenia. However, one needs to be cautious in drawing this conclusion because of other evidence which suggests that women are not always unfairly disadvantaged. For example, the age-earnings profile of women is steeper than that of men, suggesting a higher return to experience. In addition, the occupation-specific effects on earnings systematically favor women. Though, it is of some concern that returns to higher levels of education are lower for women than for men.

What then could account for the large "unexplained" difference in earnings? It can be argued that the difference could be because of gender-associated and productivity-associated factors or compensating differentials for worker skills that have not been captured in the analysis. It is difficult to identify the relative importance of gender discrimination vis-à-vis other unobservable factors on the basis of the available data. Resolving the issue would require specially tailored firm- and individual-level data set.

It could also be that women received lower starting wages than men, when they enter employment but thereafter they are not disadvantaged in how their experience

evolves in the workplace. However, it would require a special opinion survey to confirm this.

VI. Relation to Previous Studies and Conclusion

The relative economic welfare of women is a standard measure for a nation's well-being. However, this aspect is often overlooked while viewing the rapid progression of transition economies after the fall of Communism in Eastern Europe. Slovenia has conquered much of its previous controlled economic state, and has continued to succeed in creating a stable economic environment. It is not clear, however, whether the economic situation of Slovene women has improved with the transition. The paper aimed to analyze the situation of Slovenia and its occupational structures—could the wage differential between men and women be explained by occupational segregation?

As other economists have analyzed differentials, they have paid close attention to personal and firm characteristics. Given the equality of these characteristics, individuals should be given an equal wage. Although there has been much research conducted on explaining the wage differential, occupational segregation is often overlooked as a potential factor that may explain the gap.

This paper has shown that occupational segregation is present in the Slovene economy. Moreover, it also has proven that occupational segregation does *not* provide significant explanation for the overall gender wage gap. This has also been proven for the inter-occupational trend that occurred within the constraints of this data set, with the exception of Plant & Machine Operators. This primary data set from 2001, is the most recent to date from a late-transition economy. It shows, contrary to Orazen and

Vodopivec (1995), women in Slovenia are not doing as well post-transition as they originally had concluded. By particularly looking at specific occupations we can see that women are, in fact, doing significantly worse than 90% of male wages.

This study's findings are contrary to Ogloblin (1999) and consistent with Jurajda (2003). Ogloblin had proved that occupational segregation could explain the gender wage gap in certain transition economies, up to 80%. Jurajda used this same technique and found that in the Czech Republic and Slovakia occupational segregation was not a significant factor. This study supports Jurajda's study. The results may be skewed because the three countries that have been highlighted are economically strong comparatively to their former counterparts. It also may be the case that the market economies in each country, while they support gender separation, do not penalize it.

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Appendix A

Table A1: Mean Value of Variables within Unskilled Workers

	All unskilled workers		Male unskilled workers		Female unskilled workers	
	Mean	Std error	Mean	Std error	Mean	Std error
Education						
Below elementary	0.1942	0.0062	0.2053	0.0093	0.1850	0.0082
Elementary	0.5199	0.0078	0.4798	0.0115	0.5533	0.0105
Secondary	0.2839	0.0070	0.3133	0.0107	0.2594	0.0092
Higher professional	0.0017	0.0006	0.0016	0.0009	0.0018	0.0009
University	0.0002	0.0002	0	0	0.0004	0.0004
Age						
25 years or below	0.0983	0.0046	0.1463	0.0082	0.0584	0.0049
26 to 35 years	0.2805	0.0070	0.3048	0.0106	0.2603	0.0092
36 to 45 years	0.3349	0.0073	0.2734	0.0103	0.3860	0.0102
45 to 55 years	0.2723	0.0069	0.2484	0.0100	0.2922	0.0096
56 years or more	0.0140	0.0018	0.0271	0.0037	0.0031	0.0012
Unmarried person dummy	0.3890	0.0076	0.5266	0.0115	0.2745	0.0094
Permanent worker dummy	0.6502	0.0074	0.6399	0.0111	0.6587	0.0100
Location of enterprise (Region)						
North east Slovenia	0.3926	0.0076	0.4032	0.0113	0.3838	0.0102
South east Slovenia	0.0988	0.0046	0.0910	0.0066	0.1054	0.0065
Central & North west Slovenia	0.3953	0.0076	0.3989	0.0113	0.3922	0.0103
West and South west Slovenia	0.1133	0.0049	0.1069	0.0071	0.1186	0.0068
Size of enterprise						
Less than 10 workers	0.1638	0.0058	0.2282	0.0097	0.1102	0.0066
10 to 49 workers	0.1877	0.0061	0.1995	0.0092	0.1780	0.0080
50 to 99 workers	0.1319	0.0053	0.0915	0.0067	0.1656	0.0078
100 to 249 workers	0.1503	0.0056	0.1383	0.0080	0.1602	0.0077
250 workers or more	0.3663	0.0075	0.3426	0.0109	0.3860	0.0102
Proportion in occupation female						
≤ 20 percent	0.2158	0.0064	0.4388	0.0114	0.0301	0.0036
> 20 but ≤ 40 percent	0.1382	0.0054	0.1872	0.0090	0.0974	0.0062
> 40 but ≤ 60 percent	0.2716	0.0069	0.2968	0.0105	0.2506	0.0091
> 60 but ≤ 80 percent	0	0	0	0	0	0
> 80 percent	0.3745	0.0075	0.0771	0.0062	0.6220	0.0102

Table A2: Mean Value of Variables within Technicians

	All Technicians		Male Technicians		Female Technicians	
	Mean	Std error	Mean	Std error	Mean	Std error
Education						
Below elementary	0.0005	0.0003	0.0006	0.0004	0.0005	0.0003
Elementary	0.0236	0.0017	0.0223	0.0025	0.0246	0.0024
Secondary	0.7269	0.0051	0.7880	0.0069	0.6743	0.0074
Higher professional	0.1777	0.0044	0.1282	0.0057	0.2203	0.0065
University	0.0713	0.0030	0.0609	0.0040	0.0803	0.0043
Age						
25 years or below	0.0443	0.0024	0.0435	0.0035	0.0451	0.0033
26 to 35 years	0.3317	0.0054	0.3256	0.0079	0.3370	0.0074
36 to 45 years	0.3601	0.0055	0.3219	0.0079	0.3929	0.0077
45 to 55 years	0.2441	0.0049	0.2681	0.0075	0.2235	0.0065
56 years or more	0.0197	0.0016	0.0409	0.0034	0.0015	0.0006
Unmarried person dummy	0.3486	0.0055	0.3886	0.0082	0.3141	0.0073
Permanent worker dummy	0.8351	0.0043	0.8466	0.0061	0.8252	0.0060
Location of enterprise (Region)						
North east Slovenia	0.2805	0.0052	0.2664	0.0075	0.2927	0.0071
South east Slovenia	0.0560	0.0026	0.0526	0.0038	0.0588	0.0037
Central & North west Slovenia	0.5766	0.0057	0.6057	0.0083	0.5515	0.0078
West and South west Slovenia	0.0869	0.0032	0.0753	0.0045	0.0970	0.0046
Size of enterprise						
Less than 10 workers	0.1620	0.0042	0.1974	0.0067	0.1315	0.0053
10 to 49 workers	0.1453	0.0041	0.1605	0.0062	0.1322	0.0053
50 to 99 workers	0.0916	0.0033	0.0692	0.0043	0.1108	0.0049
100 to 249 workers	0.1215	0.0038	0.1136	0.0054	0.1283	0.0052
250 workers or more	0.4797	0.0057	0.4592	0.0084	0.4973	0.0078
Proportion in occupation female						
≤ 20 percent	0.0025	0.0006	0.0052	0.0012	0.0002	0.0002
> 20 but ≤ 40 percent	0.3503	0.0055	0.5828	0.0083	0.1502	0.0056
> 40 but ≤ 60 percent	0.3025	0.0053	0.3359	0.0080	0.2738	0.0070
> 60 but ≤ 80 percent	0.0261	0.0018	0.0117	0.0018	0.0384	0.0030
> 80 percent	0.3186	0.0054	0.0644	0.0042	0.5374	0.0078

Table A3: Regression Analysis of Earnings on Unskilled Workers

	All unskilled workers		All unskilled workers		Male unskilled		Female unskilled	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Constant	11.1990	0.0373	11.40401	0.039414	11.72319	0.061518	11.09013	0.054957
Education dummies[1]								
Elementary	0.0247	0.0172 #	0.03406	0.016807 *	0.01082	0.023177 #	0.059066	0.023965 *
Secondary	0.0794	0.0194	0.082397	0.018935	0.06831	0.025063	0.10578	0.028133
Higher professional	0.4496	0.1502	0.445733	0.146871	0.349649	0.209661 #	0.498772	0.201937 *
University	-0.3908	0.3958 #	-0.245674	0.387175 #	(dropped)		-0.2219	0.403213 #
Age dummies[2]								
26 to 35 years	0.2402	0.0237	0.249459	0.023168	0.270998	0.02741	0.246138	0.040258
36 to 45 years	0.3344	0.0249	0.347414	0.024389	0.285587	0.03015	0.413384	0.040968
46 to 55 years	0.3634	0.0268	0.365091	0.026206	0.29655	0.03251	0.444306	0.043585
56 years or more	0.4087	0.0575	0.346373	0.056432	0.334052	0.058476	0.306925	0.158172 #
Unmarried person dummy	0.0115	0.0143 #	-0.021482	0.014193 #	-0.028159	0.019217 #	-0.025857	0.020609 #
Permanent worker dummy	0.1470	0.0136	0.144726	0.013294	-0.12614	0.018427	0.153579	0.01875
Location (Region) dummy[3]								
North east Slovenia	-0.0878	0.0210	-0.090579	0.020499	-0.095472	0.02891	-0.07824	0.02845
South east Slovenia	-0.0294	0.0268 #	-0.02324	0.026245 #	-0.036868	0.037685 #	0.00329	0.035933 #
Central & North west Slovenia	-0.0428	0.0209 *	-0.047474	0.020394 *	-0.053566	0.02878 #	-0.033423	0.02837 #
Size of enterprise dummy[4]								
Less than 10 workers	-0.2890	0.0192	-0.30759	0.018854	-0.276671	0.023671	-0.363745	0.030202
10 to 49 workers	-0.1090	0.0176	-0.123291	0.017251	-0.145378	0.023949	-0.108748	0.024457
50 to 99 workers	-0.0465	0.0199 *	-0.04448	0.019432 *	-0.007266	0.031124 #	-0.063336	0.025039
100 to 249 workers	-0.0560	0.0189	-0.055882	0.018495	-0.129519	0.026726	-0.001606	0.025212 #
Proportion in occupation female dummy[5]								
≤ 20 percent	0.1994	0.0171	0.02657	0.020887 #	0.04571	0.032684 #	-0.132906	0.050158
> 20 but ≤ 40 percent	0.1268	0.0204	0.025322	0.021217 #	0.021059	0.036167 #	0.034262	0.030308 #
> 40 but ≤ 60 percent	0.1194	0.0162	0.036224	0.016931 *	0.016344	0.034019 #	0.0693	0.02109
> 60 but ≤ 80 percent	(dropped)		(dropped)		(dropped)		(dropped)	
Female dummy			-0.222252	0.016103				
R square	0.1876		0.2235		0.2236		0.2094	
Adjusted R square	0.1836		0.2196		0.2157		0.2023	
F-statistic	47.54		56.43		28.19		29.64	
Reg. sum of square	148.021064		176.3726		69.19293		94.99628	
d.f.	20		21		19		20	
Residual sum of square	641.069905		612.7184		240.2436		358.6992	
d.f.	4118		4117		1860		2238	
N	4139		4139		1880		2259	

[1] The omitted category was below elementary education.
[2] The omitted category was 25 years or below in age.
[3] The omitted category was West and South west Slovenia
[4] The omitted category was enterprises with 250 workers or more.
[5] The omitted category was feminization of more than 80 percent.

Not statistically significant at the 5 percent level.
* Significant at the 5 percent level, using a two-tailed test.
All variables not marked with # or * are significant at the 1 percent level, using a two-tailed test.

Table A4: Regression Analysis of Earnings on Technicians

	All technicians		All technicians		Male technicians		Female technicians	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Constant	10.7501	0.2451	10.9770	0.2431	11.0142	0.3136	10.8341	0.3645
Education dummies[1]								
Elementary	0.3336	0.2447 #	0.2955	0.2421 #	0.3995	0.3113 #	0.1648	0.3642 #
Secondary	0.5059	0.2421 *	0.4541	0.2395 #	0.5636	0.3076 #	0.3184	0.3608 #
Higher professional	0.6610	0.2424	0.6177	0.2399	0.7563	0.3082 *	0.4622	0.3612 #
University	0.7424	0.2430	0.7018	0.2404	0.8893	0.3090	0.5190	0.3619 #
Age dummies[2]								
26 to 35 years	0.5834	0.0289	0.5790	0.0286	0.5514	0.0385	0.6018	0.0414
36 to 45 years	0.8072	0.0300	0.8025	0.0297	0.6830	0.0404	0.8860	0.0426
46 to 55 years	0.8704	0.0312	0.8527	0.0309	0.6960	0.0414	0.9827	0.0447
56 years or more	0.9092	0.0496	0.8395	0.0494	0.6967	0.0539	1.2988	0.2122
Unmarried person dummy	0.0056	0.0130 #	-0.0063	0.0129 #	-0.0756	0.0174	0.0428	0.0187 *
Permanent worker dummy	0.2298	0.0157	0.2263	0.0156	0.2113	0.0211	0.2272	0.0224
Location (Region) dummy[3]								
North east Slovenia	-0.0233	0.0217 #	-0.0239	0.0214 #	-0.0700	0.0305 *	0.0166	0.0297 #
South east Slovenia	-0.0320	0.0303 #	-0.0271	0.0300 #	-0.0924	0.0420 *	0.0357	0.0421 #
Central & North west Slovenia	0.0931	0.0204	0.0875	0.0202	0.0819	0.0287	0.0896	0.0281
Size of enterprise dummy[4]								
Less than 10 workers	-0.3182	0.0164	-0.3356	0.0162	-0.3511	0.0204	-0.3213	0.0252
10 to 49 workers	-0.0858	0.0169	-0.0931	0.0167	-0.1193	0.0217	-0.0746	0.0251
50 to 99 workers	-0.0705	0.0203	-0.0681	0.0201	-0.0916	0.0301	-0.0590	0.0269 *
100 to 249 workers	-0.0629	0.0180	-0.0595	0.0178	-0.0581	0.0245 *	-0.0604	0.0252 *
Proportion in occupation female dummy[5]								
≤ 20 percent	0.5520	0.1117	0.4006	0.1111	0.3830	0.1069	0.3667	0.5096 #
> 20 but ≤ 40 percent	-0.0078	0.0140 #	-0.1210	0.0164	-0.0990	0.0310	-0.1473	0.0236
> 40 but ≤ 60 percent	-0.0788	0.0146	-0.1472	0.0154	-0.1593	0.0319	-0.1267	0.0193
> 60 but ≤ 80 percent	-0.0111	0.0360 #	-0.0322	0.0357 #	-0.1070	0.0742 #	0.0026	0.0425 #
Female dummy			-0.1753	0.0136				
R square	0.2789		0.2944		0.3269		0.2813	
Adjusted R square	0.2769		0.2923		0.3228		0.2775	
F-statistic	138.76		142.86		80.32		75.28	
Reg. sum of square	681.2055		719.0415		317.7641		408.9971	
d.f.	21		22		21		21	
Residual sum of square	1761.418		1723.581		654.2942		1045.171	
d.f.	7535		7534		3473		4040	
N	7557		7557		3495		4062	

[1] The omitted category was below elementary education.
[2] The omitted category was 25 years or below in age.
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