

Gender Segregation and Wage Gap: An East-West Comparison

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Abstract

This paper discusses the implication of recent results on the structure of gender wage gaps in transition economies for the literature on gender segregation. Differences in employment rates of low-wage women driven by initial transition policies may be responsible for different wage ‘penalties’ to predominantly female occupations. New evidence presented here also suggests that the introduction of western-type anti-discrimination policies have had little immediate effect on the structure of female-male wage differences.

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1 Introduction

It is a well established fact that occupations and industries staffed mainly with female workers pay lower wages to both men and women compared to predominantly ‘male’ occupations and industries. The observed persistent concentration of women in low-paid groups of workers, coined gender segregation, is therefore a key explanation for the existence of the gender wage gap.

The contribution of this paper is to survey and update selected recent findings on the structure of the gender wage gap in transition economies and to discuss the implications of the available East-West comparisons for the literature on gender segregation. The advantage of studying the gender pay gap in transition from central planning to a market economy is that we observe dramatic changes in employment rates, which are in part driven by different transition policies. I will argue that the recent transition-based results may shed light not only on cross-country differences in the size of the gap but also on the mechanism giving rise to the typical wage ‘penalty’ to working in predominantly female occupations and industries. The extension of some of the earlier findings with new data in this paper further allows me to assess the immediate impact of the introduction of Western anti-discrimination policies.

The structure of the paper is as follows. The next section provides a brief summary of the existing research on gender wage gaps in transition. Next, Section 3 discusses the available theories of gender segregation and the importance of the transition research for differentiating between them. To support this discussion, I present a set of results based on previous and new research with the purpose of maximizing comparability across countries. Section 4 then offers new evidence on the structure of the gender wage gap in Central Europe after the introduction of standard anti-discrimination legislation.

2 Female Wages in Transition

Female pay was lower than male pay even under communism which compressed wages and forced near-full labor-force participation (e.g., Brainerd, 2000). Hence, during the transition from central planning there are two main, potentially off-setting forces affecting the male-female gender wage gap: (i) an increase in wage dispersion, which is expected to worsen the relative wage position of women, who are predominantly located in the lower part of the wage distribution, and (ii) a drop in employment rates, which is expected to diminish the observed gender wage gap, because dropping out of employment primarily affects low earners, i.e. women.

There is now a battery of results available on the size and structure of the gender wage gap before and during transition. A typical finding in this literature is that gender differences in productive characteristics can ‘explain’ only a small part of the wage gap. Hence, within-job wage discrimination and gender segregation are likely to be important in transition economies. Alternatively, there is a large difference in the relative unobservable labor quality of employed women and men.

Some of the transition studies find the female-male wage gap to be stable over time (e.g., Newell and Reilly, 2001), some find it increasing in countries with a dramatic rise in wage inequality (e.g., Brainerd, 2000), and some find a decrease in the gap in countries with large outflows of low-earners from employment (e.g., Orazem and Vodopivec, 2000). These studies are overwhelmingly based on (repeated) cross-sections of employed workers. They typically do not correct for female selection into employment and when they do (e.g, Jolliffe, 2002), they use identification strategies which do not reflect the main shifts in participation between central planning and market.

The major exception which does explicitly consider the effect of the decline in employment rates is Hunt (2002). She follows East Germans employed in 1990 and shows that low-earning workers, i.e. mainly women, are selectively dropping out of the labor force. This selective process explains

40% of the 10-percentage-point decrease in the East German gender wage gap between 1990 and 1994. The East German slashing of low-wage employment was indeed exceptional in the transition context and was driven by a wage explosion following the 1990 monetary union between East and West Germany. In contrast, real wages declined and wage floors remained relatively low in other transition economies (Boeri and Terrell, 2002). To the extent that the evolution of the gap is affected by the changing participation of low-wage women, it is not surprising that wage gaps did not substantially decrease in other transition economies.

Finally, only a few of the existing studies pay close attention to the issue of gender segregation. Ogloblin (1999) uses household survey data to suggest that occupational segregation is driving a large portion of the mid-transition Russian gender pay gap. Jurajda (2003) implies a significant wage ‘penalty’ to working in female occupations, firms and job cells (groups of workers with the same occupation working in the same firm) using a sample of 1998 Czech and Slovak employees. However, Jurajda and Harmgart (2003) recently find that predominantly ‘female’ occupations pay higher wages in early-transition East Germany, in stark contrast to both the transition and western literature. The interpretation of this difference in the findings is the topic of the next section.

3 Segregation and Labor Quality

The extensive US literature on gender segregation puts forward three main hypotheses for why ‘female’ occupations pay less: (i) discriminating employers may prevent women from working in high-wage occupations, (ii) ‘female’ occupations may offer costly non-wage characteristics preferred by women, and/or (iii) workers employed in ‘female’ occupations may have lower labor quality.¹

¹For example, if women are discouraged from entering high-wage occupations by discriminatory barriers, then only highly productive women will enter the typically ‘male’ occupations. The fraction of female workforce then becomes an index of labor quality and only low-quality men will join ‘female’ occupations.

To get at the importance of explanations (ii) and (iii), researchers have recently controlled for not only observed productive characteristics of workers, but also occupational attributes and unmeasured worker quality. In the U.S. and Canada, controlling for these additional factors substantially reduces the wage penalty to female jobs (Macpherson and Hirsh, 1995; Baker and Fortin, 2001). In this line of research, unobserved person-specific characteristics are captured using person-fixed-effect regressions, where workers switching occupations provide the key source of identification for the estimation of occupations’ ‘femaleness’ on wages. However, switching occupation and participation decisions (i.e. being employed in at least two periods) is likely to be endogenous to the extent of segregation as well as its wage impact. An alternative strategy for studying the sources of the penalty to working in predominantly female occupations is to rely on cross-country differences in labor-market institutions and wage structures (Baker and Fortin, 1999).² Below, I offer some tantalizing comparisons using this strategy.

Econometric Approach The vast majority of the gender-wage-gap literature relies on the Oaxaca-Blinder mean-wage decomposition, which quantifies the part of the overall gender wage gap attributable to differences in the average characteristics of men and women. To conserve space, I follow Groshen (1991) and present the decomposition in a particularly simple form: I use ‘pooled’ regressions based on both male and female data to approximate the counterfactual non-discriminatory wage structure (as in Oaxaca and Ransom, 1994) and consider the female dummy coefficient as an estimate of the unexplained portion of the gap.³ I therefore decompose the gap between the male and female mean of the natural logarithm of wages as follows:

$$\overline{\ln w_m} - \overline{\ln w_f} = (\overline{X_m} - \overline{X_f})' \beta + \alpha. \quad (1)$$

²Blau and Kahn (2003) use this approach to understand international differences in the size of the gender pay gap.

³In Jurajda (2003) I find this approach equivalent to the standard Oaxaca-Blinder decomposition.

Here, \overline{X}_m and \overline{X}_f represent the respective vectors of male and female mean values of explanatory variables, β stands for the set of slope coefficients and α for the female-dummy coefficient from a ‘pooled’ wage regression. The first term on the right hand side of equation 1 quantifies the explained part of the total logarithmic wage difference using β to approximate a non-discriminatory wage structure, while the second term α captures the remaining unexplained part. The set of explanatory variables X contains not only standard productive characteristics of workers (education and experience) but also the fraction of female workers in a given occupation or industry, which controls for the ‘femaleness’ of a given employment category.

Comparison of Segregation Effects In Table 1, I present (i) the total log-wage gender gap, and (ii) the female dummy coefficient together with segregation-related slope parameters from ‘pooled’ regressions estimated for five economies using highly comparable data.⁴ Column (1) shows the US estimates, which are taken from Bayard et al. (2003), columns (2) and (3) present new results for the Czech and Slovak Republics, and columns (4) and (5) list unreported specifications estimated for East and West Germany as part of Jurajda and Harmgart (2003) (JH).⁵

Two key findings stand out from the table. First, a major portion of the total gender wage gap remains unexplained in all five economies, after controlling for detailed worker and employer characteristics as well as gender segregation. East Germany is the extreme case as the ‘pure’ gender wage gap approximated by the female dummy is three times larger than the overall gender pay

⁴All four data sets, which are samples of non-public employees from medium and large firms, provide a coverage of the entire array of occupations and industries in a given economy, and allow one to establish the occupation- and industry-specific share of female workers. See the Appendix for details and references.

⁵The results in Table 1 are not fully comparable because of the different categorizations of occupations and industries available in each data set. However, switching from 54 to 187 industries had no material effect on the Czech 2002 parameters of interest (no detailed industrial classification is available for Slovakia) and switching from 2- to 4-digit occupations had little effect on the estimates in Jurajda (2003) for both the Czech and Slovak Republics.

gap. Second, gender segregation by occupation and industry is a statistically significant factor contributing to the overall gender pay differences, except in both parts of Germany. In East Germany, ‘female’ occupations and industries pay more. The extremely low overall East German wage gap is therefore supported by the coexistence of significant within-job wage gaps with a positive wage ‘penalty’ to predominantly ‘female’ employment segments.⁶

JH suggest an explanation for the exceptional East German findings based on the unique restructuring process of East German transition. German unification brought about the imposition of near-western wage levels against a background of mass layoffs. This resulted in a strong selection of women into employment based on labor quality (Hunt, 2002). Indeed, productive characteristics of East German female full-time employees are substantially higher than those of their male colleagues. If the share of women in an occupation becomes a measure of skill quality, high productivity men may sort themselves into predominantly ‘female’ occupations.⁷ The selection process leading to only highest-productivity women attaining full-time jobs may be less extreme in West Germany, which did not experience a rapid dis-employment process and where higher wages are supported by higher productivity. This would explain why the ‘femaleness’ of occupations plays no role for West German wages, but raises East German wages.

The quality-sorting explanation is supported by fixed-effect regressions of JH, where the positive effect of occupations’ ‘femaleness’ on wages is eliminated by controlling for time-constant unobservable worker quality, and it is also consistent with the comparisons in Table 1. In particular, female full-time employment rates are much lower in Germany than in the US or Central Europe, but these differences are smaller for men.⁸ Correspondingly, wage floors are much lower in the US or in

⁶JH provide direct evidence on the significant within-job wage gaps using the matched employer-employee portion of the German data.

⁷For a theoretical model where workers of complementary skills are grouped together see Kremer (1993).

⁸The gender gap in full-time employment is 31 percentage points in Germany, but ranges from 12 to 19 points in

the Czech and Slovak Republics compared to Germany. This argument is also supported by OECD (2002) – an extensive cross-country study based largely on the European Community Household Panel – which suggests that “cross-country differences in female employment rates are mainly accounted for by the degree of integration of less-educated, lower-paid women into employment” and that compositional effects are important for explaining international differences in the gender pay gap as well as in the extent of segregation.

4 Legislation

Most post-communist economies have recently adopted the standard set of anti-discrimination policies including the equal pay and equal employment opportunity clauses.⁹ Each of these clauses affects a different part of the overall male-female pay difference. The equal pay regulation targets wage differences within job cells, where a job cell is defined as a group of workers with the same occupation in the same firm. The equal employment opportunity provisions target all forms of discriminatory segregation resulting in unjust concentration of women in low-paying employment segments. To measure the effect of the new legislation, one can therefore decompose the overall pay gaps into components corresponding to specific anti-discrimination policies.

In East Germany the new legislation came into effect as part of the German unification such that detailed measures of the structure of the gender wage gap before the introduction of the new legislation are not available. In Central Europe, however, the laws came into effect only recently within the EU-accession legislation process. In the Czech Republic the laws were enacted in 2000

the other three countries in 2000 (OECD, 2002). Starting 1992, the female employment ratio is practically identical in both parts of Germany based on the German Microcensus.

⁹While the constitutions of communist countries did include a “no discrimination in remuneration” clause, there was no specific implementation of this principle in labor-market legislation and no enforcement in courts.

while in Slovakia, the legislation became effective as of the second quarter of 2002. In Table 2, I therefore extend the 1998 Czech and Slovak enterprise-sector wage-gap decompositions from Jurajda (2003) to the first quarter of 2002. In the Czech Republic, this corresponds to two years after the enactment of the legislation while in Slovakia, the new estimates correspond to the situation immediately before the new laws came into effect. To the extent that the Slovak wage structure from the first quarter of 2002 was not affected by the upcoming legislation, one can think of this research design as approximating a difference-in-difference comparison, where the Slovak evolution of the gender wage gap serves as a surrogate for the evolution of the Czech gap in absence of the new legislation. Following Groshen (1991) and Bayard et al. (2003) I use matched employer-employee data to control for not only occupational but also within-firm forms of segregation (see Jurajda, 2003, for details).¹⁰

The 2002 results, based on a sample of over 800 (300) thousand Czech (Slovak) workers, suggest a minor change occurred in the structure of the gender pay gap between 1998 and 2002 in both economies. Table 2 presents the relative contributions of the unexplained and segregation-related parts of the gender wage gap according to the decomposition outlined in equation (1). In both countries, about 60 percent of the wage gap remains unexplained after controlling for detailed worker and firm characteristics and gender segregation, providing a high upper limit on the violation of the equal pay act. The remaining part of the gap is linked to gender segregation, in particular within-firm segregation.¹¹ The results in Table 2 imply that the size of the gender wage gap as well

¹⁰A weakness of this comparison is that both firm samples grew over time and due to strict anonymization procedures it is not possible to focus on the panel sub-sample; hence, I rely on industry, ownership and firm size controls to remove the effect of the changing sample structure.

¹¹The contribution of all other explanatory variables is small and tends to work to the advantage of women. An important caveat to these results is that the unexplained wage-gap component is likely to reflect in part the lack of information on the actual length of labor market experience in the Czech and Slovak data (see Jurajda, 2003).

as its structure remain quite stable between 1998 and 2002 in both economies. The only exception is a small drop in the size of the overall Czech gap¹² and a substantial decrease in the Czech wage-gap contribution of firm-level segregation driven by the drop in the parameter estimate.

5 Conclusions

This paper uses recent results from the transition literature on gender segregation to motivate future cross-country research linking the size of the wage penalty to ‘female’ occupations with wage floors and skill structure of female employment. Such research would be complementary to the existing within-country longitudinal studies, which control for unobservable worker skills by relying on the exogeneity of worker occupation moves.

The results presented here for the Czech and Slovak Republics also suggest that little immediate change occurred in the structure of the wage gap with the introduction of anti-discrimination legislation, with the possible exception of a decrease in the effect of firm-level gender segregation.¹³ Despite the new legislation almost two thirds of the gender wage gap remains unexplained and segregation continues to represent a major source of the gap. Segregation affects gender wage differences primarily within firms so that an implementation of the anti-discrimination policies aiming to equalize wages in occupations across firms would have little effect.

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¹²The gap-change comparison is similar when controlling for characteristics of sampled firms.

¹³As of 2002, there has been a few court trials concerning unequal hiring practices in the Czech Republic (CHC, 2002); however, firm-level gender segregation did not decrease and it is not clear how hiring practices would affect firm-level pay strategies.

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Appendix: Data

Czech and Slovak Republics: The data consist of national employer surveys in which participating firms report hourly wages of all of their employees. The stratified sampling is based on the country firm register and covers only firms employing more than 10 workers; the budgetary sector of public employees is not included. The data, which cover about one third of all enterprise employment, are drawn directly from companies' personnel databases. The wage measure is a quarterly average used for social security purposes. For more details see Jurajda (2003).

Germany: The data consist of a one-percent random sample of the German Social Security records, better known as the IAB employment subsample. The analysis-ready data correspond to end-of-year updates on each employment spell. German social security reporting excludes civil servants and self-employed workers; as of 1995, the records cover 80 (86) percent of total West (East) German employment. The wage measure is a daily average; hence, to minimize gender differences in hours worked, the analysis excludes part-time workers. See Jurajda and Harmgart (2003).

USA: The US data used by Bayard et al. (2003) come from a match between worker responses to the 1990 Decennial Census long form to establishment records maintained by the U.S. Census Bureau. The restrictions implied by the matching procedure exclude small firms as well as part-time and public administration workers. The hourly wage measure is based on annual earnings and hours worked.

Table 1: Log Wage Differentials by Gender and 'Femaleness' of Occupation and Industry

	Country	Czech	Slovak	East	West	
	Year	USA	Republic	Republic	Germany	Germany
		1990	2002	2002	1995	1995
		(1)	(2)	(3)	(4)	(5)
Total gap		-0.375	-0.282	-0.234	-0.041	-0.241
Female		-0.241	-0.211	-0.182	-0.123	-0.170
		(0.002)	(0.009)	(0.01)	(0.006)	(0.003)
% female in occupation		-0.143	-0.132	-0.097	0.127	0.007
		(0.005)	(0.019)	(0.029)	(0.011)	(0.005)
% female in industry		-0.395	-0.168	-0.166	0.060	-0.100
		(0.012)	(0.034)	(0.061)	(0.016)	(0.09)
No. of occupations		13	27	27	187	288
No. of industries		236	54	59	57	87
No. of firms		32,931	2,240	875	10,094	35,929
No. of workers		637,718	805,767	334,586	23,561	89,997

Notes: Control variables in all specifications are worker education, age, and firm employment and region (except in Germany). Standard errors in parentheses allow for clustering of residuals at the firm level. Column (1) comes from Bayard et al., (2003) and columns (4) and (5) are based on Jurajda and Harmgart (2003). The Czech and Slovak (US) [German] worker-level data covers business enterprises employing more than 10 (25) [50] workers.

Table 2. Contribution of Segregation to the Wage Gap Before and After Anti-Discrimination Legislation

	Coefficient estimate	Mean difference women - men	Relative contribution to wage gap	Coefficient estimate	Mean difference women - men	Relative contribution to wage gap
	(1)	(2)	(1)x(2)/(total gap)	(3)	(4)	(3)x(4)/(total gap)
	1998			2002		
CZECH REPUBLIC	total log wage gap = -0.297			total log wage gap = -0.282		
Female	-0.189*	1	0.64	-0.165*	1	0.59
% female in occupation	-0.104	0.328	0.12	-0.084*	0.293	0.09
% female in job cell	-0.104*	0.512	0.18	-0.108*	0.569	0.22
% female in firm	-0.237*	0.236	0.19	-0.034	0.274	0.03
SLOVAK REPUBLIC	total log wage gap = -0.227			total log wage gap = -0.234		
Female	-0.139*	1	0.61	-0.14*	1	0.60
% female in occupation	-0.098*	0.252	0.11	-0.030	0.297	0.04
% female in job cell	-0.061*	0.489	0.13	-0.092*	0.514	0.20
% female in firm	-0.25*	0.211	0.23	-0.192*	0.252	0.21

Note: 1998 results are based on Jurajda (2003). For the list of control variables and the number of occupational categories, see Table 1. * denotes statistical significance at the 1% level.