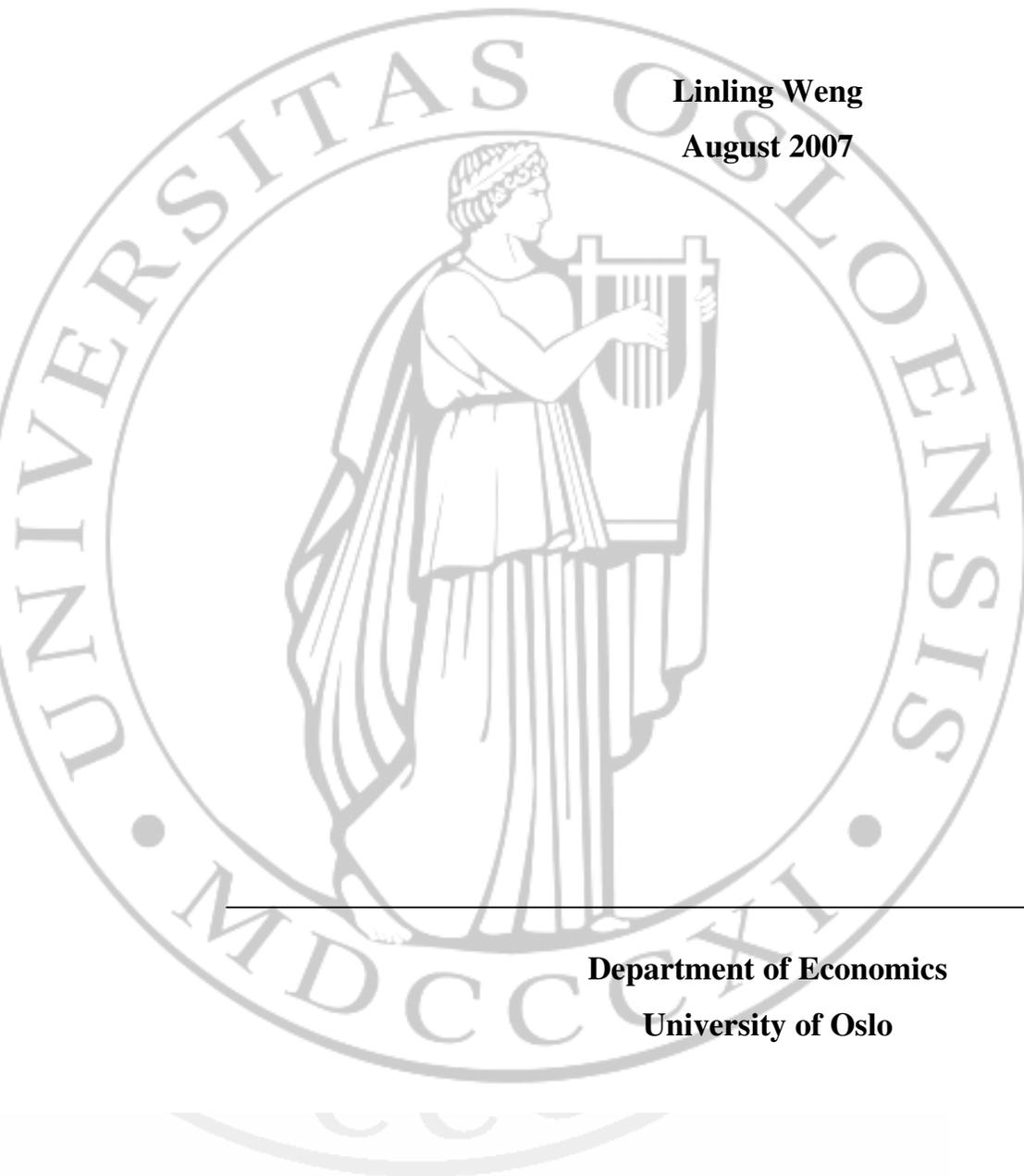


A Comparative Study of Gender Pay Gaps in Nordic Countries and Eastern European Countries

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Preface

First and foremost, I owe a great debt of gratitude to my supervisor, Professor Erling Barth. His provision of data material, professional guidance and skilled advice gave me invaluable help in completing the thesis. In addition, his enormous patience and encouragement supported me throughout the months.

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I should confirm here that all possible errors are on my own responsibility.

Linling Weng

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Abstract

Under the compressed wage structure and generous family policies, Nordic countries have been regarded as leaders of gender equality in terms of low gender pay gaps and high rates of female labor force participation; after the fundamental restructuring of the economic system in Eastern European countries, women have experienced a remarkable change with respect to the labor market positions and economic status facing the increased wage inequality and significant declines in labor force participation rates. The cross-country comparison of gender pay gaps is investigated using ESS2 (European Social Survey second round) data sets and econometric techniques for the selected Nordic countries and Eastern European countries. The results indicate the different characteristics in terms of the gender pay gaps and labor market situations in these countries. Some significant difference in gender pay gaps between countries has been found; however, the systematic pattern of significant difference in gender pay gaps between the two groups of countries does not exist. Besides, the negative correlation between gender wage gaps and female employment rates cannot be strongly supported by the evidence in this study and the positive relation between the wage distributions and the gender wage gaps can only be applied to the adjusted wage gaps between single men and women. The gender pay gaps in Nordic countries remain low level, but the negative effects of family-friendly policies and over-crowded public sector may have led to the relatively high family wage gaps in these countries. On the other hand, modest increases in wage inequality and the improved rewards to skills in the competitive markets which favor women employed in the labor markets perhaps keep the gender pay gaps modest level in the selected Eastern European countries. In addition, unexplained factors still account for a non-negligible proportion in gender pay gaps, which raises the consideration about the discrimination against women in the labor market among all the selected countries.

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1. Introduction

The difference in earnings between men and women has a long history, and nowadays, this disparity in earnings still exists in almost every occupation and in every country throughout the world. Such kind of disparity is called gender pay gap in this study, which is defined as the difference in mean logarithm of gross hourly earnings between male and female paid employees aged 15-64 whose main activities are paid work during the last seven days before the survey date across the whole economy.

The gender pay gap has been studied by using many different data sets and estimation methods for several countries and those findings do explain a lot about the reasons and characteristics of the pay gap. Most studies concentrate on examining the pay gap within a specific country, while relatively little attention has been paid to a comparative study across countries (Polachek and Xiang, 2006). But actually, as Polachek and Xiang (2006) pointed out, there are considerable international variations in the gender wage gap. For example, among OECD nations, women in Australia, Belgium, Italy and Sweden earn 80 percent as much as males, whereas in Austria, Canada and Japan women earn about 60 percent as much as males. Thus, it is possible to expect some important knowledge and findings by engaging in a comparative study of gender pay gaps across countries.

This thesis compares the gender pay gaps in Nordic countries with those in Eastern European countries. Nordic countries have been regarded as leaders with respect to large degree gender equality in the labor market, but the process of stagnation can also be seen in the gender wage gaps in most of these countries in recent years (Datta Gupta et al. 2006); and Eastern European countries have experienced a fundamental restructuring of their economic system toward a market economy since the begin of the 1990s, increases in wage inequality and significant declines in labor force participation rates have depressed female relative wages (Brainerd, 2000). The studies which are relevant to the gender pay gap are not very well documented in Eastern Europe (Paternostro and Sahn, 1999), it is worth noting the

characteristics of the gender pay gaps in the economies in or after transition¹ and comparing with those characteristics in the countries with traditionally low level of gender inequality.

In this study, ESS2 (European Social Survey second round) data sets have been utilized to explore the variations in the gender pay gaps between the selected Nordic countries and Eastern European countries during the period 2004-2005. Nordic countries comprise Denmark, Finland, Iceland, Norway and Sweden; while Czech Republic, Hungary, Poland, Slovakia and Ukraine are selected from the Eastern European countries. An integrated statistical package 'STATA' (version 9.0) has been mainly used for data analysis and graphics. The hypotheses are concentrated on the cross-country comparison of gender pay gaps. More specifically, whether the gender pay gaps in Nordic countries are significantly different from those in Eastern European countries and what are the inherent factors which contribute to such pay gaps in different countries? Do the gender wage gaps positively correlate with the wage distributions in these countries? Is there any negative relation between gender wage differentials and female employment rates in the labor markets in these two types of countries with different labor market characteristics and policies?

The analysis follows the established econometric techniques of estimating the earnings equation, decomposing the gender pay gaps and hypothesis testing across countries. Several findings are provided by this study. First, some significant difference in gender pay gaps has exhibited between the selected Nordic countries and Eastern European countries, but such pattern cannot be found between the two groups of countries. Second, a more compressed wage structure associated with a lower gender wage gap can only be applied to the adjusted gender wage gaps between single men and women in the sample countries in this study. Third, the negative correlation between gender pay gaps and the female employment rates cannot be strongly proved in these countries, although a weakly negative correlation between the male-female wage differentials for single individuals and the single female employment rates has shown up. Finally, that the family wage gaps which are prevalent in Nordic countries and not notable in Eastern Europe can perhaps explain the above three findings to some extent.

The rest of the thesis is organized as follows. Section 2 gives a brief discussion of background for this study and some related findings of cross-country gender pay gap. Section 3 describes

¹ According to the World Bank "10 years of transition" report, Czech Republic, Hungary, Poland and Slovakia which joined the EU on 1.May 2004 have completed the transition process.

the data sets and the methodology used in analyzing the data is presented in section 4. Section 5 brings the main results and empirical evidence. Some underlying reasons for the findings will be discussed in section 6. The last section concludes the thesis.

2. Background and Related Findings

Previous comparative studies of gender pay gap have brought some inspiration for this thesis. Rosenfeld and Kalleberg (1990) carried out the standard wage regressions for full-time workers to compare the wage differences between men and women in two sets of countries (United States and Canada; Norway and Sweden) with different labor market structures, and they found significant unexplained wage differences in each country. The finding from Blau and Kahn (1996b) is the more compressed the wage structure the smaller the gender wage gap. Less dispersed wage structures, however, are not always favorable to women. As mentioned in OECD Employment Outlook (2002), a narrow-than-average wage differential between the private and the public sector in Belgium, Denmark, Finland and the Netherlands contributes to a widening of the gender wage gap in these countries since women are over-represented in the public sector in these countries. Regarding the relationship between the female employment rate and the gender wage gap across countries, OECD Employment Outlook (2002) pointed out that with an evidence that cross-country differences in female employment rates are mainly accounted for by the degree of integration of less educated and lower-paid women into employment, in countries where a higher proportion of low-educated women are employed, the gender pay gap will tend to be wider, all other things being equal.

2.1 Gender Pay Gaps in Nordic Countries

Scandinavian women were among the first to get equal pay by law around the world (Datta Gupta et al. 2006) and Nordic countries do have succeeded in achieving high level of gender equality such as the high female labor force participation rate and the low gender wage gap. The observed unadjusted mean female-male earnings ratios in Nordic countries were between 80% and 88% in 1996², which remained among the highest in the world. This might be the case which suggested by Blau and Kahn (1996b) that a more compressed wage structure was associated with a lower gender pay gap, since the Nordic countries have a compressed wage

² The actual gap depends on whether the wage measure is straight time wages or includes leave pay. See Pedersen and Deding (2000).

dispersion due to a “solidaric wage policy” (see Longva and Strøm, 1996). But on the other hand, there has been almost no movement in the high ratio in Denmark since the late 1970s (Rosholm and Smith, 1996), and even a slight decrease there in recent years (Datta Gupta et al., 2006); Sweden has experienced the same process of stagnation in the gender wage gap since the start of the 1980s (Edin and Richardson, 2002), and so does Finland; only Norway had a steady decline in its gender wage gap in the 1980s and 1990s (Asplund et al., 1997). The stagnant process in the gender pay gaps in most of the Nordic countries is exactly different from the case in some other countries who are on the way towards narrowing the gender pay gap, such as the U.S., whose average female-male raw earnings ratio showed considerable progress after 1970s (Datta Gupta et al. 2006).

Several explanations for such kind of stagnation in Nordic countries can be found from other empirical studies. Mainly, one is the gender segregation by sector which states that lower pay can result from over-supply of female workers in a certain working sector. As mentioned before, over-representation of women in the public sector in Denmark and Finland has a positive contribution to a widening of the gender wage gap (OECD, 2002). The other argument is the ‘boomerang’ effects of family-friendly policies in Nordic countries (Datta Gupta et al. 2006) with the purpose of pursuing gender equality in the labor market. Nordic countries led on most of the family-friendly policy indices (OECD, 2001) and have succeeded in maintaining a high rate of female employment. One of the ‘boomerang’ effects which should be considered in this thesis is that the nice family-friendly schemes mostly taken by mothers may deteriorate women’s position in the labor market and thus negatively affect the pay received by women. For instance, Ruhm (1998) found that the extensions of parental leave schemes in OECD countries tend to increase the gender wage gap.

Family wage gap is another focus of some studies based on the stylized facts that male-female wage differences are relatively small for single men and women, but considerably larger for married men and women especially those with children (Blau and Kahn, 1992; Harkness and Waldfogel, 2003). Polachek (1975) and Becker (1985) showed the result that married men had higher wages since they invested more human capital than married women (especially those married women with children), while single men and women earned roughly similar wages. Given the generous family-friendly policies in Nordic countries may bring some negative effects on women’s commitment to their careers and incentive to accumulate more human capital during the interruption of their careers due to childcare and parental leave, the

difference in the pay gap between single men and women and that between married men and women might be expected by adopting the family wage gap approach in this study.

2.2 Women's Economic Status in Eastern Europe

A transition economy is defined as an economy which is changing from a planned economy to a free market in this study. Eastern European countries introduced the market reform in the early 1990s and have experienced more than a decade for the transition process. An important feature of transition economy is the economic liberalization accompanied by growing social inequality and the dismantled state welfare systems.

As for the labor market, women in Eastern Europe fared relatively well under socialism (Brainerd, 2000) due to the centralized wage-setting system and the government's commitment to equality. Given the similar economic structure and labor market institutions in these countries before transition, the women's economic status like high female labor force participation rates and modest female-male wage differentials was also similar among these countries. Economic reforms have been implemented in these countries at different paces since the 1990s, and the change in women's economic status goes to different ways. Referring to the research of Brainerd (2000), women in Ukraine is faring substantially worse in terms of wages relative to men than they did under socialism, whereas women in some other countries—such as Poland and Hungary—have gained significantly in comparison with men since the introduction of reform.

Changes in the wage structure and in the gender-specific factors such as discrimination appear to be related to the change in labor market experiences. On the one hand, centralized wage-setting system has been abandoned since market reform was adopted, both labor price and inequality have been risen in these countries (though at different speed), female-male wage differentials can be expected to rise even though women may benefit from an increased rate of return to human capital if women are on average well-educated. On the other hand, reform is supposed to create more effective and competitive labor market, thus the factors which can enlarge the gender pay gap such as the discrimination against women in the labor market are predictably diminishing as the transition process goes to the end. This is consistent with one

implication of Becker's model³ that competitive market forces will cause discrimination to diminish and disappear over time because the lower-cost non-discriminating firms can gain a larger share of the market at the expense of less-efficient discriminating firms.

Empirical studies (e.g. Brainerd, 2000) showed that women in Ukraine suffered a substantial decline in relative wages by the tremendous widening of the wage distribution after the market reform has been performed; modest increases in wage inequality in some other countries such as Poland and Hungary have also depressed female relative wages, but these losses have been offset by gains in remuneration to observed skills and by a decline in discrimination against women. Female labor force participation rates have fallen significantly in all Eastern European countries but have been matched by similar declines in male labor force participation rates.

Given the experiences of Eastern European countries and the available ESS2 data sets, this thesis will focus on the labor market situations and women's economic status in these countries in the survey year 2004- 2005 and the contrast of gender pay gaps between Eastern Europe and Nordic countries. The pre-reform female labor market performance may be mentioned in some parts, but the investigation of the differences in this kind of performance before and after the market reform will be beyond the scope of this thesis.

³ Becker's *taste-for-discrimination* model gives the interpretation that the discriminating firms can not survive in a highly competitive product market. See McConnell et al.(2003).

3. Data

This study utilizes the data sets from European Social Survey second round (ESS2), which is a multi-country survey covering 25 European Nations and fielding in year 2004 and 2005. Four restricted conditions are considered here for the purpose of this study:

- a). The target countries have been selected from the data sets following the definition of United Nations Statistics Division, five Nordic countries: Denmark, Finland, Iceland, Norway and Sweden; five Eastern European countries, Czech Republic, Hungary, Poland, Slovakia and Ukraine.
- b). Due to data limitation, data sets in 2004 are relatively complete for most of the target countries, but not available for Iceland, Hungary and Ukraine. So the data sets in 2005 are used for Iceland, Hungary and Ukraine in this study; and for the other seven countries the data sets in 2004 are used. The explanation for this choice is that the labor market situation such as the characteristics of the individuals and firms as well as the institutional arrangements such as the wage formation and policies has no dramatic changes in terms of the effect on the main conclusions.
- c). The population consists of individuals in the ten target countries between age 14 and age 99, and the target samples are restricted to the working age paid employees. Working age is generally defined as persons in the 15 to 64 age bracket according to the ILO Guidelines (see OECD Factbook 2007), which is also consistent with the fact that the current retirement age in Nordic countries is age 65 on average and in Eastern European countries is age 60 on average. Employed workers are defined as those hold paid work as the main activity during the last seven days before the survey date in ESS2, where full-time students and self-employed persons are excluded. The target sample frame including only the paid employees is for the sake of the statistical consistence concerning the topic of this thesis.
- d). Variables. The questionnaire in ESS2 includes two main sections and each consists of approximately 120 items, which aims to monitor the cross-country differences in a wide range of social variables. In order to compare gender pay gaps across countries, the explanatory variables are chosen in terms of gender, age, education, experience, marital status, working sector and so on. The dependent variable in this study is the natural logarithm of hourly wage. One problem here is that the lack of information on working sector variables for the samples

in Hungary. Summary of variable definitions is presented in Appendix 1.

The wage concept used throughout the analysis is the gross hourly wage, which is given by the gross pay in Euro before tax and insurance deduction during a certain period divided by the contracted working hours during the same period in main job for each individual. Since women averagely work fewer hours per year than men do, comparing hourly wage between men and women is likely to avoid the over-estimation of gender pay gap in each country.

One advantage of the data sets is that they cover several Eastern European countries as well as all Nordic countries. One problem for the gender pay gap research concerning Eastern European countries is data limitation. Given the data sets from ESS2, it is likely to get some ideas about the gender wage differentials in those transition economies and make cross-country comparison as well.

It is necessary to mention that the “design weight” has been involved in computing data. Several of the sample designs used by countries participating in the ESS were not able to give all individuals in the population exactly the same chance of selection, it means that the selection bias maybe exist in the data due to the non-random sample selection. By using the “design weight”, it is possible to correct the problem of selection such as over- or under-represent certain types of people in samples in some countries, and make the samples more representative of the population in each country.

Means of the variables on full sample for each country and means of the variables on age 15-64 paid employees for each country are given in Appendix 2a /2b and Appendix 3a/3b, respectively, which provide the detailed information about the samples in this study. The discussion and analysis will be in the later section, and here it should be noted that the main disadvantage of the data sets is the relatively small sample size. Especially, when they are restricted to the target samples, say aged 15-64 paid employees, only around 800 observations on average in Nordic countries except in Iceland (which has less than 200 observations), while around 450 observations on average in Eastern European countries except in Slovakia (which has only 320). The difficulties in obtaining highly reliable estimates for statistical models probably arise because of the small sample sizes.

4. Methodology

4.1 Wage Equation and Decomposition

To gauge the magnitude of the effects of the labor market characteristics on gender pay gap, the Mincer earnings equation (1974) in which the logarithm of hourly wage is explained by a set of factors such as personal characteristics and job characteristics is applied in this thesis. The wage equation, for the target individuals (age 15-64 paid employees), takes the form:

$$\log W = \alpha + \beta X + \varphi S + \delta_1 F + \delta_2 M + \delta_3 (F \times M) + \varepsilon$$

where W denotes the hourly wage for each individual, and the natural logarithm of hourly wage is taken as the dependent variable in this equation. X is a vector of human-capital variables, and S is a vector of working sector dummy variables. F and M are both demographic dummy variables, which indicate the gender and marital status, respectively. An important interaction term ($F \times M$) is used here to facilitate the comparison of the gender pay gaps among individuals with different marital status. $\alpha, \beta, \varphi, \delta_1, \delta_2$ and δ_3 are vectors of unknown coefficients, while ε is a stochastic error term assumed to be normally distributed with zero expectation.

X vector includes a set of human capital variables like years of education, years of labor market experience, and a quadratic term of experience. S vector consists of the manufacturing and public dummy variables, which can be either a manufacturing worker or a public sector employee. Presenting these vectors to the wage equation is because the differences in the stock of human capital and the dominant occupations between men and women are perhaps the sources of the female-male earnings differential to some extent (see McConnell et al. 2003).

Based on an OLS regression of the wage equation and individual data, wage functions for aged 15 to 64 paid employees can be estimated. Clearly, $\hat{\delta}_1$ is the estimated wage differential between men and women for the sample individuals, which results from the individual membership in the female group. As shown in Blau and Kahn (1992), and Harkness and

Waldfoegel (2003), male-female wage differences are relatively small (usually less than 10%) for single (especially never married) men and women; but these differences are considerably larger (roughly 40%) for married men and women, especially those with children. So in this study, the interaction term ($F \times M$) which combines the gender and marital status dummy variables has been introduced into wage equation. Briefly, $\hat{\delta}_1$ indicates the pay gap between single male and female; and the pay gap between married male and female can be shown by $(\hat{\delta}_1 + \hat{\delta}_3)$. Given these estimates, it is plausible to find out whether the marital status has a significant effect on gender pay gap in each country, how large the effect is, and further explore the probable reasons of such effect.

This wage equation is often extended to include more variables such as region, union density and so on, in order to find more factors which can explain the gender wage differential. The coefficient of gender dummy variable, as mentioned before, can measure the unexplained factor of the female wage deficiency. So this method can be used to explain the gender wage gap based on a host of variables which are linked to the observable labor market characteristics on the one hand, and on the other to the unclear reasons due to the individual membership in the female group. It allows us to identify whether those possible sources of pay inequality between men and women can be significantly observed components of the gender pay gap, and obtain the adjusted gender pay gap when the differences in the observed components like human capital endowments and productive characteristics are taken into account. By applying this method, it is possible to figure out some characteristics which play important roles in the emergence of the gender pay gaps in different countries; and to compare the adjusted wage gap as well as the unadjusted gap among countries.

Furthermore, the technique so-called decomposition of the gender pay gap has been taken for the sake of specifying more detailed magnitude of different components' contribution to the pay differential. According to the research of gender pay gap measurements which is conducted by Weichselbaumer and Winter-Ebmer (2003), Blinder-Oaxaca decomposition appears to be one of the most common methods in explaining gender pay gap, apart from Mincer earnings equation. Blinder(1973) and Oaxaca(1973) first propose a technique to use the estimating wage equations separately for men and women, then decompose the observed gender pay gap into two parts, say, explained component (such as difference in skills) and

unexplained component (such as discrimination); this decomposition is under the assumption that employers value similar endowed skills of men and women differently.

Based on the wage equation utilized in this study, a decomposition technique which crucially assuming that male and female have the same returns to personal characteristics has been used here. More specifically, the unadjusted wage differential:

$$\overline{\log W_M} - \overline{\log W_F} = \hat{\beta} (\overline{X_M} - \overline{X_F}) + \hat{\phi} (\overline{S_M} - \overline{S_F}) - \hat{\delta}_1 + \hat{\delta}_2 (\overline{M_M} - \overline{M_F}) - \hat{\delta}_3 \times \overline{M_F},$$

where $\overline{X_M}$ and $\overline{X_F}$ represent the mean value of the human-capital vector of men and women respectively, $\hat{\beta}$ is the estimated value of returns to human capital from the wage function regressions, which is supposed to be same for both men and women. Analogically, $\overline{S_M}$ and $\overline{S_F}$ are the proportion of men and women in a certain working sector, $\overline{M_M}$ and $\overline{M_F}$ are the proportion of getting married for men and women; while $\hat{\phi}$ and $\hat{\delta}_2$ are the remunerations for the persons in that working sector and those get married, respectively. Besides, $\hat{\delta}_1$ indicates the penalty on earnings due to being a woman, and $\hat{\delta}_3$ gives the penalty on earnings for a married woman. In a word, the difference in the mean log hourly wage between male and female can be decomposed into “explained components” and “unexplained components” in this case, in which the “explained components” consist of the differences in human capital endowments between men and women weighed by the rates of return to human capital (the first term on the right-hand side), the differences in sectoral composition weighed by the premium to the worker in a certain working sector (the second term), and the differences in proportion of getting married weighed by the remuneration to the married people (the fourth term); while the “unexplained components” comprise the rates of penalty to women (the third term on the right-hand side) and the proportion of married women weighed by the rates of penalty to married women.

The decomposition adopted here is to find out the exact percentage of each component on the contribution to gender pay gap in each country, thus the size regarding the different components’ contribution in different countries will be netted out. It enables to specify the proportion of significant components of pay gap in each country and assess such cross-country differentials.

4.2 Hypothesis Test for Cross-country Difference in Pay Gaps

The hypothesis with respect to the cross-country difference in gender pay gaps involves comparing the gender pay gaps between Nordic countries and Eastern European countries, so this section summarizes how to test this hypothesis.

Let γ_N be the mean gender pay gap in one of the Nordic countries and let γ_E be the mean gender pay gap in one of the Eastern European countries. Since γ_N and γ_E are constructed from different randomly selected samples, both of them are independent random variables. The mean gender pay gap in each country is $\gamma = \overline{\log W_M} - \overline{\log W_F}$, and the difference in the gender pay gaps between each Nordic country and each Eastern European country is specified by $(\gamma_N - \gamma_E)$. Follow the wage equation mentioned before, if there is a significant difference in the gender pay gap between single individuals and married individuals in one country, then $\gamma = \delta_1$ for the pay gap between single men and women as well as $\gamma = \delta_1 + \delta_3$ for the pay gap between married men and women can be expected.

Considering the hypothesis that whether gender pay gaps in Nordic countries significantly differ from those in Eastern European countries, the two-sided alternative hypothesis is

$$H_0 : \gamma_N - \gamma_E = 0 \quad \text{vs.} \quad H_1 : \gamma_N - \gamma_E \neq 0.$$

If the null hypothesis (H_0) that gender pay gaps are of no difference between the Nordic countries and Eastern European countries can be rejected at the statistically significant level, it means the cross-country difference in gender pay gaps is statistically significant.

In order to test the null hypothesis, the t-statistic for comparing two means from different populations is carried out here,

$$t = \frac{\gamma_N - \gamma_E}{\sqrt{Se_N^2 + Se_E^2}}$$

in which Se_N and Se_E designate the standard error of the mean gender pay gap γ_N and γ_E , respectively.

In this hypothesis test for cross-country difference in gender pay gaps, t-statistic can be simply calculated with the estimated gender pay gaps and standard errors of the gaps in different

countries and compared with an appropriate critical value, then whether to reject the null hypothesis can be decided. Besides, it is deserved to mention that this thesis only compares the difference in gender pay gaps between each individual Nordic country and each individual Eastern European country. Though it can be expected even within the same country group, the gender pay gap in each individual country could have various characteristics and maybe significant difference, the test between countries within the same group will not be conducted since it is not the main domain of this study.

5. Results and Analysis

5.1 Descriptive Evidence

5.1.1 Variable Means

Means of the variables for the full sample and aged 15-64 paid employees are listed in Appendix 2a/2b and 3a/3b, respectively. From the means for the full sample, on average, there are no big differences in demographic and human capital variables between male and female in both sets of countries, except a great disparity in the percentage of married population between men and women in Hungary and Ukraine. In each country it seems more men stay in manufacturing than women, whereas the opposite situation appears in the public sector; and these differences are much more marked in Nordic countries rather than in Eastern European countries.

Variable means for aged 15-64 paid employees, which should be given more attention in this thesis, have shown the similar patterns compared with the full sample means. For the target group of aged 15-64 paid employees, the mean age of the samples in Nordic countries is above that in Eastern European countries, which is relevant to the fact that the current retirement age in Eastern Europe is about five years earlier on average than that in Nordic countries. The married proportion of men is close to that of women in most of these countries, and the proportion is relatively higher in Eastern Europe than it is in Nordic countries. But two things should be noticed here. One is the difference in percentage between married men and married women is still huge in Hungary (12.28%) and Ukraine (10.03%) among Eastern European countries, which seems unrealistic and is likely to be a disturbance for data analysis⁴; the other is the proportion of married population in Sweden (less than 50% of the

⁴ As checked for Hungary, if omit the criterion of paid employees and only consider the 15-64 age group in the population, the married proportion is 57.68% for men and 53.55% for women, which seems more reliable. Thus, many missing data of hourly wages for married women in Hungary may be a possible reason for the huge difference in married proportion between male and female paid employees.

population) appears much lower than the average level in other countries, perhaps it should be treated very cautiously for analyzing the results⁵.

As for the human capital variables, the gender differences in educational attainment are small and actually in most of the countries, women outdo men in their education level. Especially in Poland, women have obtained schooling almost one year more than men, averagely. Women have no longer been inferior to men regarding to the work experience since it is evident that women have more experience (ranging from a low of 0.275 year in Ukraine to a high of 3.962 years in Iceland) in all the countries except in Czech (but only 0.168 year less than men's). From the data sets in this thesis, women are endowed with higher level of human capital in all the countries, and this level has little difference between Nordic and Eastern European countries. The reasons behind are perhaps because women in Nordic countries have enjoyed equal opportunity for a relatively long time whereas women in Eastern Europe are generally better educated than men since the socialism policies before market economy promised gender equality in these countries and encouraged women's education for political and economic purposes.

The prominent difference in the variable means between these two sets of countries exists in the working sector variables. More men work in manufacturing and more women occupy the public sector, which is a common feature in all the countries. The compositions of men and women in each sector, however, have substantial differences in these countries. Only a very small number of women works in manufacturing in Nordic countries, while though the proportion of women working there is lower than that of men in Eastern European countries, the difference is not as great as that in Nordic countries. On the other hand, more than half of the female population is concentrated in the public sector in Nordic countries, in contrast with approximately one-third in Eastern European countries. The problem of over-representation of women in a certain working sector seems more striking in Nordic countries, which is supposed to depress the wage for women in this sector.

Means of log hourly wage and hourly wage which indicate the raw wage gap between male and female will be interpreted later together with the wage equation estimations.

⁵ As mentioned in previous section, other empirical studies found that male-female wage differences were smaller for single men and women but larger for married men and women. If it's also tenable in the data sets here, the much lower proportion of married workers in the samples compared with other countries can narrow the total male-female wage gap in Sweden.

5.1.2 Wage Distribution and Inequality

To shed some light on the impact of overall wage structure on the gender pay gap, Table 5-1 summarizes the wage inequality of the population in sample countries.

Table 5-1 Summary Measures of the Log Wage Distribution
(Age 15-64)

	Variance of log wages			90-10 log wage differential*			
	Total	Male	Female	Total	<i>OECD data</i>	Male	Female
DK(Denmark)	0.319	0.340	0.287	0.848	-	0.897	0.725
FI(Finland)	0.162	0.169	0.127	1.045	0.880	1.025	0.896
NO(Norway)	0.138	0.137	0.115	0.793	0.708	0.842	0.708
SE(Sweden)	0.094	0.101	0.073	0.761	0.833	0.802	0.655
IS(Iceland)#	0.212	0.215	0.191	1.152	-	1.075	1.064
CZ(Czech)	0.165	0.167	0.136	1.071	-	0.968	0.970
PL(Poland)	0.326	0.298	0.352	1.353	-	1.312	1.415
SK(Slovakia)	0.187	0.174	0.149	1.095	-	1.073	0.896
HU(Hungary)#	0.306	0.329	0.283	1.418	1.593	1.361	1.335
UA(Ukraine)#	0.459	0.415	0.491	1.429	-	1.581	1.427
United States	-	-	-	-	1.535	-	-

[Note] 1.Data from Year 2004; # Data from Year 2005;

2. * The log wage at the 90th percentile of the wage distribution minus the log wage at the 10th percentile of the distribution;

3.OECD data source: OECD Employment Outlook 2004, <http://www.oecd.org/dataoecd/8/3/34846881.pdf>;

4.OECD data is for Year 2000-2001, taking natural logarithm of 90-10 percentile ratios for the gross earnings of full-time employees.

As shown in the table, the wage structure seems more compressed in Nordic countries since most of the Eastern European countries have a larger wage inequality as measured by the variance of log wages and the 90-10 log wage differential. Some main points about the level of wage inequality have been indicated by observing the 90-10 log wage differential. First, the level of male wage inequality is higher than that of female wage inequality in most of these countries except in Poland and Czech, which can be seen from the larger numbers in the column labeled “Male”; the wage inequality for women is much larger than that for men (0.103 log points more) in Poland, while it is subtly different between women and men (only 0.002 log points) in Czech. Then, the total 90-10 log wage differential is much smaller in Nordic countries than that in Eastern Europe with the exception of Iceland whose inequality level appears to be greater than that observed in Czech and Slovakia. Next, OECD statistical

data has been used as reference in this table, which can be noted that the result computed from ESS2 data sets for the wage inequality indication is fairly close to OECD statistical value in year 2000-2001, only a dramatic increase in wage dispersion in Finland in 2004. Finally, compared with the United States, which has one of the most unequal wage distributions of developed countries, most of the sample countries here (except Hungary) have relatively lower wage inequality level even though those Eastern European countries have experienced the market reform which tends to expand the wage dispersion.

Why such kind of mixed pattern for wage inequality exists in Nordic countries and Eastern European countries? Briefly, a possible reason is that it is affected by the characteristics of labor market institutions that have evolved in these countries. The outstanding features of the Scandinavian labor markets such as centralized bargaining structure, high union participation rates, and notable “solidaristic wage policy”⁶ perhaps contribute to the more compressed wage structure and lower level of wage inequality in Nordic countries. The widening wage structure in Eastern Europe compared to pre-reform situation is derived from the abandoning of the centralized wage-setting system, which leads to the relatively higher level of wage inequality in these countries compared with Nordic countries. Nevertheless, most of the Eastern European countries still keep a modest wage inequality level⁷, which is partly owing to the establishment of collective bargaining arrangement (except in Ukraine and Poland) and the maintaining of minimum wage system in those countries.

5.2 Estimation Results

Based on the wage equation suggested before, regressions of log hourly wage have been run for each country by controlling different related variables. Detailed regression models and results are presented in Appendix 4a/4b. Generally, model (1) test the effect of gender dummy variable on mean log hourly wage, and the unadjusted gender pay gap can be obtained directly from the coefficient of the gender dummy. From model (2) to (4), more and more specific variables in relation to the human-capital, marriage, working sectors and the interaction term

⁶ The concept of solidaristic wage policy as it was developed by the European trade unions in the post-war period can be understood as an integrative approach connecting both moral economy and political economy of wage formation. The core importance of solidaristic wage policy lies in the principle of de-commodification, according to which the price of labor is not set by supply and demand, but instead by collective agreements. From the perspective of trade unions, solidaristic wage policy includes both normative and economic objectives (Schulten, 2004).

⁷ Some of them have at least similar level as in other developed countries and most of them keep lower level than that in the United States, referring to OECD data. (see OECD employment outlook 2004, chapter 3).

have been added into the regression model with the aim to get better estimation for each country. Model (5) which has shown up in some countries is run for the purpose to re-test the significant variables and make more convincing selection. By applying the general method of regression selection (adjusted R-square and t-statistic values), different estimation models with different explanatory variables have been employed for different countries. Denmark and Ukraine will be omitted in the rest of the discussion in this study because of the extremely low values of adjusted R-square in all those regressions in these two countries. Table 5-2a and 5-2b list the selected estimation results for all other countries.

Table 5-2a Regression Results on log Hourly Wage, Nordic Countries, Age 15-64

	(t statistics in Parentheses)			
	FI(Finland)	NO(Norway)	SE(Sweden)	IS(Iceland)#
Gender Dummy	-0.219*** (-5.90)	-0.140*** (-4.13)	-0.100*** (-4.07)	-0.252*** (-4.25)
Education	0.061*** (15.35)	0.053*** (14.74)	0.055*** (16.29)	0.048*** (6.12)
Experience	0.016*** (4.23)	0.028*** (7.89)	0.016*** (5.63)	0.014* (1.70)
Experience Sq.	-0.000140* (-1.69)	-0.000433*** (-5.95)	-0.000195*** (-3.31)	-0.000154 (-0.86)
Married Dummy	0.102*** (2.80)	0.061** (1.97)	0.107*** (4.27)	-
Manufacturing Dummy	0.115*** (3.79)	-	-	-0.260** (-2.53)
Public Dummy	-	-0.124*** (-5.12)	-0.117*** (-5.70)	-
F×M	-0.095** (-2.00)	-0.075* (-1.76)	-0.117*** (-3.41)	-
Intercept	1.544*** (21.49)	2.025*** (32.38)	1.794*** (32.63)	2.253*** (15.43)
<i>Observations</i>	768	857	843	198
<i>Adj.R-square</i>	0.3518	0.3334	0.3428	0.2324

[Note] 1. Data from Year 2004; # Data from Year 2005;

2. ***, ** and * denote significance at 1, 5 and 10 percent level, respectively.

Table 5-2b Regression Results on log Hourly Wage, Eastern European Countries, Age 15-64
(t statistics in Parentheses)

	CZ(Czech)	PL(Poland)	SK(Slovakia)	HU(Hungary) [#]
Gender Dummy	-0.168*** (-3.12)	-0.227*** (-4.65)	-0.315*** (-7.45)	-0.350*** (-4.66)
Education	0.074*** (10.77)	0.110*** (11.74)	0.062*** (8.23)	0.135*** (15.48)
Experience	0.018*** (3.23)	0.027*** (3.37)	0.014* (1.73)	0.038*** (4.56)
Experience Sq.	-0.000408*** (-3.36)	-0.000427** (-2.11)	-0.000245 (-1.40)	-0.000545*** (-2.91)
Married Dummy	0.052 (1.09)	-	-0.093* (-1.81)	-0.232*** (-2.96)
Manufacturing Dummy	-	-	-	-
Public Dummy	-	-	-	-
F×M	-0.119* (-1.82)	-	-	0.154* (1.66)
Intercept	-0.111 (-0.99)	-0.847*** (-5.65)	-0.087 (-0.74)	-0.926*** (-6.44)
<i>Observations</i>	537	428	320	420
<i>Adj.R-square</i>	0.2631	0.2568	0.2811	0.3775

[Note] 1. Data from Year 2004; # Data from Year 2005;

2. ***, ** and * denote significance at 1, 5 and 10 percent level, respectively.

Discussion starts from the regression results of log hourly wage on the samples of aged 15-64 paid employees in Nordic countries (Table 5-2a). Both education and experience variables have positive and significant coefficients in all countries, while the negative effect from the rate of returns to increasing experience (which can be shown in the experience quadratic term) on log hourly wage is almost zero. Wage is an increasing function of human capital variables, combined with the finding from the variable means that there is averagely higher level of education and more working experience among women, the women's endowments of human capital actually narrow the gender wage gap in Nordic countries. Working sector variables indeed play key roles in explaining the gender pay gaps in all these countries though the picture is starkly different. Public dummy gives a great negative effect, which is around 1.5 times as big as the effect of human capital variables, on the log hourly wage in both Norway

and Sweden. This is possibly due to the over-supply of female workers in public sector in these countries, which could drive down the pay offered by the employers in this sector, and in turn widen the gender pay gap as a result of the over-representation of women. The problem that women are crowded in public sector also exists in Finland and Iceland, but there's no significant effect here. On the contrary, manufacturing dummy significantly affects the wages in these two countries, whilst it shows positive value in Finland and negative in Iceland. Workers in the manufacturing sector obtain higher remuneration in Finland but get penalty in terms of wage in Iceland. The reason is somewhat difficult to trace, but since only a very small portion of female workers stay in this sector in each country (11.36% in Finland and 3.88% in Iceland), it can be inferred that the magnitude of overall effect from manufacturing dummy on gender wage differentials is not large in both Finland and Iceland. Without exception, gender dummy has a significantly negative coefficient, which reveals the lower wages received by women in all these countries. Except in Iceland, including the married dummy and the interaction term strongly supports the argument of "family wage gap" in Nordic countries. The coefficients of married dummy are positive and the coefficients of the interaction term are negative in all these countries, significantly, which represent that for females the hourly wages are estimated to be lower among married individuals than for singles; however, the opposite result is shown for males.

Different regression results in Eastern European countries (Table 5-2b) have been obtained, given the available data sets. The gender pay gap is still negatively related to the human capital variables in all countries, whereas the magnitude of the effect of human capital indicators is larger in Poland and Hungary compared to other Eastern European countries and all Nordic countries. Neither working sector variable suggests significant impact on wage level in each country, which is in accordance with the observed small difference in sectoral composition between men and women in Eastern Europe. Negative gender dummy coefficients are relatively higher than those in Nordic countries, on average, but not the case in Czech. Married dummy and the interaction term have not been included in the regression model in Poland because there is no significant difference regarding marital status, just like the case in Iceland; the model in Slovakia has no interaction term as well. Contrary to the expectation, the patterns of "family wage gap" in Czech and Hungary have diverged dramatically. In Czech, married women receive lower wages than singles while married men earn more, the same as in Finland, Norway and Sweden; in Hungary it is the other way round

--married women get higher wages while the estimated hourly wages for men are substantially lower for married individuals than for single individuals⁸.

5.3 Gender Pay Gap Analysis

Obviously, gender pay gaps exist in all these countries with different magnitude and components for various reasons. The following part will focus on the comparison and decompositions of gender pay gaps to explore the different patterns and possible reasons of those gaps in different countries.

5.3.1 Summary of Gender Pay Gap

Follow the regression tests of log hourly wage for each country, gender pay gaps are summarized in Table 5-3a and 5-3b.

Table 5-3a Gender Pay Gaps in Nordic Countries, Age 15-64
(Standard Errors in Parentheses)

	FI(Finland)	NO(Norway)	SE(Sweden)	IS(Iceland)#
Unadjusted Gap	0.244 (0.028)	0.211 (0.024)	0.158 (0.020)	0.208 (0.064)
Adjusted Gap				
Single Male/Female	0.219 (0.037)	0.140 (0.034)	0.100 (0.025)	0.252 (0.059)
Married Male/Female	0.315 (0.031)	0.215 (0.028)	0.217 (0.026)	0.252 (0.059)

[Note] 1. Data from Year 2004; # Data from Year 2005;
 2. Unadjusted gender pay gap is defined as the difference in mean log hourly wage between male and female work force;
 3. Adjusted gap is the gender pay gap taking into account the differences in male and female work force regarding the individual characteristics and working sectors;
 4. Except in IS, there is significant difference in the gap between single male and female and that between married male and female in each country.

⁸ Perhaps it is because the large amount of missing data of wages for married women in Hungary and therefore leads to a huge difference in married proportion between male and female paid employees.

Table 5-3b Gender Pay Gaps in Eastern European Countries, Age 15-64
(Standard Errors in Parentheses)

	CZ(Czech)	PL(Poland)	SK(Slovakia)	HU(Hungary)#
Unadjusted Gap	0.227 (0.034)	0.110 (0.055)	0.313 (0.046)	0.161 (0.055)
Adjusted Gap				
Single Male/Female	0.168 (0.054)	0.227 (0.049)	0.315 (0.042)	0.350 (0.075)
Married Male/Female	0.286 (0.037)	0.227 (0.049)	0.315 (0.042)	0.195 (0.056)

- [Note] 1. Data from Year 2004; # Data from Year 2005;
 2. Unadjusted gender pay gap is defined as the difference in mean log hourly wage between male and female work force;
 3. Adjusted gap is the gender pay gap taking into account the differences in male and female work force regarding the individual characteristics and working sectors;
 4. Except in PL and SK, there is significant difference in the gap between single male and female and that between married male and female in each country.

As reported in the tables above, the unadjusted gender pay gaps are almost on the similar level in Nordic countries and Eastern European countries, which is around 0.2 log points; except in Poland the raw gap (only 0.11 log points) is slightly smaller and in Slovakia the gap is relatively larger (over 0.3 log points).

After controlling individual specific factors like human capital and marriage variables, as well as the working sector dummies⁹, more striking variations in the gender pay gaps appear in those countries. In most of the Nordic countries except Iceland, the pay differentials between single male and female significantly differ from the differentials between married male and female. Male-female wage gaps are relatively small for single men and women, but quite large for married men and women. The gender pay gap for single individuals is about 30 percent smaller than that for married individuals in both Finland and Norway; while it is 54 percent smaller in Sweden. Such remarkable differences can be drawn from the regression results that marriage tends to benefit men and disfavour women on earnings in these countries. Such picture can not be seen in Iceland, marriage has no important impact on gender wage differential. The adjusted male-female wage gap is around 0.252 log points regardless of the

⁹ In general, human capital variables have been included in regressions for each country. For other specific variables, I only consider the variables which have significant effects on log hourly wage for each country, as the results listed in Table 5-2a/5-2b. One exception is, in the regression result for Czech, the interaction term which is the product of gender and married dummies shows a significant effect, thus the married dummy has also been included without significant effect.

marital status, which is higher than the level in other three Nordic countries but slightly smaller than the adjusted gap for married men and women in Finland.

In Eastern European countries, the pattern that the pay gaps are distinct between men and women with respect to the marital status has shown up only in Czech with a 41 percent smaller gap between single men and women. The totally opposite pattern exhibits in Hungary that the pay gap between single male and female is much wider (almost 80 percent) than the gap between married male and female, since marriage has a positive effect on women's wage estimated in this country. The pay gaps between single male and female do not significantly differ from the gaps between married male and female in Poland and Slovakia, as in Iceland; but the adjusted pay gaps have increased in these countries compared to the unadjusted gaps, though they are increasing in different level. Particularly in Poland, the gender pay gap adjusted for human capital variables is 0.227 log points, much higher than the unadjusted one (0.110 log points). Even though the raw gap in Poland makes it a country with a seemingly small gender pay gap, the adjusted gap reveals that the female workers still face a considerably lower wage when the human capital endowment is taken into account.

5.3.2 Comparison of Gender Pay Gaps Across Countries

One of the interests of this study is to examine whether the significant difference in gender pay gaps exists between Nordic countries and Eastern European countries. With a high level of gender equality, do Nordic countries indeed have significantly smaller gender wage gaps in comparison with the Eastern European countries? To compare the difference in gender pay gaps and to test the statistical significance of such difference, the difference between the gender pay gaps and t-statistic testing have been carried out between Nordic countries and Eastern European countries. Table 5-4 throws some light on the cross-country comparison of gender pay gaps. Negative numbers indicate smaller gender pay gaps in Nordic countries compared with Eastern European countries; positive numbers represent larger gaps in Nordic countries.

Table 5-4 Cross-country Difference in Gender Pay Gaps, Age 15-64
(t statistics in Parentheses)

		FI(Finland)		NO(Norway)		SE(Sweden)		IS(Iceland) #
		single	married	single	married	single	married	single/married
CZ(Czech)	single	0.051 (0.78)	-	-0.028 (-0.44)	-	-0.068 (-1.14)	-	0.084 (1.05)
	married	-	0.029 (0.60)	-	-0.071 (-1.53)	-	-0.069 (-1.53)	-0.034 (-0.49)
HU(Hungary) #	single	-0.131 (-1.57)	-	-0.210** (-2.55)	-	-0.250*** (-3.16)	-	-0.098 (-1.03)
	married	-	0.120* (1.87)	-	0.020 (0.32)	-	0.022 (0.36)	0.057 (0.70)
PL(Poland)	single/married	-0.008 (-0.13)	0.088 (1.52)	-0.087 (-1.46)	-0.012 (-0.21)	-0.127** (-2.31)	-0.01 (-0.18)	0.025 (0.33)
SK(Slovakia)	single/married	-0.096* (-1.72)	0	-0.175*** (-3.24)	-0.100** (-1.98)	-0.215*** (-4.40)	-0.098** (-1.98)	-0.063 (-0.87)

[Note] 1. Data from Year 2004; # Data from Year 2005;

2. ***, ** and * denote significance at 1, 5 and 10 percent level, respectively;

3. Adjusted gender pay gaps between single male and female and between married male and female have been used here.

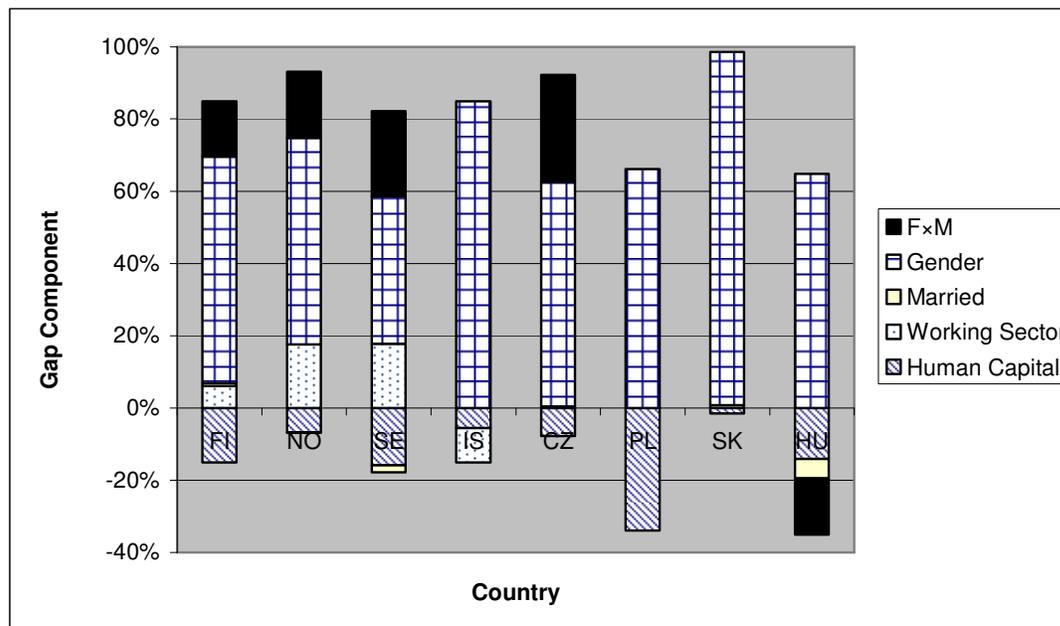
From the results of cross-country comparison, it is somewhat hard to recognize a systematic pattern of the difference in gender pay gaps between Nordic countries and Eastern European countries. To sum up, the comparison results suggest three features of the difference in gender pay gaps. First, no significant difference in gaps exists between Iceland and all the selected Eastern European countries, and the same case has shown up in the comparison between Czech and all Nordic countries here. Then, put Iceland and Czech aside, the gender pay gaps between single men and women in other three Nordic countries are all smaller than those in other three Eastern European countries. But based on the t-statistic testing, in Sweden all these smaller gaps are statistically significant, in Norway the gaps are significantly smaller than those in Hungary and Slovakia and in Finland the gap only significantly differs from that in Slovakia. Next, turn to the male-female wage gaps between married men and women, the smaller gaps only significantly exist between Norway and Slovakia as well as between Sweden and Slovakia; the pay gap between married men and women in Finland rises to the same high level as that in Slovakia, and overtakes the gap in Hungary. Such pattern probably is due to the observed evidence that the male-female wage differentials are significantly larger for married men and women than those for single men and women in these three Nordic countries.

The hypothesis that the gender pay gaps in Nordic countries are significantly different from those in Eastern European countries can not be supported by the unsystematic pattern of the difference in gender pay gaps in these countries; however, smaller pay gaps between single men and women still significantly exist in some Nordic countries compared with Eastern European countries while the same case can hardly be applied to married men and women.

5.3.3 Decompositions of Gender Pay Gap

To further explore the magnitude of components which are responsible for the gender pay gaps in different countries, the unadjusted pay gap between male and female in each country has been decomposed at the mean. The decomposition results, in which variables with statistically significant coefficients have been involved, are presented in Figure 5-1; more detailed information on the decomposition results is provided in Appendix 5.

Figure 5-1 Decompositions of Gender Pay Gap



The figure above demonstrates the significant components of the gender pay gap in each country, and the size of each component. The explained components include the observed human capital endowments, working sector composition, and marriage status. The similarity is that the human capital endowments contribute to narrowing the gender pay gaps in all these countries, though the sizes of contribution are different from each other. As mentioned before,

women on average accumulating relatively higher level of human capital in these countries tends to narrow the gender wage differentials. The effect of marriage status is almost next to nothing in most of the countries, except a small negative effect in Hungary. Working sector dummies can be explanatory variables only in all Nordic countries; however, the explained portion is different. Manufacturing dummy seems to favor women in Iceland since around 10 percent negative effect on the pay gap exists there, while it explains about 5 percent of the gender wage gap in Finland. Almost 20 percent of the male-female wage differentials can be explained by the public dummy in both Norway and Sweden, which suggests that the overcrowded female working sector, say public sector here, consists a great part of gender pay gaps in these two countries.

Apart from the explained components, unexplained factors still attribute a considerable portion to the gender pay gap in each country. More than 50 percent of the gender pay gap is due to the gender dummy in almost all countries, except in Sweden the gender dummy only accounts for near 40 percent. It means that women in these countries facing the inferior treatment in terms of wage still results from the membership in the female group, which is generally influenced by the discrimination against women, to a large extent. In addition, the interaction term between gender and married dummies shows a positive effect on the gender pay gap in Finland, Norway, Sweden and Czech, which well reflects that the married women in these countries suffer more substantial wage inferiority. On the contrary, in Hungary the interaction term appears a negative effect on the gender pay gap, which means married women are in a better situation with respect to the wage in this country.

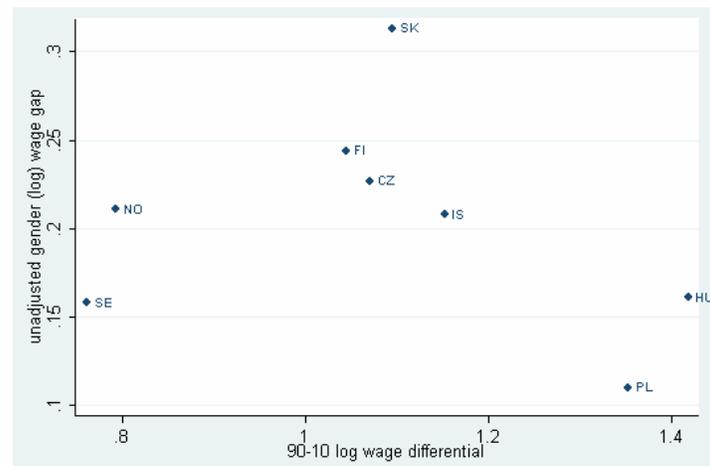
5.3.4 Gender Pay Gap and Wage Distribution

One remarkable consequence of the market reform in Eastern European countries is the widening wage distribution. Wage-setting system changed from the centralized form to collect bargaining or decentralized system with the development of economic liberalization. The expected widening wage structure following wage decentralization emerged after the introduction of market reform in these countries, as it can be seen from Brainerd (2000) that the post-reform 90-10 log wage differential is more than 30 percent larger than the pre-reform level for men and around 25 percent for women in Czech and Slovakia, while around 100 percent larger in Ukraine. On the contrary, Nordic countries have a narrower wage dispersion

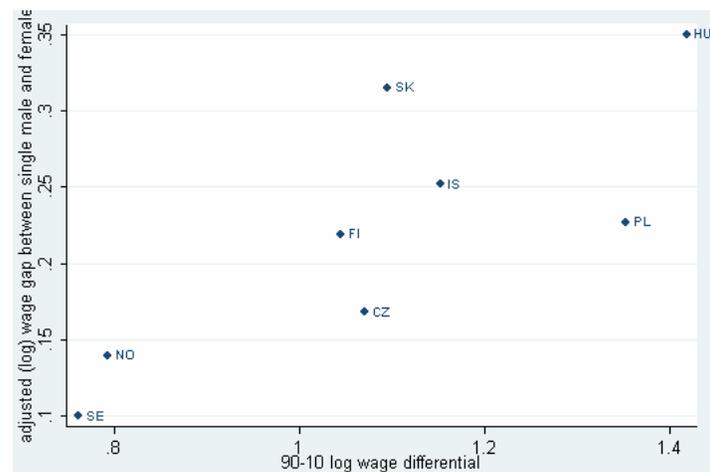
and more compressed wage structure, compared to Eastern Europe. The summarized wage distribution indicators have been reported in Table 5-1 in previous discussion.

As previous comparative studies suggest that a more compressed wage structure is associated with a lower gender pay gap (Blau and Kahn, 1996b), is this pattern suitable for Nordic countries and Eastern European countries as well? Given the summary of wage distribution (Table 5-1) and the gender pay gaps in all countries (Table 5-3a/5-3b), the correlation between gender pay gap and wage distribution is presented in Figure 5-2. Here only the 90-10 log wage differential has been used as the indicator of wage distribution to correlate with the gender pay gap in each country.

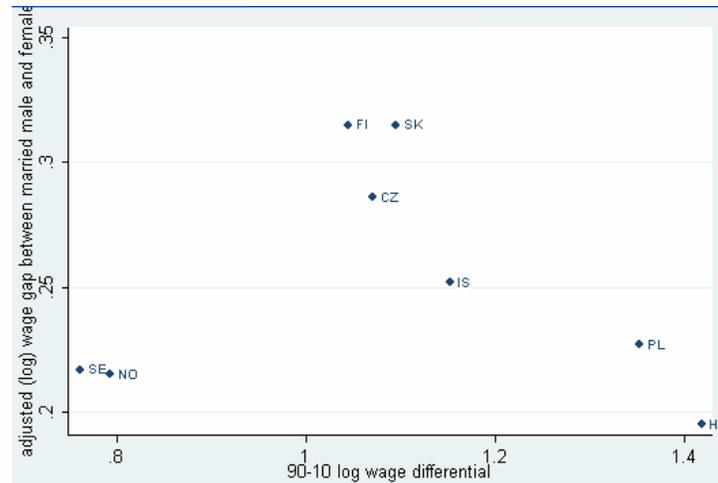
Figure 5-2 Correlation between Gender Pay Gap and Total Wage Distribution



(a) Correlation coefficient: -0.2695



(b) Correlation coefficient: 0.8039



(c) Correlation coefficient: -0.0769

Given the small number of countries in this study, it is difficult to test the hypothesis that there is a positive correlation between wage dispersion and gender wage gap in these countries resorting to the available data sets here. However, Figure 5-2 still illustrates some characteristics of the labour market situations in Nordic countries and Eastern European countries.

Unadjusted gender wage gap, adjusted wage gap between single male and female as well as the adjusted wage gap between married male and female are utilized to correlate with the wage dispersion level, which is measured by the total 90-10 log wage differential; and each correlation has been shown in the panels in Figure 5-2, separately. Only in panel (b), the highly positive correlation suggests that the adjusted pay gaps between single men and women are increasing in the level of wage dispersion in these countries; such positive relation is unlikely to obtain from panel (a) and panel (c). It is consistent with the previous finding in this study that the pay gaps between married men and women are much greater than the gaps between single men and women in some countries, especially in Nordic countries.

An unusual phenomenon in these correlations appears in Hungary. The gender wage gap between single men and women is largest in Hungary, as seen from the symbol which is on the highest level in panel (b), since Hungary has the widest wage dispersion among the sample countries in these correlations; but the symbol of Hungary goes to the bottom in panel (c) when the pay gap between married men and women is correlated with wage distribution,

as a result of smaller gap between married men and women rather than between single men and women in Hungary.

5.3.5 Investigation into Employment Rates

In addition to the widening wage structure in Eastern Europe, a sharp decline of employment rate in the labour market has occurred in response to the market reform in these countries at the same time. Large employment reductions in state enterprises resulting from the privatization of state-owned enterprises and the liberalization of wages and prices as well as the incapability of off-setting the large scale reductions by the expansion of private sector, both strongly drove down the overall employment rates in Eastern European countries. Consequently, with the declines in overall employment rates in the labour market, the female labour force participation rates have fallen significantly in all Eastern European countries. On the other hand, the Nordic countries have been taken as highly gender equality countries with high labour force participation rates of women during the past decades. The detailed information on employment rates in both Nordic countries and Eastern European countries has been given in Appendix 6, gained from ESS2 data sets.

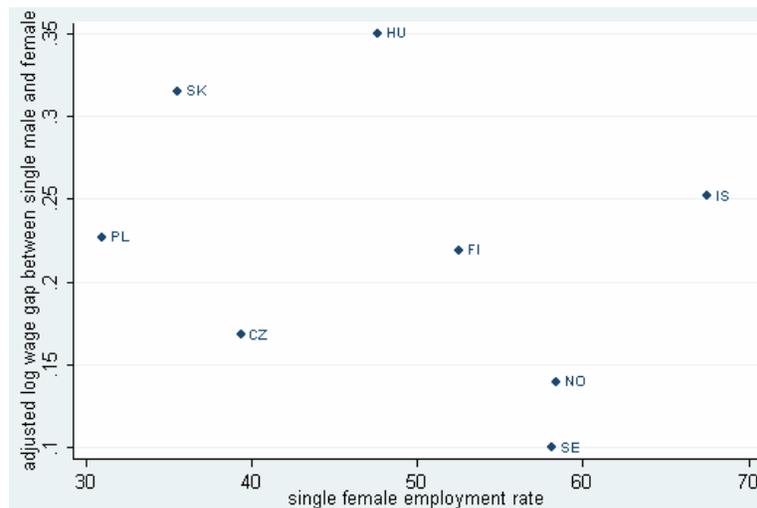
Both the employment rates from ESS2 data sets and in OECD data for working age (15-64) population have been listed in Appendix 6, through which it can be observed that the employment rates obtained from ESS2 are close to the OECD statistics for most of the countries. Also, the employment rates for persons with different marital status (single or married in this study) have been reported separately, since there is significant difference in gender pay gaps with regard to different marital status for some sample countries, it is worth noting the difference in employment rates in terms of marital status as well.

Based on the reported employment rates for all countries, it's clear to see that Nordic countries have much higher employment rates on average than all the Eastern European countries. Focus on the female employment rates for working age population, around 40 percent higher in Nordic countries compared to Eastern European countries. Besides, higher employment rates appear in Nordic countries for both single and married women. As for the observed employment gap between men and women, much smaller gaps exist in Nordic countries than those in Eastern European countries even though the gender gaps in

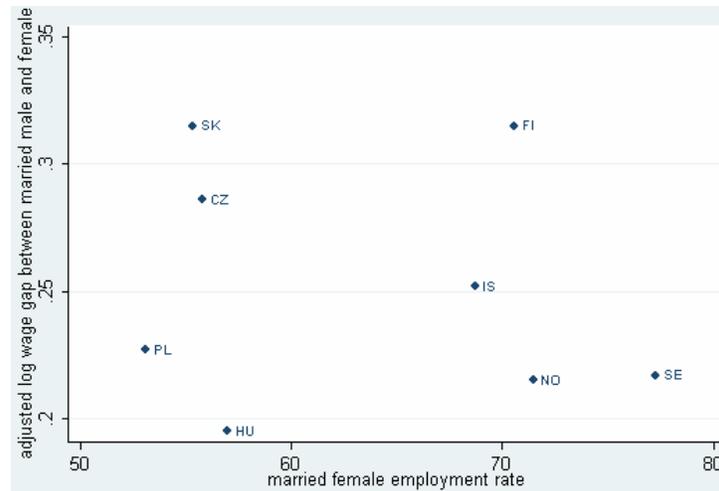
employment rates have widened greatly among married population in comparison with those among single population.

The large decline in employment rate in Eastern Europe after market reform may exert a downward pressure on wages in the labour market, and also there is still an apparent lower female employment rates in these countries than those in Nordic countries. Is it possible to expect a negative effect of female employment rate on the gender pay gap to some extent? Can female employment rates explain some features of gender pay gaps in these countries? Some correlations have been employed to test the hypotheses, presented in Figure 5-3. Again, the relatively small number of sample countries is difficult to give strong evidence in explaining the relation between female employment rates and gender pay gaps empirically, it may explore some findings for the comparative study of gender pay gaps in a sense.

Figure 5-3 Correlation between Gender Pay Gap and Female Employment Rate



(a) Correlation coefficient: -0.3097



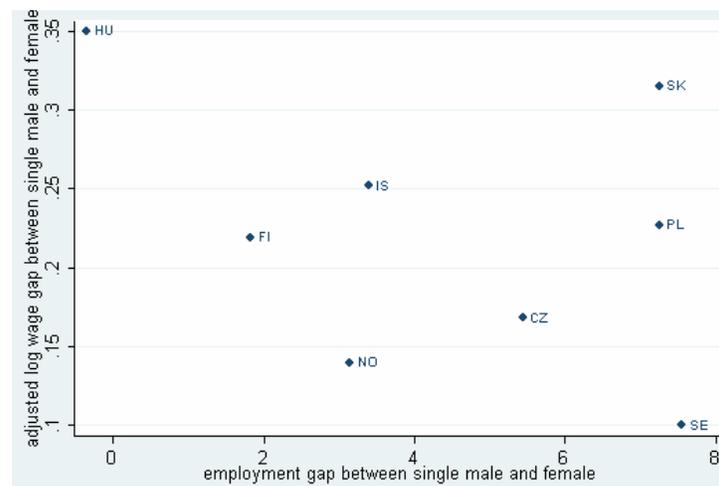
(b) Correlation coefficient: -0.1555

The correlations between the adjusted gender pay gap among single population and single female employment rate (panel (a)) as well as the adjusted gender pay gap among married population and married female employment rate (panel (b)) are shown above. It can be seen from Figure 5-3, although the correlations suggest that the female employment rate is unlikely to well explain the gender pay gap in these countries, the adjusted wage gap between single male and female is negatively correlated with the single female employment rate with a low correlation coefficient while even weaker correlation has been obtained from the relation between the adjusted gender pay gap among married population and married female employment rate. In addition, when comparing panel (a) with (b), it is obvious that the male-female wage differentials between married men and women are greater than those between single men and women in some countries (Finland, Norway, Sweden and Czech) in spite of the higher female employment rates among married population. One exception is again Hungary where with higher female employment rate among married population, the wage gap between married men and women has become narrower. Hard to prove as it is, the situation is consistent with the result for Hungary that gender pay gap is smaller among married population, rather than the case in some other countries that married women encounter greater gender wage differential compared to single women.

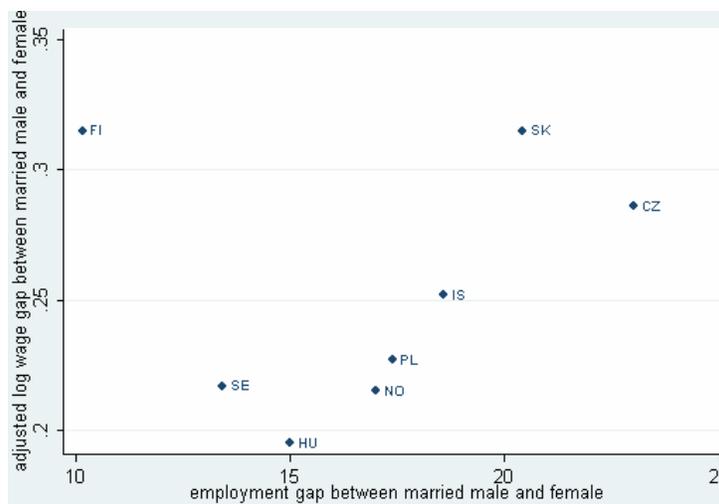
The result here is kind of puzzle against the expectation that higher female employment rate accompanies smaller male-female wage gap. But for those countries with higher gender pay gaps among married population, much higher employment gaps between men and women among married population in comparison with the single population perhaps make some sense

in explaining the larger male-female wage differential for married men and women. Because if the higher employment gap between married men and women is due to the declined incentive for labour market participation among married women (probably because of the division of labour in the family or child care) or the discrimination against married women especially married women with children, it is expectable that a higher gender gap with regard to employment rate leads to a larger gender pay gap. But this is hardly the case in this study, with reference to the correlations in Figure 5-4.

Figure 5-4 Correlation between the Gender Gaps in Wage and in Employment Rate



(a) Correlation coefficient: -0.3993



(b) Correlation coefficient: 0.1647

[Note] Employment gap is given by the difference between the male employment rate and female employment rate with regard to marital status; all employment rates have been reported in Appendix 6a/6b.

6. Underlying Reasons for Empirical Findings

Though there is a mixed picture with respect to gender pay gaps in Nordic countries and Eastern European countries, some different characteristics still stand out and lead up to pursuing the study for underlying reasons. This section covers the explanation of factors contributing to the gender pay gaps in different countries as well as the related policies and economic situations.

6.1 Family, Work and Pay Gap

One remarkable characteristic of gender pay gaps in previous analysis is that the pay gap between married men and women is significantly larger than that between single men and women in some countries, especially in most of the Nordic countries. This finding is in accord with the results of other researches on family wage gap, thus leads to considering about the effects of family policies and women's choices between work and family on the gender pay gaps in Nordic countries and Eastern European countries.

Box 1. Family-friendly Policies in Selected Nordic Countries

Finland

- The Finnish leave period is 54 weeks with the first 20 weeks for the mother, then 32 weeks of parental leave¹⁰ and further, a father's quota of 2 weeks. However, fathers have to take at least two weeks of parental leave in order to earn the two weeks of paternal leave.
- The compensation rate is 66% for most of the period, while 70% of the average wage level has been implemented since 2005.
- A subsidy for child care at home has existed up until the child is aged 3; the coverage of publicly provided child care is lowest among all Nordic countries.

Iceland

- The maternity leave has been 6 months since 1987. By 2000, 3 months leave was allotted for mother and a 3 months parental leave period could be used by either parent. The father's quota increased to 3 months in 2003.
- For most of the leave period, the compensation rate is 80% of former wage income up to a maximum.
- High coverage of public child day care is provided in Iceland, for children aged 3-5 the coverage was 93% in 2002.

¹⁰ Parental leave is defined as the leave period which is transferable between the father and mother; maternal leave is defined as a leave period that is reserved for the mother; paternal leave means a leave period that is reserved for the father, or say, father's quota.

Norway

- The parental leave period was extended to 52 weeks in 2005. Except for the mother's quota of 9 weeks and the father's quota of 4 weeks, the rest is open for both parents.
- The mother and father should be employed for at least six months during the last ten months before the birth to be entitled to payment during parental leave. The parents are compensated 100% of their former wage income for a period of 40 weeks or 80% for a period of 52 weeks.
- Around 82% of all children age 3-5 were provided public child care in 2002, while the coverage was relatively low for children aged 0-2.
- All families with children aged 13-36 months, who do not have a governmentally subsidized child care arrangement, may receive a *cash for childcare benefit* amounting to Euro 400 per month. In addition all children receive a child benefit around Euro 130 per month.

Sweden

- The parental leave period is 16 month totally, among which 13 months can be shared between mother and father without restriction while one month is reserved for mother and in 2002 the father's quota was extended to two months.
- The compensation rate for most of the leave period is 80% of former wage income up to a maximum, though a 90% compensation rate exists in the case of all state and government employees in the public sector. The compensation rate is based on the former annual income.
- The coverage of publicly provided child care is not low except for the age group 0-1; while the staff-to-child ratio is typically 1:6 for preschool children, which is much lower than the average ratio in other OECD countries.

Source: Barth et al. (2002); Datta Gupta et al. (2006).

Nordic countries led on most of the family-friendly policy indices across OECD countries (OECD, 2001); at the same time, these countries have succeeded in maintaining a high rate of female labor force participation without reducing fertility to the low levels (Datta Gupta et al., 2006) thanks to the generous family-friendly policies (see Box 1).

Despite the fact that large differences with regard to the detailed family policies do exist among Nordic countries, considerably generous family-friendly policies are applied in Nordic countries such as long leave periods for child-rearing, high compensation rates during leave periods, high flexibility of the leave schemes, large investments in publicly provided child care to improve the coverage and quality of child care and so on. Such kind of policies has been proved that to some extent they have positive effects on women's participation in the labor market and on children's development, by some studies (e.g. Jaumotte, 2004; Datta Gupta et al., 2006); while certain effects on women's position in the labor market and the choices for women to balance work and family should also be considered. Although the data for child number or fertility rate is not available in this study, the gender pay gaps between married men and women and those between single men and women do make some sense when family policies and family wage gaps are taken into account.

Based on the flexibility of take-up the leave schemes in Nordic countries and less than 100% offer of compensation rates during leave periods, generally most of the parental leave is taken up by mothers (Datta Gupta et.al., 2006). This is because the economic incentives spur on the parent with lower earnings to take up most of the parental leave, and since men tend to earn higher income than women, thus mothers are likely to take large proportion of the parental leave in these countries. Formal rights to leave make it easier to keep a formal attachment to previous job and employer, which is important for parents, especially for mothers (since most of the parental leave periods are taken by mothers in these countries) to take time for childbirth and childrearing without getting out of labor market. At the same time, the publicly provided child care with a fairly low price and high quality (see the extensive surveys in OECD 2002b, 2003, 2004, 2005) can possibly support mothers to return to their previous jobs without anxiety. On the other hand, negative effects may come from long periods of maternity leave (parental leave). Though those mothers who have formal rights with job-protection are high likely to resume previous employment, the leave schemes with high compensation rate and long period allow mothers to take considerable time out of work, which have a negative labor supply effects(Datta Gupta et. al., 2006). Also, long leave periods directly imply career interruptions, which can be expected to have negative effects on women's human capital accumulation during break. This is because mothers may experience a stagnation period of accumulating education or working experience during parental leave periods and competitive labor market and continuously updated knowledge may impede mothers to adapt to the new working environment easily when they return to previous jobs. Thus negative effects of long leave periods on women's position in the labor market and therefore relative wages are likely to exist in these countries to some extent, which can partly explain why the male-female wage differentials between married men and women are significantly larger than the differentials between single men and women in most of the Nordic countries.

Box 2. Family Support Systems in Selected Eastern European Countries

Czech Republic

- Maternity leave period is 6 weeks prior to confinement and 22 weeks after confinement. The compensation rate is 69% with a maximum.
- Parental allowance or social allowance is paid for low income families with children, by using income-tested approach to decide the entitlement.
- Child benefit up to age 15 (26 for student) is paid to low-income families, earnings-related benefit formula is applied as well.
- Enrolment rate of nursery have dropped significantly since the transition to a market economy, while kindergarten participation rate is nearly as high as before the transition.

Monthly fee for public kindergarten was around 2-5% of average wages in 1998, and some special support for low-income families or families with more than one child in day care are provided by government.

Hungary

- 4 weeks before confinement and 20 weeks after, for maternity leave. 70% of last wage is compensated for leaving.
- Child care fee is paid until the child turns 2 related to earnings, which is 70% of last wage up to an annual maximum of Euro 318.44. Child raising support is universal for parents who raise three or more children in their own home, if the youngest child is between 3 and 8.
- Family allowance is applied universally up to child turns 16 (20 for student), the allowance is increasing with number of children in the family and higher for single parent. Euro 14.57 per month is paid for one child in the family and Euro 17.26 is for single parent with one child.
- Enrolment rates of nursery and kindergarten are both the same level as pre-reform, with 10% in nursery and 85% in kindergarten in 1997.

Poland

- Maternity leave period is from 16 weeks for the first single birth to 18 weeks for the next single birth, and 26 weeks in case of multiple birth. 100% of last wage is paid for compensation during leave period.
- Based on income-tested approach, only low-income families are qualified to receive child raising allowance, which is paid for 24 months for single child and 36 months if raising more than one child or if a single parent. The allowance uses a flat rate, which is Euro 69.44 per month and Euro 110.41 for single parent.
- Family allowance is available for low-income families up to child turns age 16 (20 for student), which is increasing from the third child in the family. Euro 9.26 is paid monthly for the first and second child in low-income family.
- Both nursery and kindergarten participation rates were relatively low, which were around 5% in nursery and 50% in kindergarten in 1997.

Slovakia

- 4-6 weeks before and 24-22 weeks after confinement for maternity leave, while 37 weeks for multiple birth or single mothers. Compensation rate is 90%.
- Parental leave allowance is only available for low-income and full-time parental care families, which is Euro 65.85 per month and paid up to child is 3.
- Child allowance is paid up to age 15 (25 for student) to low-income families; earnings-related benefit formula is applied and the amount of allowance is rising with the age of child.

Source: Rostgaard (2004).

Transition economies have experienced changes not only in market and economic situation, but also in demographic landscape. The number of children has dropped significantly in most of these countries since 1989, which is argued by some analysts that the great decline in fertility rate in these countries is a consequence of the harsh economic and social conditions the countries have faced during transition (Rostgaard, 2004). As mentioned by Sobotka (2001), the trend in the four Eastern European countries which are listed in Box 2 can be seen as resulting from a more stable environment (compared with the former Soviet Union) in which

two groups of women can be distinguished: those acting traditionally by marrying and having children early, and those who postpone birth and are less willing to follow the two-child family norm. These economies have also experienced considerably falls in employment since the introduction of market reform and the falls have especially affected women in labor market. As it can be seen from Appendix 6b, only around half of female working-age population are employed in the labor market nowadays with the lowest in Poland at 46.4% in 2004 (according to OECD data in Appendix 6b). The reason for low labor market employment rate is partly due to economic pressure and privatization of state-owned enterprises.

Family support system is an important policy tool that helps families and children to improve their quality of life as well as to enable both parents to take time off for child-caring and to balance work and family life. The family support policies used to be very generous in relation to family allowances and early childhood care and education services under the centrally planned economy; while those policies have tended to be less generous since market reform was implemented in these countries, i.e. reduced family allowances as the result of fiscal crisis brought on by the transition, and significantly dropped enrolment rates of pre-school child day care services. Although Eastern European countries tend to follow the established patterns of family support system, the concrete family policies vary across countries (see Box 2).

The coexistence of generous family support policies favoring mothers like the relatively long maternity leave periods, high compensation rate (considerably high rate with 100% in Poland and 90% in Slovakia), no corresponding generous policy available for fathers, income testing approach used for selection of families who are eligible to receive parental benefit (except in Hungary) and benefit provided until the child is 2-3 years old and the economic pressure and depressing female employment rate in the labor market in these countries leads to two strategies for women to make decisions between work and family. One is the “one-earner, two-parent family” (Rostgaard, 2004) pattern with the mother staying at home to take care of children and the father entering labor market to earn money to support the family, since women tend to suffer more severe employment pressure and earn less in the labor market. The other is that women keep staying in employment with postponing the childbearing or those mothers who go back to work after child birth as soon as possible in order to protect their previous jobs by giving up their entitled maternity leave. These two strategies may partly explain the finding in this study why in some Eastern European countries (e.g. Poland and

Slovakia), there's no significant difference in gender pay gaps between single population and married population. Since some married women with child enjoy the generous family policies and become inactive in labor market while the others stay in employment to pursue their career, it can be expected that the gender pay gaps in these countries may be not significantly different with regard to marital status.

Another important family policy which is also related to gender wage gap is the provision of early childhood care and education services (hereinafter "ECCE") programs. The typical ECCE programs in communist regimes would initially appear very similar to the Nordic approach (Rostgaard, 2004). But with the transition to the market economy, the enrolment rates have dropped in both nurseries and kindergartens in most of the Eastern European countries. Such drop can be explained in this way: the rising in unemployment makes many parents think it's unnecessary to use day care since they can take care of the child at home; besides, relatively high expenditure on childcare incurs lower demand to use day care since many families especially low-income families can not afford the high enrolment fees. The recent situation of ECCE programs in Czech can explain why the gender pay gap between single men and women is significantly narrower than the gap between married men and women in this country (just the case in most of the Nordic countries) to some extent. Except the low enrolment rate in nursery (only about 1% in 1997), the fairly high kindergarten participation rate (around 85% in 1997) as well as the relatively low enrolment fee for public kindergartens (2-5% of monthly average wage in 1998) may reflect that publicly provided child care is still a better choice than child care at home in Czech.¹¹ Apart from ECCE, there is a fact in this country where 23% of available maternity days are not used (UNICEF, 1999). As discussed before, this observed fact partly reflects the trend that some mothers refrain from using the maternity leave and are willing to go back to work as soon as possible in order to protect their jobs since they face a labor market with low employment rate and great competition; also the relatively low compensation rate during leave period compared to other Eastern European countries may give incentives to women to choose resume their career as soon as possible in order to have better financial support for the family. In spite of the fact that low employment rate still persists, a fairly large portion of mothers go back to labor market after relatively short interruptions in Czech. This situation perhaps partly explains the difference in gender pay gaps with respect to marital status in this country since non-mother

¹¹ Here, the enrolment rate, participation rate and enrolment fee can be obtained from Rostgaard (2004).

female labor force with no small portion is also staying in employment and lower wage for married women compared to single women may be due to some loss of human capital during career interruptions or more discrimination against married women or mothers.

6.2 Gender Segregation

Labor markets in Nordic countries are among the most gender-segmented labor markets in the world (OECD, 2002). In this study it is clear to see that in all Nordic countries more than half of the female work force is employed in the public sector, while only 16-22 percent of the male work force is there; this is not the case for the labor markets in Eastern Europe, where around 30 percent of the female work force stays in the public sector and the proportion of the female workers in the manufacturing is similar to that of the male workers. As a result, gender segregation by working sector becomes an important explanatory factor in the observed gender pay gaps in Nordic countries, especially when working in the public sector accounts for almost 20 percent of the gender pay gaps in both Norway and Sweden; whereas there's no significant effect of working sector on gender pay gaps in all selected Eastern European countries in this study.

Why over-representation of female work force in the public sector could be a serious case in Nordic countries? And how does such gender-segmented labor market affect the male-female wage differential? One explanation for the female-dominated public sector is self-selection of women, see Datta Gupta et al. (2006). As mentioned before, very generous family-friendly policies have been implemented in all Nordic countries, and generally the working conditions in the public sector have been much more family-friendly than in the private sector with respect to the rights to part time employment, child-care days etc, see Rosholm and Smith (1996). Provided with this kind of welfare state, Scandinavian women prefer being employed in the public sector to access to better family-friendly scheme and devote more time and energy to family life since woman is usually regarded as the person who is mainly responsible for the home and non-market activities in comparison with man. Apart from those women with families attracted by the public sector, a number of men or non-mothers also tend to enter the public sector to pursue their career. One important factor is that the public sector to a large extent has a monopoly power as the only potential employer for a large fraction of the labor force in the Nordic countries (Datta Gupta et al., 2006).

Given the over-crowded public sector in Nordic countries, it's obvious that the relative wage in this sector tends to be lower, and therefore it partly contributes to the gender pay gap. Theoretically, when a large proportion of the population selects to serve in the public sector, the labor supply which is greater than the labor demand will drive down the wage rate and employers in the public sector are willing to pay lower wage facing the over-supplied market. And the monopsonistic power of the public sector in Nordic countries combined with unions' preferences for working conditions improvements at the expense of wage increases, general macroeconomic conditions, tight public budgets etc (see Datta Gupta et al., 2006) may also explain the relatively low wage in public sector. Consequently, gender segregation by working sector becomes one of the main explanatory factors in gender pay gaps in Nordic countries since the lower wage in the public sector mainly influences the women's income due to the over-represented female work force in this sector. Other previous studies (e.g. Datta Gupta et al., 2006) suggest the combination of generous family-friendly schemes mainly in the public sector and high public sector employment in all Nordic countries may have led to the re-emergence of a new type of male breadwinner society where mothers (women) enter the relatively low paid public sector to obtain more opportunities for family caring while fathers (men) are mainly employed in the private sector in order to have high income to support family. Such pattern may explain why most of the Nordic countries are experiencing the process of stagnation in gender pay gaps though they possess a compressed wage structure and expanding family-friendly policies.

On the contrary, the problem of gender segregation by working sector does not show up in the analysis of gender wage gap for Eastern European countries although the proportion of the female work force in the public sector is more than twice as much as that of the male work force in these countries according to the data sets in this study.

Before the market reform, the majority of the population was employed in state-owned enterprises in Eastern Europe. When market reform was launched and these Eastern European countries embarked on a process of economic transition, large economic and social costs following the structural adjustment reforms led to a sharp reduction of income of the population and the domestic demand. With the development of competitive market, the difficulties for large state-owned enterprises in adjusting to the new market conditions and the lack of competitiveness, coupled with the widespread economic recession, resulted in the

large-scale closure of those non-competitive state-owned enterprises and further the large employment reductions in state enterprises in all these Eastern European countries.

At the same time, a giant process of privatization involved in the transition to a market economy fostered the rapid development of the new private businesses in a wide variety of economic activities and the privatization of state-owned enterprises. As a consequence, the difficult position of many state-owned enterprises together with the successful process of privatization and restructuring led to the reallocation of employment across different branches of the economies in Eastern Europe. The expansion of private sector has played a salient role in absorbing a vast amount of labor force since the implementation of market reform in spite of the fact that the overall employment rates in these Eastern European countries are still low today, especially where the female employment rates are only around 50 percent or even lower than 50 percent. The nation-wide employment reduction since the introduction of reform can be explained by the fact that the large job creation in the private sector has been outweighed by the great decline in the public sector.

With the fact that in the Eastern European countries a large proportion of work force is employed in the private sector and the private sector seems expanding and more competitive, no over-supplied labor force or monopsonistic power can drive down the relative wages in these sectors. It perhaps demonstrates the finding in this study that the public sector is not a significant contributor to the gender pay gaps in all these Eastern European countries.

However, it is noteworthy that sectoral and occupational segregation still account for the wage gap in Eastern Europe, which has been proved by other research. As suggested by Fodor É (2005), the patterns of sectoral segregation are similar in Czech Republic, Hungary and Poland—For one thing, great gender wage gaps exist in the financial sector in the three countries, e.g. in Hungary, around 70% of women worked in banking and financial services in 2000 but the female-male wage ratio was less than 60%, which is the same situation in the Czech Republic and Poland. For another, wage differences are smallest in those sectors and occupations that are most segregated in these three countries. In public administration or education, for example, where the staffs are predominantly women, the gap is 15-20 percent; in agriculture, which is predominantly male, it is only 12 percent.

6.3 Gender Discrimination

Unexplained components still account for the gender pay gaps considerably, which have been found in this study of all the sample countries. As reported before, the patterns are mixed and somewhat complicated. The unexplained factor due to being a member of female group accounts for more than 60 percent of the gender pay gaps in the Eastern European countries, and less in the Nordic countries except in Iceland. Another unexplained factor is the membership in the married female group, which generally accounts for about 20 percent in the Nordic countries excluding Iceland while more than 25 percent in Czech. It is worth considering the unexplained factors given such fairly great sizes in accounting for the gender pay gaps here. Although such factors are owing to various reasons other than discrimination, in this study only discrimination will be briefly discussed on account of data limitation.

Statistical discrimination theory points out that statistical discrimination occurs when an individual is judged based on the general characteristics of the group which he belongs rather than upon his own characteristics (see McConnell et al., 2003). This type of discrimination is possibly implied in the labor market in Nordic countries. The previous research conducted by Datta Gupta and Smith (2002) shows that despite there not being a permanent effect of career interruptions on the family pay gap, there is a tendency that all women seem to have flatter wage profiles during the child bearing ages when controlling for observable factors. These findings perhaps reflect that given the generous family policies and the fact that mothers take up almost all of the total parental leave periods, the negative effect of parental leave policies on all women's relative wages may exist in Nordic countries. Such negative effect possibly comes from the employers' statistical discrimination against all women around the child bearing ages, despite of the fact that some women may plan to postpone childbearing or only take small portion of parental leave period. Such discrimination is practiced on the basis of the average features of the mothers' group irrespective of the personal preference and behavior which may be differ from the average, and finally penalizes all women in terms of their wages.

Becker's taste-for-discrimination model envisions discrimination as a preference or "taste" for which the discriminator is willing to pay (see McConnell et al., 2003). As mentioned before, one of the important implications of Becker's model is that such kind of discrimination may tend to diminish in a competitive market because the firms who practice this type of discrimination will suffer higher wage costs than other non-discriminating firms therefore

drop out of the competitive market. In the case of the Eastern European countries, economic reforms have spurred the development of privatization process and in turn have led to the more competitive markets. The taste-for-discrimination may be hard to be adopted in these countries after reform. For one thing, this type of discrimination against women directly becomes too costly for enterprises facing the more and more competitive markets as well as the pressure from budget constraints. For another, changing into competitive markets is highly likely to lead the market valuations of labor skills to be more effective, which possibly favor women rather than men since in these Eastern European countries women on average are more highly educated and more experienced than men. As a consequence, the market reform which has been launched in Eastern Europe may decrease the taste-for-discrimination against women from firms and result in narrowing the gender wage gaps in terms of the increasing return to human capital indicators in the competitive market. By using standard Oaxaca decomposition, Jolliffe and Campos (2004) found that from 1986 to 1998 in Hungary, the male-female difference in log wage declined by an amount of 0.12 and almost this entire decline can be explained by the drop in the unexplained or “discrimination” component (which declined by 0.11) of the Oaxaca decomposition.

Some hints can be obtained from the family support schemes in Eastern European countries. First, there is no formal leave period for fathers in the selected countries, which implies mothers are regarded as the main persons to take the responsibility for childcare. Next, with the pressure on the labor market, say low employment rates in all these countries, improving family-support policies generally favor mothers more than fathers, which seems to encourage women to stay at home rather than actively participate in the labor market. Finally, some countries re-introduced elements of pro-natalist¹² policies, e.g. the family support schemes in both Poland and Hungary award greater benefits to larger families, which imply the return to the tradition that women are viewed as housewives. Following these hints, statistical discrimination perhaps occurs in Eastern European countries as well. With the rapid emergence of the private sector in these countries, employers increasingly associate the employment of women with increased labor costs and discrimination against women in employment (UNICEF, 1999) if they apply the characteristic that women tend to take long time of leave due to family responsibility to the overall female group.

¹² Natalism is the belief in the virtues of the high birth-rate. The sharp decline in fertility rates since the end of 1980s as well as the pressure from religious groups and conservative parties led some governments of Eastern European countries to re-introduce the pro-natalist principle into their policies in order to encourage population growth (see Siim, 2000; Rostgaard, 2004).

Another possible source of discrimination against women in Eastern Europe is the attitude of the society. As the National Action Plan for Czech Republic (2004) suggested, although the legal system of the Czech Republic ensuring the equality between men and women has been established for several years, a persistent problem in this country that the stereotype in the attitude of the society to the role of men and women still exists. And this fundamental problem in Czech society often extends to the labor-legal sphere, thus creates the conditions for discriminatory behavior of employers on the labor market. The research performed by the Institute of Sociology of the Academy of Science for the Ministry of Labor and Social Affairs has shown that in Czech, 40 percent of women have experienced discrimination in employment and about half of them on grounds of gender (see the National Action Plan for Czech Republic, 2004). Analytically, such discrimination in the labor market can be expected to widen the gender pay gaps as well.

7. Conclusion

With the aid of ESS2 data sets this thesis studies the recent gender pay gaps in the selected Nordic countries and Eastern European countries. This study tests the arguments that the gender pay gaps in Nordic countries significantly differ from the gaps in Eastern European countries and that the gender wage differentials positively correlate with the wage distributions while negatively correlate with the female employment rates in the labor markets in these countries. Yet, the results reported above indicate that no clear evidence can strongly support the arguments, but some different characteristics which are related with gender pay gaps do exist in Nordic countries and Eastern European countries.

In retrospect, it appears that the negative effects of family-friendly policies and over-representation of female work force in the public sector on female wages seem to stand out in the Nordic countries; while in the selected Eastern European countries such effects haven't shown up remarkably. Although the generous family-friendly policies in Nordic countries have encouraged women's entrance into the labor market, they can perhaps reduce the women's value and attractiveness as employees since human capital accumulation and job-attachment may be demoted by providing flexible and long-period parental leave schemes. The male-female wage differentials for single men and women have been found relatively small in some of the Nordic countries; however, the pay gaps between married men and women are not so narrow as expected given the finding of gender pay gaps in Nordic countries. Besides, the negative effect of over-crowded public sector on women's relative wages has significantly widened the gender pay gaps in Nordic countries, which has been shown in this study.

Having experienced the market reforms, the Eastern European countries have also undergone great changes in the labor markets apart from the variant economic and social systems. The private sector has developed rapidly instead of the public sector, which has absorbed a large proportion of labor force. Female employment rates are quite low compared with the pre-reform labor markets, though around 30 percent of women stay in the public sector, there is no significant effect of working sector in terms of the manufacturing and public sectors on

wages in all these countries. Relatively generous family support policies have been provided in Eastern Europe, in which income-testing approach and pro-natalism principle have been involved in some countries. The purpose of such family policies is mainly to encourage women to stay at home to deal with family work and spur the population growth rather than enabling women to combine market work with family life and encouraging women to participate in the labor market facing the pressure on the labor market. Given this condition, it can be expected that women in Eastern Europe can be divided into two types: one is traditional type with family work as main task and men is the only earner in the family, the other is those women who take market work as main task and may give up enjoying the family support policies, and therefore stay employed in the labor market. Thus, the pattern has shown up in Nordic countries that the male-female wage differentials for married men and women are greater than those for single men and women can not be obtained in the selected Eastern European countries except in Czech. Market reform has brought a more competitive market in Eastern Europe, which may improve the market valuation on labor skills and in turn favor the employed women in terms of wage since on average women have higher education level and more experience than men in these countries.

Based on the characteristics in the labor markets discussed above, some significant difference in gender pay gaps between the selected Nordic countries and Eastern European countries has been found in this study. Even though the pay gaps between single men and women in some Nordic countries do significantly smaller than those in some Eastern European countries, the similar pattern has hardly shown up in most of the countries when the pay gaps between married men and women are being observed. That is, there is no systematic pattern of significant difference in gender pay gaps between Nordic countries as a group and the group of Eastern European countries. On the other hand, the gender wage gaps negatively correlating with the female employment rates has not been strongly proved in this study, although the female employment rates in Nordic countries are much higher than those in Eastern Europe nowadays. These results are also in accord with the previous findings that most of the Nordic countries remain the low gender pay gaps for a long history but have experienced the process of stagnation in the gender wage gaps since the late 1970s (see Datta Gupta et al., 2006); while in Eastern Europe, the gender wage gaps were in the relatively low level before the economic reform, and women fared better with regard to relative wages after reform in spite of the widened wage structures and declined female employment rates in the selected Eastern European countries (see Brainerd, 2000) to some extent. The relation

between the wage distribution and the gender wage gap has been examined in this thesis as well. Since Nordic countries have a very compressed wage structure and Eastern Europe has a widened wage structure following the decentralized wage-setting system after the implementation of market reform, it can be expected perhaps the more narrowing wage dispersions in Nordic countries are associated with lower gender pay gaps in comparison with the Eastern European countries, which have been suggested by other studies (e.g. see Blau and Kahn, 1996b). The surprising finding in this study, however, is not the same as expected—the positive correlation only exists between the wage distribution and the gender wage gaps between single men and women for these countries, which can partly be related with the finding that the male-female wage differentials for married men and women are much greater than those for single men and women in most of the Nordic countries.

Apart from the observed factors, discrimination perhaps still plays a non-negligible role in the gender pay gaps in all these countries because of the large proportion of the unexplained components in the gender pay gaps which has been found in this study. It can not be testified on account of data limitation; however, discrimination against women, especially against married women in a way exists in all countries which may bring negative effects on women's participation in the labor market and the relative wages.

Last but not least, some limitation of this study should be pointed out here. Though the data sets cover all Nordic countries and many Eastern European countries, some countries like Denmark and Ukraine can not be used for research due to the unrecognizable data problem. The unusual data results of gender pay gaps in Hungary can not be explained well maybe because of many missing data of wages for married women in this country. These problems have an adverse effect on the findings to some extent. Another potential problem which is of limitation in this study perhaps is non-random selection with employment. If the employment selection is different across countries, it may affect the observed difference in gender pay gaps. For instance, compared to male workers, if only high quality female workers (say, tend to get high wages) are employed in the labor market, the pay gap between man and women in such a country can be expected a relatively low level. In addition, family wage gap can be concentrated more when comparing these two sets of countries if more variables related with the family structure are involved, which raises a suggestion for further research as well.

References/Literature

- Asplund R., Barth E., Smith N., & Wadensjö E. (1997): "The Male-Female Wage Gap in the Nordic Countries", in Niels Westergård-Nielsen, ed., *Wage Differentials in the Nordic Countries*, Amsterdam: North Holland.
- Barth E., Røed M., & Torp H. (2002): *Towards a Closing of the Gender Pay Gap: A Comparative Study of Three Occupations in Six European Countries*, Oslo: The Institute for Social Research.
- Becker, Gary S. (1985): "Human Capital, Effort, and the Sexual Division of Labor", *Journal of Labor Economics*, 3(1) part 2: 33-58.
- Blau, Francine D., & Kahn, Lawrence M. (1992): "The Gender Earnings Gap: Learning from International Comparison", *American Economic Review* 82: 533-38.
- Blau, Francine D., & Kahn, Lawrence M. (1996b): "Wage Structure and Gender Earnings Differentials: An International Comparison", *Economica* 63: 29-62.
- Blinder, Alan S. (1973): "A Model of Inherited Wealth", *Quarterly Journal of Economics*, 87 (4) : 608-626.
- Brainard E. (2000): "Women in Transition: Changes in Gender Wage Differentials in Eastern Europe and the Former Soviet Union", *Industrial and Labor Relations Review*, Vol. 54, no.1: 138-62.
- Cahuc P., & Zylberberg A. (2001): *Labor Economics*, Cambridge Massachusetts: The MIT Press
- Datta Gupta N., & Smith N. (2002): "Children and Career Interruptions: The Family Gap in Denmark", IZA Discussion Paper No. 263, *Economica* 69/276: 609-29.
- Datta Gupta N., Oaxaca R., & Smith N. (2006): "Swimming Upstream, Floating Downstream: Comparing Women's Relative Wage Progress in the United States and Denmark", *Industrial and Labor Relations Review*, Vol. 59 no. 2: 243-66.
- Datta Gupta N., Smith N., & Verner M. (2006): "Child Care and Parental Leave in the Nordic Countries: A Model to Aspire to?", IZA DP No.2014, Bonn: The institute for the Study of Labor (IZA).
<http://ftp.iza.org/dp2014.pdf>
- Edin, Per-Anders, & Richardson K. (2002): "Swimming With the Tide: Solidarity Wage Policy and the Gender Earnings Gap", *Scandinavian Journal of Economics*, Vol.104, No.1: 49-67.
- Fodor É. (2005): "Women at Work: the Status of Women in the Labor Markets of the Czech Republic, Hungary and Poland", Occasional Paper 3, Feb. 2005, Geneva: UNRISD.
[http://www.unrisd.org/unrisd/website/document.nsf/462fc27bd1fce00880256b4a0060d2af/655d60dc55b78527c1257011003866ba/\\$FILE/OPGP3.pdf](http://www.unrisd.org/unrisd/website/document.nsf/462fc27bd1fce00880256b4a0060d2af/655d60dc55b78527c1257011003866ba/$FILE/OPGP3.pdf)
- Harkness S., & Waldfogel J. (2003): "The Family Gap in Pay: Evidence from Seven Industrialized Countries", in S. Polachek, ed. *Research in Labor Economics* 22: 369-414.
- Jaumotte F. (2004): "Labour Force Participation of Women: Empirical Evidence on the Role of Policy and Others Determinants in OECD Countries", *OECD Economic Studies*, 37, 2003/2, Paris.
- Jolliffe D. & Campos N. F.: "Does Market Liberalisation Reduce Gender Discrimination? Econometric Evidence from Hungary, 1986-1998", *Labor Economics* 12 (2005): 1-22.

-
- Longva P., & Strøm S. (1996): “The Gender Wage Gap: An Inter-Industry Approach”, Memorandum from Department of Economics, University of Oslo, No.19, May 1996.
- McConnell C.R., Brue S.L., & Macpherson D.A.(2003): Contemporary Labor Economics, 6th ed, Boston: McGraw-Hill.
- Mincer J. (1974): *Schooling, Experience, and Earnings*, New York: Columbia University Press.
- Oaxaca R. (1973): “Male-Female Wage Differentials in Urban Labor Markets”, *International Economic Review*, 14 (3): 693-709.
- OECD(2001): *Employment Outlook 2001*, Paris:OECD.
- OECD(2002): *Employment Outlook 2002*, Paris: OECD <http://www.oecd.org/dataoecd/28/58/18960381.pdf>
- OECD(2002b,2003,2004,2005), *Babies and Bosses, Reconciling work and family life*, Paris: OECD.
- OECD(2004): *Employment Outlook 2004*, Paris: OECD <http://www.oecd.org/dataoecd/8/3/34846881.pdf>
- OECD(2007): *OECD Factbook 2007*, Paris: OECD
<http://lysander.sourceoecd.org/vl=1541081/cl=26/nw=1/rpsv/factbook/index.htm>
- Paternostro S., & Sahn, David E. (1999): “Wage Determination and Gender Discrimination in a Transition Economy: the Case of Romania”, Policy Research Working Paper No. 2113, Washington DC: World Bank.
- Pedersen L., & Deding M.(2000): “Wage Differences Between Men and Women in Denmark”, Social Research Institute (SFI) Working Paper 2000:4, Denmark: SFI
- Polachek S. W. (1975): “Potential Biases in Measuring Male-Female Discrimination”, *Journal of Human Resources*, 10 (2): 205-29.
- Polachek, S. W., & Xiang J. (2006): “The Gender Pay Gap: A Cross-Country Analysis”,
http://www.rand.org/labor/adp_pdfs/2006_polachek.pdf
- Questionnaire for the Czech Republic (July 2004), Implementation of the Beijing Platform for Action (1995) and the Outcome of Twenty-Third Special Session of the United Nations General Assembly (2000): Extract from the National Action Plan “Government Priorities and Procedures for the Enforcement of the Equality of Men and Women”, Czech Republic Government.
<http://www.un.org/womenwatch/daw/Review/responses/CZECH-REPUBLIC-English.pdf>
- Rosenfeld R., & Kalleberg A. (1990): “Across-national Comparison of the Gender Gap in Income”, *American Journal of Sociology*, 96(1): 69-106
- Rosholm M., & Smith N. (1996): “The Danish Gender Wage Gap in the 80s: A Panel Data Study”, *Oxford Economic Papers*, Vol 48: 254-79
- Rostgaard T. (2004): “Family Support Policy in Central and Eastern Europe-A Decade and a Half of Transition”, *Early Childhood and Family Policy Series N°8-2004*, United Nations Educational, Scientific and Cultural Organization. <http://unesdoc.unesco.org/images/0013/001337/133733ef>
- Ruhm, Christopher J.(1998): “The Economic Consequences of Parental Leave Mandates: Lessons from Europe”, *Quarterly Journal of Economics*, Vol.113(1): 285-317.
- Schulten T. (2004): “Foundations and Perspectives of Trade Union Wage Policy in Europe”, WSI Discussionpaper No. 129, August 2004, Düsseldorf: WSI.
http://www.boeckler.de/pdf/p_wsi_diskp_129.pdf

- Siim B. (2000): "Politics Matters, Gender and Citizenship in France, Britain and Denmark", Paper for the COST 13A Working Group Gender Issues, Berlin: Workshop on Labor Marginalisation/Exclusion and Caring (Nov. 24/25, 2000). <http://www.socsci.aau.dk/cost/gender/Workingpapers/siim.pdf>
- Sobotka T. (2001): The Years of Rapid Fertility Changes in European Post-communist Countries: Evidence and Interpretation, Population Research Centre, University of GrÖningen.
- UNICEF (1999): "Women in Transition", Regional Monitoring Report No.6, Florence, Italy: UNICEF.
- Weichselbaumer D., & Winter-Ebmer R. (2003): "A Meta-analysis of the International Gender Wage Gap", Working Paper No. 0311, Department of Economics, Johannes Kepler University Linz.
- World Bank (2002): "Transition. the First Ten Years-Analysis and Lessons for Eastern Europe and the Former Soviet Union", Washington D.C.: the World Bank.
[http://lnweb18.worldbank.org/ECA/eca.nsf/Attachments/Transition1/\\$File/complete.pdf](http://lnweb18.worldbank.org/ECA/eca.nsf/Attachments/Transition1/$File/complete.pdf)

Appendix

Appendix 1. Summary of Variable Definition

Variable	Definiton
Country	sample countries, identified by ISO Country Code.
Hourly Wage	gross pay in a certain period in Euro divided by the contracted working hours during that period
Log Hourly Wage	natural logarithm of hourly wage
<i>Demographic</i>	
Gender Dummy	if man, gender=0; if woman, gender=1
Age	individual age
Married Dummy	marital status, married=1 includes legally married or in a civil partnership; married=0 includes never get married or divorced or widowed, so on
F× M	an interaction term between gender and married dummy variables, F× M=1 means a married woman
<i>Human Capital</i>	
Education	years of full-time education completed
Experience	years of being employed in labor market
Experience Sq.	a quadratic term of experience
<i>Working Sector</i>	
Manufacturing Dummy	manufacturing=1 means the individual who works in manufacturing
Public Dummy	public=1 means the individual who works in public sector

Appendix 2a. Variable Means, Nordic Countries (Full Sample)
(Standard Deviations in Parentheses)

Variable	DK(Denmark)		FI(Finland)		NO(Norway)		SE(Sweden)		IS(Iceland) [#]	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<i>Demographics</i>										
Age	47,009 (17,689)	47,030 (18,052)	46,459 (18,158)	47,979 (19,033)	45,300 (17,369)	45,885 (17,234)	46,414 (18,588)	47,870 (19,341)	43,224 (17,565)	43,779 (18,225)
Married %	58,01	53,92	54,85	47,49	55,25	54,32	44,57	43,55	53,56	52,04
<i>Human Capital</i>										
Education	13,465 (3,670)	13,027 (3,566)	12,170 (4,084)	12,403 (4,091)	13,169 (3,523)	13,172 (3,668)	12,041 (3,492)	12,150 (3,417)	13,390 (4,271)	13,075 (4,512)
Experience	28,335 (17,466)	28,752 (18,374)	29,863 (18,724)	31,842 (19,822)	27,002 (17,828)	27,979 (18,051)	30,107 (18,646)	31,546 (19,540)	26,887 (17,819)	28,327 (19,094)
Experience-Sq./100	11,075 (11,094)	11,638 (12,480)	12,420 (12,744)	14,064 (14,096)	10,466 (11,624)	11,082 (12,120)	12,537 (13,020)	13,765 (14,159)	10,391 (12,010)	11,656 (13,527)
<i>Working Sector</i>										
Manufacturing %	23,20	10,65	23,63	11,92	12,80	7,43	22,91	10,65	11,81	7,02
Public %	17,15	47,17	12,13	35,29	16,89	47,84	15,42	45,55	12,92	37,46
Observations	694	742	948	1,074	906	834	921	911	271	299

[Note] 1. Data from Year 2004; [#]Data from Year 2005
2. Standard deviations are not reported for dummy variables.

Appendix 2b. Variable Means, Eastern European Countries (Full Sample)
(Standard Deviations in Parentheses)

Variable	CZ(Czech)		PL(Poland)		SK(Slovakia)		HU(Hungary) [#]		UA(Ukraine) [#]	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<i>Demographics</i>										
Age	45,204 (17,539)	46,016 (17,746)	41,321 (17,600)	43,092 (18,460)	41,969 (17,672)	42,611 (18,055)	45,120 (18,653)	45,998 (17,755)	44,849 (18,008)	47,814 (18,064)
Married %	63,07	57,02	60,71	56,82	59,59	56,14	61,39	50,45	68,93	60,38
<i>Human Capital</i>										
Education	12,370 (2,298)	12,101 (2,323)	11,384 (3,066)	11,617 (3,321)	12,231 (3,042)	11,715 (2,897)	11,841 (2,882)	11,834 (3,229)	11,472 (3,063)	11,167 (3,242)
Experience	28,070 (16,818)	28,969 (17,772)	26,021 (17,584)	28,201 (18,740)	25,496 (17,163)	26,485 (18,024)	29,308 (18,227)	29,587 (18,478)	28,879 (17,894)	32,235 (18,578)
Experience-Sq./100	10,705 (10,216)	11,548 (11,720)	9,858 (11,149)	11,460 (12,502)	9,442 (10,812)	10,258 (12,110)	11,907 (11,649)	12,164 (12,256)	11,537 (11,445)	13,840 (13,166)
<i>Working Sector</i>										
Manufacturing %	27,67	22,24	20,92	18,24	20,19	15,26	-	-	14,90	11,43
Public %	9,50	19,18	7,84	20,74	9,15	18,94	-	-	11,26	17,41
Observations	1,414	1,612	833	883	743	734	646	852	747	1,283

[Note] 1. Data from Year 2004; [#]Data from Year 2005

2. Standard deviations are not reported for dummy variables.

3. Data for working sector dummy variables is not available in Hungary.

Appendix 3a. Variable Means, Nordic Countries (Paid Employees, Age 15-64)

(Standard Deviations in Parentheses)

<i>Variable</i>	DK(Denmark)		FI(Finland)		NO(Norway)		SE(Sweden)		IS(Iceland) #	
	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
Log Hourly Wage	3.198 (0.583)	3.045 (0.536)	2.728 (0.412)	2.484 (0.357)	3.112 (0.369)	2.901 (0.339)	2.759 (0.317)	2.600 (0.271)	3.089 (0.434)	2.881 (0.437)
Hourly Wage	30.291 (33.139)	25.813 (30.809)	16.719 (7.648)	12.835 (5.322)	24.265 (11.717)	19.231 (6.789)	16.669 (6.220)	13.982 (4.094)	24.309 (11.236)	19.562 (8.962)
<i>Demographics</i>										
Age	42.683 (11.183)	43.203 (10.502)	40.895 (11.122)	44.096 (10.529)	42.186 (11.848)	43.213 (11.026)	41.855 (11.399)	43.632 (11.337)	39.653 (11.905)	43.437 (11.899)
Married %	65.00	67.85	59.23	56.30	58.96	59.64	45.39	49.63	59.57	56.31
<i>Human Capital</i>										
Education	14.387 (3.170)	14.592 (3.142)	13.835 (3.786)	14.242 (3.508)	14.052 (3.378)	14.183 (3.325)	12.952 (3.012)	13.505 (2.953)	14.421 (4.186)	14.243 (4.062)
Experience	21.297 (11.814)	21.611 (11.245)	20.061 (12.190)	22.854 (12.230)	22.134 (12.313)	23.030 (12.142)	21.903 (12.156)	23.127 (12.199)	19.232 (12.212)	23.194 (13.405)
Experience-Sq./100	5.926 (5.467)	5.931 (5.090)	5.506 (5.535)	6.715 (5.818)	6.412 (5.854)	6.775 (5.797)	6.272 (5.746)	6.833 (5.732)	5.174 (5.382)	7.159 (6.441)
<i>Working Sector</i>										
Manufacturing %	25.67	8.68	29.75	11.36	14.47	5.84	27.36	10.98	14.74	3.88
Public %	20.67	61.09	16.53	50.12	22.25	56.85	18.62	55.85	15.79	52.43
Observations	300	311	363	405	463	394	435	410	95	103

[Note] 1. Data from Year 2004; # Data from Year 2005.

2. Standard deviations are not reported for dummy variables.

Appendix 3b. Variable Means, Eastern European Countries (Paid Employees, Age 15-64)

(Standard Deviations in Parentheses)

<i>Variable</i>	CZ(Czech)		PL(Poland)		SK(Slovakia)		HU(Hungary) #		UA(Ukraine) #	
	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
Log Hourly Wage	1.018 (0.409)	0.791 (0.368)	0.815 (0.546)	0.705 (0.593)	0.799 (0.417)	0.486 (0.386)	1.087 (0.574)	0.927 (0.532)	-0.926 (0.644)	-1.011 (0.701)
Hourly Wage	3.002 (1.248)	2.366 (0.961)	2.697 (2.216)	2.436 (1.765)	2.429 (1.107)	1.756 (0.753)	3.659 (3.424)	2.961 (1.992)	0.493 (0.386)	0.509 (0.695)
<i>Demographics</i>										
Age	41.889 (11.420)	41.884 (10.334)	37.217 (10.084)	39.636 (10.057)	40.430 (12.235)	40.799 (9.995)	37.861 (10.731)	40.759 (11.357)	39.868 (11.587)	41.050 (10.092)
Married %	69.14	66.98	75.43	75.03	66.67	69.40	67.16	54.88	79.32	69.29
<i>Human Capital</i>										
Education	12.684 (2.151)	12.847 (2.418)	12.355 (2.647)	13.294 (3.020)	13.000 (2.986)	12.866 (2.473)	12.677 (2.723)	13.016 (2.600)	11.864 (2.090)	12.772 (2.278)
Experience	23.205 (11.737)	23.037 (10.783)	17.862 (10.796)	19.342 (11.146)	21.430 (12.029)	21.933 (9.974)	19.184 (11.206)	21.743 (11.965)	22.003 (11.670)	22.278 (10.218)
Experience-Sq./100	6.758 (5.409)	6.465 (4.886)	4.351 (4.359)	4.977 (4.462)	6.032 (5.375)	5.798 (4.254)	4.930 (4.816)	6.153 (5.182)	6.196 (5.151)	6.003 (4.545)
<i>Working Sector</i>										
Manufacturing %	38.64	26.15	27.52	21.50	29.57	21.64	-	-	18.50	13.43
Public %	10.11	29.31	12.80	38.54	14.52	33.58	-	-	18.29	35.08
Observations	289	248	221	207	186	134	202	219	183	255

[Note]: 1. Data from Year 2004; # Data from Year 2005.

2. Standard deviations are not reported for dummy variables.

3. Data for working sector dummy variables is not available in Hungary.

Appendix 4a. Regression of log Hourly Wage, Nordic Countries, Age 15-64

Variable	(t statistics in Parentheses)																								
	DK(Denmark)				FI(Finland)					NO(Norway)					SE(Sweden)					IS(Iceland) #					
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	
Gender Dummy	-0.153*** (-3.38)	-0.167*** (-3.76)	-0.143*** (-2.93)	-0.112 (-1.42)	-0.244*** (-8.80)	-0.294*** (-12.21)	-0.264*** (-10.37)	-0.209*** (-5.56)	-0.219*** (-5.90)	-0.211*** (-8.65)	-0.226*** (-10.71)	-0.185*** (-8.29)	-0.141*** (-4.15)	-0.140*** (-4.13)	-0.158*** (-7.79)	-0.195*** (-11.03)	-0.155*** (-8.30)	-0.101*** (-4.10)	-0.100*** (-4.07)	-0.208*** (-3.25)	-0.224*** (-3.75)	-0.236*** (-3.69)	-0.162* (-1.68)	-0.252*** (-4.25)	
Education	0.035*** (4.62)	0.037*** (4.73)	0.037*** (4.63)		0.060*** (15.09)	0.063*** (15.53)	0.062*** (15.31)	0.061*** (15.35)		0.048*** (13.78)	0.053*** (14.81)	0.053*** (14.68)	0.053*** (14.74)		0.050*** (15.05)	0.056*** (16.35)	0.055*** (16.19)	0.055*** (16.29)		0.053*** (6.45)	0.052*** (6.19)	0.052*** (6.15)	0.052*** (6.12)	0.048*** (6.12)	
Experience	0.016** (2.08)	0.016** (2.09)	0.016** (2.06)		0.016*** (4.11)	0.017*** (4.41)	0.016*** (4.33)	0.016*** (4.23)		0.027*** (7.55)	0.028*** (7.97)	0.028*** (7.88)	0.028*** (7.89)		0.015*** (5.27)	0.015*** (5.50)	0.016*** (5.66)	0.016*** (5.63)		0.013 (1.49)	0.014* (1.70)	0.013 (1.54)	0.013 (1.54)	0.014* (1.70)	
Experience Sq.	-0.000297* (-1.75)	-0.000293* (-1.73)	-0.000292* (-1.72)		-0.000136 (-1.63)	-0.000146* (-1.76)	-0.000143* (-1.72)	-0.000140* (-1.69)		-0.000424*** (-5.74)	-0.000434*** (-5.96)	-0.000433*** (-5.94)	-0.000433*** (-5.95)		-0.000203*** (-3.37)	-0.000186*** (-3.14)	-0.000198*** (-3.35)	-0.000195*** (-3.31)		-0.000101 (-0.56)	-0.000137 (-0.75)	-0.000118 (-0.65)	-0.000154 (-0.86)		
Married Dummy	0.063 (1.27)	0.063 (1.26)	0.088 (1.25)		0.051** (2.02)	0.051** (2.04)	0.103*** (2.83)	0.102*** (2.80)		0.018 (0.77)	0.025 (1.06)	0.061** (1.96)	0.061** (1.97)		0.052*** (2.78)	0.049*** (2.64)	0.107*** (4.27)	0.107*** (4.27)		-0.047 (-0.70)	-0.043 (-0.65)	0.028 (0.29)			
Manufacturing Dummy		0.033 (0.52)	0.034 (0.54)			0.101*** (3.20)	0.101*** (3.19)	0.115*** (3.79)			-0.018 (-0.50)	-0.017 (-0.47)				-0.013 (-0.55)	-0.014 (-0.59)				-0.261** (-2.50)	-0.264** (-2.54)	-0.260** (-2.53)		
Public Dummy		-0.045 (-0.84)	-0.043 (-0.80)			-0.045 (-1.57)	-0.044 (-1.52)				-0.126*** (-5.09)	-0.126*** (-5.10)	-0.124*** (-5.12)			-0.125*** (-5.81)	-0.121*** (-5.63)	-0.117*** (-5.70)				-0.044 (-0.64)	-0.048 (-0.71)		
F*M			-0.048 (-0.50)				-0.094** (-1.96)	-0.095** (-2.00)				-0.075* (-1.75)	-0.075* (-1.76)				-0.118*** (-3.42)	-0.117*** (-3.41)					-0.124 (-1.04)		
Intercept	3.198*** (98.95)	2.479*** (18.07)	2.445*** (17.44)	2.439*** (17.32)	2.728*** (135.54)	1.626*** (23.25)	1.544*** (21.40)	1.529*** (21.11)	1.544*** (21.49)	3.112*** (188.16)	2.109*** (34.28)	2.040*** (32.35)	2.030*** (32.09)	2.025*** (32.38)	2.759*** (194.61)	1.893*** (34.77)	1.817*** (32.51)	1.800*** (32.26)	1.794*** (32.63)	3.089*** (66.89)	2.151*** (14.35)	2.196*** (14.55)	2.173*** (14.25)	2.253*** (15.43)	
Observations	611	611	611	611	768	768	768	768	768	857	857	857	857	857	845	843	843	843	843	198	197	197	197	198	
Adj. R-square	0.0167	0.0616	0.0607	0.0595	0.0907	0.3377	0.3505	0.3529	0.3518	0.0795	0.3121	0.3311	0.3328	0.3334	0.0660	0.3075	0.3339	0.3423	0.3428	0.0462	0.2161	0.2334	0.2338	0.2324	

[Note] 1. Data from Year 2004; # Data from Year 2005.

2. ***, ** and * denote significance at 1, 5 and 10 percent level, respectively

Appendix 4b. Regression of log Hourly Wage, Eastern European Countries, Age 15-64
(t statistics in Parentheses)

Variable	CZ(Czech)					PL(Poland)					SK(Slovakia)					HU(Hungary) #			UA(Ukraine) #				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(1)	(2)	(3)	(4)	
Gender Dummy	-0.227*** (-6.73)	-0.248*** (-8.17)	-0.260*** (-8.29)	-0.181*** (-3.32)	-0.168*** (-3.12)	-0.110** (-2.00)	-0.225*** (-4.60)	-0.225*** (-4.46)	-0.122 (-1.25)	-0.227*** (-4.65)	-0.313*** (-6.83)	-0.315*** (-7.45)	-0.322*** (-7.39)	-0.237*** (-3.16)	-0.312*** (-7.37)	-0.161*** (-2.93)	-0.250*** (-5.58)	-0.350*** (-4.66)	-0.085 (-1.30)	-0.156** (-2.36)	-0.155** (-2.35)	0.113 (0.84)	
Education		0.075*** (10.89)	0.072*** (9.85)	0.071*** (9.76)	0.074*** (10.77)		0.109*** (11.56)	0.110*** (10.91)	0.110*** (10.83)	0.110*** (11.74)		0.062*** (8.23)	0.060*** (7.72)	0.059*** (7.45)	0.061*** (8.10)		0.133*** (15.37)	0.135*** (15.48)		0.068*** (4.60)	0.070*** (4.71)	0.071*** (4.79)	
Experience		0.018*** (3.24)	0.018*** (3.20)	0.018*** (3.19)	0.018*** (3.23)		0.025*** (2.86)	0.025*** (2.87)	0.024*** (2.85)	0.027*** (3.37)		0.014* (1.73)	0.014* (1.72)	0.013* (1.68)	0.008 (1.08)		0.037*** (4.43)	0.038*** (4.56)		0.016 (1.49)	0.016 (1.45)	0.009 (0.84)	
Experience Sq.		-0.000403*** (-3.31)	-0.000402*** (-3.29)	-0.000407*** (-3.33)	-0.000408*** (-3.36)		-0.000375* (-1.80)	-0.000373* (-1.79)	-0.000377* (-1.81)	-0.000427** (-2.11)		-0.000245 (-1.40)	-0.000242 (-1.38)	-0.000244 (-1.40)	-0.000146 (-0.88)		-0.000536*** (-2.85)	-0.000545*** (-2.91)		-0.000383 (-1.56)	-0.000382 (-1.56)	-0.000261 (-1.05)	
Married Dummy		-0.007 (-0.21)	-0.007 (-0.19)	0.051 (1.07)	0.052 (1.09)		0.066 (1.10)	0.066 (1.10)	0.133* (1.64)	-		-0.093* (-1.81)	-0.098* (-1.89)	-0.042 (-0.64)	-		-0.129*** (-2.70)	-0.232*** (-2.96)		0.024 (0.31)	0.026 (0.35)	0.257** (2.05)	
Manufacturing Dummy			-0.022 (-0.63)	-0.020 (-0.60)	-		0.039 (0.66)	0.042 (0.71)	-			0.035 (0.70)	0.028 (0.57)	-	-						0.301*** (3.36)	0.321*** (3.59)	
Public Dummy			0.048 (1.11)	0.047 (1.08)	-		0.004 (0.06)	0.008 (0.13)	-			0.052 (0.94)	0.061 (1.09)	-	-						0.073 (0.96)	0.081 (1.07)	
F×M				-0.116* (-1.78)	-0.119* (-1.82)				-0.136 (-1.23)	-				-0.128 (-1.39)	-						0.154* (1.66)		-0.349** (-2.28)
Intercept	1.018*** (43.82)	-0.086 (-0.77)	-0.038 (-0.33)	-0.064 (-0.55)	-0.111 (-0.99)	0.815*** (21.45)	-0.853*** (-5.69)	-0.884*** (-5.50)	-0.924*** (-5.64)	-0.847*** (-5.65)	0.799*** (26.94)	-0.087 (-0.74)	-0.085 (-0.70)	-0.093 (-0.77)	-0.071 (-0.61)	1.087*** (25.44)	-0.951*** (-6.64)	-0.926*** (-6.44)	-0.926*** (-18.89)	-1.870*** (-8.99)	-1.955*** (-9.33)	-2.089*** (-9.64)	
Observations	537	537	537	537	537	428	428	428	428	428	320	320	320	320	320	421	420	420	438	437	437	437	
Adj. R-square	0.0763	0.2599	0.2602	0.2633	0.2631	0.0070	0.2571	0.2544	0.2553	0.2568	0.1252	0.2811	0.2790	0.2811	0.2759	0.0177	0.3749	0.3775	0.0016	0.0511	0.0712	0.0802	

[Note] 1. Data from Year 2004; # Data from Year 2005;

2. ***,** and * denote significance at 1, 5 and 10 percent level, respectively.

Appendix 5. Decompositions of Gender Pay Gap

	Total gender gap in log hourly wage	Explained Components							Unexplained Components		
		(1) Education	(2) Experience	(3) Experience-sq.	(4) Manufacturing	(5) Public	(1)+(2)+(3) Human Capital	(4)+(5) Working Sector	(6) Married	(7) Gender	(8) F×M
FI(Finland)	0,244	-0.02483	-0.04469	0.01693	0.02115	-	-0,05259	0,02115	0.00299	0.219	0.05349
NO(Norway)	0.211	-0.00694	-0.02509	0.01572	-	0.04290	-0.01631	0.04290	-0.00041	0.140	0.04473
SE(Sweden)	0.158	-0.03042	-0.01958	0.01094	-	0.04356	-0.03906	0.04356	-0.00454	0.100	0.05807
IS(Iceland) #	0,208	0.00854	-0.05547	0.03057	-0.02824	-	-0,01636	-0,02824	-	0.252	-
CZ(Czech)	0,227	-0.01206	0.00302	-0.01195	-	-	-0.02099	-	0.00112	0.168	0.07971
PL(Poland)	0.110	-0.10329	-0.03996	0.02673	-	-	-0.11652	-	-	0.227	-
SK(Slovakia)	0,313	0.00831	-0.00704	-0.00573	-	-	-0.00446	-	0.00254	0.315	-
HU(Hungary) #	0.161	-0.04577	-0.09724	0.06665	-	-	-0.07636	-	-0.02849	0.350	-0.08452

[Note]: 1. Data from Year 2004; #Data from Year 2005

2. The total gender gap here is the unadjusted gap in log hourly wage

3. All numbers are calculated based on the regression results on log hourly wage and variable means for aged 15-64 paid employees.

Appendix 6a. Employment Rates, Nordic Countries, Working Age 15-64
(Share of persons of working age in employment)

	<i>DK(Denmark)</i>			<i>FI(Finland)</i>			<i>NO(Norway)</i>			<i>SE(Sweden)</i>			<i>IS(Iceland) #</i>		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
<i>15-64</i>	66.16	69.60	62.95	64.30	67.71	61.17	70.80	75.52	65.63	70.93	75.54	66.20	73.65	79.57	68.25
<i>N</i>	1,179	569	610	1,605	768	837	1,476	772	704	1,462	740	722	482	230	252
OECD DATA	76.0	79.9	72.0	67.2	68.8	65.5	75.6	78.4	72.7	73.5	75.0	71.8	84.4	87.4	81.2
Marital Status															
<i>Single</i>	52.18	54.62	49.81	53.37	54.35	52.52	60.12	61.56	58.41	62.09	65.70	58.15	69.16	70.91	67.52
<i>N</i>	527	260	267	815	379	436	687	372	315	860	449	411	227	110	117
<i>Married</i>	77.69	82.20	73.61	75.57	80.72	70.57	80.08	88.47	71.47	83.78	90.69	77.27	77.51	87.29	68.70
<i>N</i>	650	309	341	790	389	401	788	399	389	598	290	308	249	118	131

Appendix 6b. Employment Rates, Eastern European Countries, Working Age 15-64
(Share of persons of working age in employment)

<i>Marital Status</i>	<i>CZ(Czech)</i>			<i>PL(Poland)</i>			<i>SK(Slovakia)</i>			<i>HU(Hungary) #</i>			<i>UA(Ukraine) #</i>		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
<i>15-64</i>	56.79	65.24	49.26	50.75	57.10	44.44	54.50	61.71	47.03	56.13	61.16	52.63	50.43	61.58	43.26
<i>N</i>	2,335	1,103	1,232	1,483	734	749	1,268	645	623	1,243	545	698	1,497	578	919
OECD DATA	64.2	72.4	56.0	51.9	57.4	46.4	57.0	63.2	50.9	56.9	63.1	51.0	-	-	-
Marital Status															
<i>Single</i>	41.91	44.78	39.34	34.72	38.23	30.98	39.23	42.80	35.55	47.50	47.29	47.64	42.40	46.04	40.14
<i>N</i>	1,003	473	530	595	302	293	520	264	256	528	222	306	573	204	369
<i>Married</i>	66.63	78.80	55.79	61.59	70.49	53.11	65.71	75.74	55.31	713	71.96	56.96	54.39	69.15	44.77
<i>N</i>	1,309	621	688	885	431	454	729	371	358	63.36	321	392	916	369	547

[Note]: 1. Data from Year 2004; # Data from Year 2005

2. OECD DATA source: OECD Factbook (2007), <http://oberon.sourceoecd.org/vl=9633552/cl=12/nw=1/rpsv/factbook/06-01-01.htm>