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GENDER EARNINGS DIFFERENTIALS IN EUROPE

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Περίληψη

Η μελέτη αυτή διερευνά και συγκρίνει τις διαφορές στις αποδοχές μεταξύ των ανδρών και γυναικών σε εννέα Ευρωπαϊκές χώρες χρησιμοποιώντας στοιχεία από το τελευταίο κύμα του European Community Household Panel. Τα αποτελέσματα δείχνουν ότι υπάρχουν ακόμη διαφορές στις αποδοχές ανδρών και γυναικών, οι οποίες διαφέρουν από χώρα σε χώρα. Η διαφορετική αξιολόγηση, άρα και αμοιβή, από την αγορά εργασίας των ίδιων χαρακτηριστικών με βάση το φύλο αποτελεί την κύρια πηγή της διαφοράς των αποδοχών ανεξάρτητα από τη μέθοδο ανάλυσης που υιοθετείται κάθε φορά. Το σφάλμα επιλογής αποτελεί έναν ακόμη παράγοντα διαφοροποίησης, αλλά μόνο σε ορισμένες χώρες. Η λεπτομερής ανάλυση της διαφοράς των αποδοχών αποκαλύπτει ότι οι διαφορές στους σταθερούς όρους της εξίσωσης αποδοχών μαζί με τις διαφορετικές αμοιβές των χαρακτηριστικών ανθρώπινου κεφαλαίου έχουν κυρίαρχο ρόλο στη διαμόρφωση του χάσματος αποδοχών. Οι διαφορές στις αμοιβές των εκπαιδευτικών προσόντων έχουν μικρή συνεισφορά στη συνολική εικόνα της διαφοράς αποδοχών, ενώ οι διαφορές που αφορούν στις επαγγελματικές επιλογές των ατόμων φαίνεται να μην έχουν ξεκάθαρη επίδραση. Από την άλλη μεριά, τα έτη δυνητικής εργασιακής εμπειρίας είναι πιο σημαντικά από την εκπαίδευση στον προσδιορισμό της μισθολογικής υπεροχής των ανδρών σε όλες τις χώρες υπό εξέταση. Ενδεχομένως, λοιπόν, μια κοινή πολιτική με στόχο την καταπολέμηση του μισθολογικού μειονεκτήματος των γυναικών σε ολόκληρη την Ευρώπη δεν θα ήταν αποτελεσματική. Αυτό που χρειάζεται κατά τη γνώμη μας είναι μια κοινή προσπάθεια να εξασφαλιστούν ίσες ευκαιρίες για άνδρες και γυναίκες πριν ακόμη αυτοί αποφασίσουν να εισέλθουν στην αγορά εργασίας.

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Gender Earnings Differentials in Europe

Abstract

This study investigates and compares gender earnings differentials across nine European countries using data from the last wave of the European Community Household Panel. Our results show that gender earnings differentials still exist and differ across countries. The fact that labour markets value the same characteristics differently by gender is the main force driving earnings gaps, irrespective of the decomposition method used. Selectivity bias turns out to be an issue only in certain countries. The detailed decomposition reveals that differences in constant terms of the earnings equations and different rewards regarding human capital characteristics dominate the gaps. Differences in rewards regarding educational qualifications play a minor role, while differences in occupational groups seem to have a mixed effect. On the other hand, years of potential experience are more important than education in determining male earnings advantage in all countries examined. Therefore, a uniform policy to combat female earnings disadvantage throughout Europe would not be appropriate. What is appropriate, though, to our opinion is a uniform effort to ensure equal opportunities for males and females before even they decide to enter the labour market.

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Keywords: Gender earnings differential, ECHP, detailed decomposition, selection bias.

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I. Introduction

In a competitive labour market, human capital theory[1] predicts that earnings are determined by a worker's productivity, which is to a large extent defined by the amount he/she embodies. Earnings differential between groups of workers are common and accepted in every labour market, as long as, they can be justified on the grounds of productivity differences or the specific nature of employment[2]. When certain groups of workers are concentrated in specific occupations or sectors of employment that pay less than average, the well-known phenomenon of segregation is observed[3] and is considered a source of discrimination.[4] Other sources of discrimination proposed in the literature have to do with taste-based discrimination (Becker, 1971) and statistical discrimination (Phelps, 1972; Arrow, 1973).[5] We concentrate our efforts on differences in hourly earnings between sexes that can be attributed either to different characteristics embodied by these two groups of workers or to different rewards for similar characteristics by the labour market.

The founding treaty of the EEC in Rome (1957) recognised gender discrimination as a major political and economic issue. According to it and all subsequent Treaties, the EU aims at eliminating inequalities of all kind and at eliminating discrimination against females within and out of the labour market. A relevant directive was issued in 1997 and provided for the obligation of the accused to prove that there has been no breach of the principle of equal treatment. Moreover, the fight against gender earnings inequality reached its peak through the inclusion of the principle of "equal opportunities for men and women" as one of the four pillars of the National Action Plans for Employment in

[1] Mincer (1958, 1974), Schultz (1961) and Becker (1964) are considered the founders of Human Capital Theory, although its seeds are found much earlier in the work of Adam Smith (1776).

[2] Hypothetically speaking, a miner faces harsher working conditions than a clerk and therefore should be paid accordingly.

[3] See for example Sorensen (1990), Macpherson and Hirsch (1995), Bayard et al. (1999), Meulders et al. (2003), Plantenga and Remery (2006). Extending the notion of segregation, Rycx and Tojerow (2004) investigate the notion of rent sharing in Belgium and conclude that 18% of the wage gap is due to differences between wage-profit elasticity for males and females.

[4] A different issue related to gender earnings differential is the one studied by Ruiz et al. (2004). They focus on the role of job mobility in gender earnings differential in Spain and show that it is lower among females that decided to move to another job.

[5] For a thorough discussion regarding sources of discrimination see Ashenfelter and Card (1999).

1999, which since then are regularly carried out in all EU member-states. (Meulders et al., 2003)

Despite efforts to impose equal treatment of sexes, gender earnings differentials still exist in European countries, as shown in Table 1 (last two columns). These differentials vary across countries ranging from 18% (Finland) to 26.4% (Austria and Ireland) in the private sector and from 4.4% (Italy) to 25.5% (Austria) in both sectors. Furthermore, the earnings gap is wider in the private compared to the public sector (except for Finland), probably due to the stricter application of regulations in the latter. What is important though is that while females have closed the gaps in education and experience over the last decades, other factors (e.g. field of study) have apparently become more important in explaining the gender earnings gap. (Rubery et al., 2002) Studies using ECHP verify that argument.[6] Beblo et al. (2003a and 2003b) show that gender earnings differentials exist in five European countries and that they vary along the wage distribution. They argue that differences in characteristics explain at most 50% of the earnings differential and that countries exhibit considerable differences between sexes concerning individual characteristics. Arulampalam et al. (2005) come to the same conclusions when investigating gender earnings differential along the wage distribution in eleven European countries. Taking under consideration employment in the public or the private sector, they conclude that the gap in some countries is wider at the top of the wage distribution, pointing towards the existence of glass ceiling, while in some other countries the gap is wider at the bottom of the distribution, in accordance with the hypothesis of sticky floors.

[Table 1]

[6] For an extended literature review concerning gender earnings differential in various countries see Cholezas (2005), ch.4.

Further, Ponthieux and Meurs (2005) use monthly wages to investigate gender earnings differentials in ten countries. They focus their attention to the role of the public sector and claim that reducing its size would lead to increased wage gaps, since differentials are smaller in the public sector. Controlling for the sector of employment they conclude that most of the earnings gap is due to the gap in private sector and point out, that the persistence of the gap could be the outcome of different educational specialisation chosen by males and females, which leads to segregation by gender in sectors and professions. Finally, Gangji et al. (2006) study the earnings differential between genders in four European countries. They claim that gender pay gaps are wider in economies that are more liberal and provide less support for female employment. Using panel data (ECHP) and adjusting for individual heterogeneity leads to increased returns to both education and experience for males and females and to a lower unexplained part of the wage gap.

Realising that it is probably economically inefficient to pay females lower wages compared to males[7], the purpose of this study is to investigate the issue of earnings differential between genders in nine European countries using data from the European Community Household Panel (ECHP). The first step uses the earnings differential decomposition method proposed by Blinder-Oaxaca (1973). The next step corrects for selection bias using the two stages Heckman (1979) method for each sex and decomposes the earnings differential by employing the Neuman-Oaxaca (1998) method of analysis involving the calculation of an extra term labelled selectivity. Our focus is to provide a detailed decomposition of gender earnings differential that allows inferences about each variable's share[8] following the averaging approach proposed by Yun (2005). In this way, the unexplained share of the gap, often referred to as discrimination, is

[7] As Rubery et al. (2002) point out: "European member states are investing in the education of women to the same or even to a greater extend than men, but have not yet recognized the need to change the labour market to ensure that these investments are fully utilized".

[8] For example, Rubery et al. (2002) claim that women's education and experience have improved substantially over the years, but other factors have become more important in sustaining the gap.

further decomposed and specific contributing factors are determined in order to offer policy makers some ideas about measures targeting female earnings disadvantage.

II. Methodology and Data

Following Blinder (1973) and Oaxaca (1973), we estimate using Ordinary Least Squares (OLS) separate semi-logarithmic earnings functions[9] for males and females:

$$\ln w_i = a + X_i'\beta + \varepsilon_i, \quad (1)$$

where w_i stands for hourly earnings for males ($i=m$) and females ($i=f$), a is the constant term, X_i is a matrix of independent variables (productivity related characteristics) of dimension (nxκ), β is a vector of coefficients (or the reward of productivity related characteristics assigned by the labour market) of dimension (nx1) and ε_i stands for the usual residuals.

In this case, the dependent variable in the earnings function is the natural logarithm of net hourly earnings ($\ln w_i$), instead of monthly or yearly commonly employed, in order to avoid mixing quantities with prices.[10] Independent variables (matrix X_i) include two dummies for educational attainment (upper secondary and tertiary education)[11], years of potential experience[12] and their square, a dummy for employment in the public sector and six dummies for occupation.[13]

[9] The semi-logarithmic earnings function was introduced by Mincer (1974) and it is also known as mincerian earnings functions. Although it is often criticized - see, for example, Heckman et al. (2003) - it is widely used, because of its minimum demand for data and its simplicity.

[10] Ponthieux and Meurs (2005) conclude that unequal amount of working hours is a crucial factor of unequal pay between males and females (males work more hours or choose to work overtime). Therefore, hourly earnings are used to avoid overestimating the earnings differential.

[11] We use dummies for levels of education instead of years, since the direct information provided by ECHP does not report years of education, but level of education completed instead.

[12] Years of potential experience are calculated by subtracting "first job starting age" from "age".

[13] Adding more variables to the earnings function has potential problems. For example, Makepeace et al. (2004) and Weichselbaumer and Winter-Ebmer (2006) point out that variables such as industry might bias the results by introducing previous unequal treatment (e.g. market segregation). On the other hand, according to Weichselbaumer and Winter-Ebmer (2005) ommiting some variables, such as marital status, tenure, union status, occupational choices etc., might introduce serious bias.

Subtracting by parts female from male estimated earnings functions we get the Blinder-Oaxaca decomposition[14]:

$$\ln \overline{w}_m - \ln \overline{w}_f = (\overline{X}_m - \overline{\mathrm{X}}_f)\hat{\beta}_m + (\hat{\alpha}_m - \hat{\alpha}_f) + \overline{X}_f(\hat{\beta}_m - \hat{\beta}_f), \quad (2)$$

The hat over the variables distinguishes estimated coefficients. The left hand side of equation (2) is the mean earnings gender differential. The first part on the right hand side of equation (2) is the explained part of the earnings differential (differences in characteristics) and the next two parts constitute the unexplained part (differences in estimators), often referred to as discrimination[15].

Estimates using OLS might be biased if the analysed sample is not randomly selected. This is known as selectivity bias and Heckman (1979) proposed a two-stage method to deal with it. At the first stage, we model the probability of working as an employee through a selection equation of the following form using probit:

$$\mathrm{Y}_i = Z_i'\xi + u_i, \quad (3)$$

The dependent variable (Y_i) equals unity, if the individual works as an employee, and zero, if he/she is unemployed, self-employed, student or economically inactive. Independent variables (matrix Z_i) include two dummies for levels of education (upper secondary and tertiary education[16]), five dummies for age groups (agr2: 30-34, agr3: 35-39, agr4: 40-44, agr5: 45-49 and agr6: 50-54[17]), three dummies for the existence of children (at least one kid less than 3 years old, from 4 to 6 years old and from 7 to 12

[14] The decomposition proposed clearly considers male rewards discrimination free, since we assume competitive labour markets, where pay depends on marginal product. Other formulations could be used. See for example Cotton (1988), Neumark (1988) and Oaxaca and Ransom (1994).

[15] See Weichselbaumer and Winter-Ebmer (2005, 2006) for a discussion concerning the use of the term "discrimination" and a meta-regression analysis that attempts to determine the factors deciding the use of the term.

[16] Individuals with "less than upper secondary education" are the reference group. The more educated a person, the higher the cost of leisure and, thus, the lower the probability of not entering the labour market.

[17] The reference group consists of individuals younger than 30 years. A younger cohort is expected to have higher participation rates and, thus, higher probability of working. On the other hand, in some countries, e.g. Greece, the unemployment rate is higher amongst young people and women.

years old)[18], two dummies for family status (one is for separated, divorced or widowed and the other for those never married[19]), per capita family income[20], irrespective of its source, excluding own earnings and, finally, a dummy for bad health[21].

After estimating the selection equation for males and females separately, we calculate the inverse Mill's ratio (IMR) known as lamda (λ)[22]. At the second stage, the new earnings function becomes:

$$\ln w_i = a + X_i'\beta + \lambda\theta + \varepsilon_i, \tag{4}$$

Based on equation (4) and the work of Neuman and Oaxaca (1998), the decomposition of the earnings differential becomes:

$$\ln \overline{w}_m - \ln \overline{w}_f = (\hat{\alpha}_m - \hat{\alpha}_f) + (\overline{X}_m\hat{\beta}_m - \overline{X}_f\hat{\beta}_f) + (\overline{\lambda}_m\hat{\theta}_m - \overline{\lambda}_f\hat{\theta}_f), \tag{5}$$

So far, the decomposition is similar to other studies, but we are interested in determining how differences in every variable or group of variables account for the earnings differential. Yun (2005) suggests an averaging approach that allows one to accurately attribute the earnings differential to every independent variable. The method relies on estimating the earnings function and then calculating each dummy's deviation from its group mean. That way, the constant term in the earnings function is transformed by adding each group's of dummies mean[23], but it remains constant and independent of the reference group chosen for every group of dummies. The normalised earnings function follows:

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[18] We expect the presence of young children to lower the probability of employment. We also assume that the effect is strong, as long as children live with their mothers and demand their attention and effort.

[19] The reference group consists of married individuals. Marriage is expected to affect males differently than females due to the distinct roles assumed within the family.

[20] The higher it is the lower the probability of working is expected to be.

[21] The healthier a person is the higher the probability of being employed. Since "bad health" might be endogenous, we have checked for the robustness of the results by re-estimating the model excluding it. The results are almost identical.

[22] Lamda is calculated for each gender separately as follows: $\lambda_i = \phi(Z_i'\xi)/\Phi(Z_i'\xi)$, where $\phi(Z_i'\xi)$ is the standard normal density function and $\Phi(Z_i'\xi)$ is the standard normal cumulative distribution function (CDF).

[23] For example, if there are four groups of dummies, four means should be added to the constant term.

$$\ln w_i = a_i + X_{i(\kappa-\nu)}\beta + \sum \bar{\gamma}_\nu + D_{i\nu}(\gamma_\nu - \bar{\gamma}_\nu) + \lambda_i\theta + \nu_i, \quad (6)$$

where $\sum \bar{\gamma}_\nu = \frac{1}{z}\sum_\nu \bar{\gamma}_\nu^j$ and z is the number of groups of dummy variable j. Remember that κ is the number of explanatory variables in the original earnings function (eq.1), so that X_i is now of dimension (nx(κ-ν)), where ν is the number of dummy variables, since it now consists of continuous variables only. Consequently, the matrix D is of dimension (nxν) and it consists of dummy variables only. Further, γ_ν stands for the estimated coefficient for dummy variable ν and, thus, $(\gamma_\nu - \bar{\gamma}_\nu)$ represents the deviation from the mean. The rest of the terms are similar to those in equation (4).

Based on the new earnings equation, we can now provide a more detailed decomposition, which includes four distinct components. [24]

$$\ln \bar{w}_m - \ln \bar{w}_f = [(\hat{a}_m - \hat{a}_f) + (\sum \bar{\gamma}_m - \sum \bar{\gamma}_f)] + [\bar{X}_f(\hat{\beta}_m - \hat{\beta}_f) + \bar{D}_f(\hat{b}_m - \hat{b}_f)] +$$

$$[(\bar{X}_m - \bar{X}_f)\hat{\beta}_m + (\bar{D}_m - \bar{D}_f)\hat{b}_m] + [(\bar{\lambda}_m\hat{\theta}_m - \bar{\lambda}_f\hat{\theta}_f)] \quad (7)$$

The first square bracket in equation (7) equals the difference between normalized constant terms. The second square bracket is the difference in estimated coefficients of either continuous or dummy variables and, thus, it represents the different values attached to the same productive characteristics by the labour market based on sex. Therefore, the first two square brackets represent the new unexplained part. The third square bracket equals differences in characteristics embodied by employees or, in other words, differences in productivity. Finally, the fourth square bracket equals the difference between two distinct factors, namely *λ's* and *θ's*[25] (estimated coefficients of lamda).

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[24] Note that $\gamma_\nu^j - \bar{\gamma}_\nu^j = \hat{b}^j$ is the deviation of each dummy's coefficient from its mean.

[25] The difference in λ's could be interpreted as differences in the selection equation overall and the difference in *θ's* could be interpreted as differences in the effect the selection equation has on earnings. For a discussion on interpreting sample selection effects see Dolton and Makepeace (1987). Further, see Neuman and Oaxaca (1998) for a discussion concerning the selectivity term decomposition. There are multiple possible analyses, which attribute part of the term to different characteristics of the selection equation, to different estimated coefficients of the selection

We apply the methodology described above in a sample that comes from the 7th wave[26] of the European Community Household Panel (ECHP) carried out in 2000.[27] ECHP is a homogeneous European panel survey, which focuses on household income and living conditions and it provides useful information concerning health, education, residence, migration, demographic characteristics and employment.[28] The main reason why we have chosen to employ ECHP[29] is that the data are directly comparable across countries, a feature, which is accomplished through uniform definitions and methods of collecting data.

We concentrate our discussion on nine European countries[30], namely Austria (A), Denmark (D), Finland (FIN), Germany (G), Greece (GR), Ireland (IRL), Italy (I), Portugal (P) and Spain (S). Our primary sample consists of full-time employees, since - in a competitive labour market- their earnings should be directly related to their productivity. Their age is between 25 and 54 years, in order to limit the impact of national differences regarding the decision to stay out of the labour market, either through the duration of studies or through early retirement schemes. In addition, ECHP reports information on children still living with their parents, which is less probable the older the parent. Further, employees must report more than 30 and less than 60 working hours per week and not being employed in the agricultural sector, which is often dominated by small family owned firms (especially in Portugal, Greece and Spain). Finally, employees have to report earnings from employment. All earnings are on an hourly basis and adjusted using the Purchasing Power Parity (PPP), which makes them comparable across countries.

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equation and to pure selectivity effect. We do not attempt such an analysis in this paper, since in most countries selectivity concerns one of the two sexes.

[26] Although, in practice, the last wave is the 8th, all income information refers to income acquired "last year", therefore relevant information is transferred one year back.

[27] For a more detailed description of ECHP see Cholezas (2005), ch.2.

[28] For a discussion of possible shortcomings concerning ECHP see Peracchi (2002).

[29] See EPUNet, ECHP User Guide, July 2004.

[30] The analysis could potentially include Belgium, France and the UK using previous waves due to missing information (e.g. sector of employment and occupation) in addition to changes in the definition of education. After careful consideration these countries were excluded to maintain comparability across countries.

III. Results

We begin our analysis by presenting some descriptive statistics in Table 2, which reveal important differences between countries and across genders in key labour market variables. As is usually the case, males have higher employment and participation rates than females in all countries (European average is about 74% vs. 55% and 79% vs. 60% respectively), reflecting their stronger attachment to the labour market. Female unemployment rates are significantly higher in all addressed countries (European average equals approximately 10% for women vs. 7% for men), except for Austria and Ireland. This is important, since high female unemployment rate could be considered an additional disincentive for entering the labour market, at least in the short run. On the other hand, there is significant heterogeneity between countries, especially when females are concerned. For example, in two countries the participation rate for females is higher than 70%, while in another three it is close to or lower than 50%. In addition, the employment rate is close to or higher than 60% in three countries and at the same time, it is close to or lower than 40% in another three countries. It turns out that Greece, Italy and Spain rank at the lower end of the distribution for both variables, while Finland and Denmark rank at the higher end. Greece, Italy and Spain also belong to the group of countries (plus Finland) that exhibit high female unemployment rates (above 10%). On the other hand, in Austria and Ireland female unemployment rates are rather low (lower than 5%).

Since our focus is on paid employment, column (7) in Table 2 presents the ratio of full-time employees over all working individuals based on ECHP. As expected, south European Mediterranean countries -particularly Greece and Italy, followed by Spain and Portugal- have a lower ratio of employees, due to different employment patterns (many self-employed). In contrast, in several northern countries more than 90% of all working individuals are full-time employees. The group of employees consists mainly of males as shown in column (8). Further, it is interesting that, based on column (9), the average European female full-time employee in our sample receives almost 85% of median male

earnings.[31] Therefore, it appears that gender earnings differentials are common throughout Europe. What is not common is the size of the gap. It ranges from around 6% to 25% of male earnings. To simplify things, Graph 1 presents all countries ranked from the highest to the lowest earnings gap based on Table A1 (column "unconditional earnings differential"). Females do worse compared to males in Ireland and Germany, while they do better in Italy, Portugal and Spain, where the earnings differential is less than or close to 10%.[32]

[Table 2] and [Graph 1]

Similar to previous studies, descriptive results so far verify that there is indeed a gender earnings differential in all nine countries under investigation. Therefore, we next attempt to specify its source. Graph 2 (see Table A2) presents the results of the standard Blinder-Oaxaca decomposition. It is straightforward, that the unexplained part accounts for the most of the earnings differential in all countries under examination, which is in accordance with previous studies. For example, in Ireland, Germany and Portugal males would receive more than 20% lower earnings, if there were no unexplained differences. On the other hand, in Denmark, Greece and Italy males would lose less than 15% of their median earnings, if they were paid according to female standards. It is also noteworthy, that -according to the standard decomposition- in most countries (six out of nine) the unexplained part is larger than the observed gap, which means that, if there were no differences in rewards, then females would earn higher wages than males, due to their better productivity characteristics (negative explained part). Denmark, Greece,

[31] Comparing Table 2 to Table 1 reveals that there are differences in the earnings gap as estimated at the last column of Table 1. Several reasons could be responsible for that. For instance, our sample is more restrictive and it refers to hourly median earnings several years earlier instead of average earnings in 2007.

[32] Rubery et al. (2002) express strong objections concerning the reliability of ECHP data as far as Italy, Portugal (unreliable data for public sector employees), France and Spain are concerned. Although the authors refer to 1995 data and the quality might have improved in latter waves, one should interpret the results for those countries with caution.

and Ireland are exceptions, but even in these countries earnings related characteristics would ensure males -at best- 1.9% higher hourly earnings or even less. Another interesting remark is that the unexplained part of the earnings gap seems to increase together with the earnings gap. A simple correlation coefficient of 0.74 supports that.[33] This means, that countries with higher earnings gaps tend to have higher unexplained earnings differentials.

These results are quite different compared to Petraki-Kottis (1984)[34], since they show higher unexplained differences. When certain countries are concerned, the results are very close to those reported in Arulampalam et al. (2005). For example, we get almost identical results regarding the percentage of the gap attributed to unexplained differences in rewards for Denmark, Finland, Ireland and Spain. On the other hand, the main finding that prevails is that those unexplained differences drive gender earnings differential.

[Graph 2]

It is well documented in previous studies that restricting the analysis to full-time employees only could cause selectivity bias. Therefore, selectivity correction techniques are employed next leading to a slightly more complex decomposition of the earnings gap proposed by Neuman-Oaxaca. According to Graph 3 (see Table A2)[35] selectivity bias is an issue for several countries. Correcting for selectivity leaves the explained part of the earnings differential almost unaltered, since changes range from none (e.g. Denmark and Greece among others) to 0.7 percentages points (from now on p.p.) in Spain. On the

[33] That contradicts the findings of Ponthieux and Meurs (2005), who however use monthly instead of hourly earnings.

[34] The author investigates gender earnings differentials in six European countries (in Belgium 78% of the gap is unexplained, in Germany 46%, in France 68%, in Italy 78%, while in Luxembourg and Netherlands no gap is found) using the Standardised Wage Survey of 1972 for labourers.

[35] Selectivity corrected hourly earnings are referred to as conditional earnings. Table A1 shows that in some countries the earnings differential varies depending on whether unconditional or conditional earnings are used. In either case though, these variations are pretty small. For instance, the largest one leads to 0.7 percentages points (from now on p.p.) higher (Portugal) or lower (Austria) male earnings.

other hand, correcting for selectivity affects the unexplained part of the gap, in some countries more than others. For example, while in Germany the increase is close to zero, in Portugal the decrease is around 13p.p. of male earnings advantage. Thus, taking into account selectivity leads to either increases or decreases -in some cases considerable ones- of the unexplained part of the gap. It seems that in Germany, Ireland and Spain between 20p.p. and 30p.p. of male earnings advantage cannot be explained by differences in productivity characteristics. In addition, while according to the standard decomposition unexplained differences always account for more than 10p.p. of male earnings advantage, correcting for selectivity -i.e. considering differences/inequalities in the decision to become a full-time employee- reveals that in at least two countries (Portugal and especially Greece) unexplained differences account for less than 10p.p. of male earnings advantage.

Changes of the unexplained differential caused by selection effects are directly related to the sign of the selectivity term. Therefore, in countries where the selection term has a negative sign correcting for selectivity actually increases the unexplained part of the earnings differential. The effect of selectivity differences itself differs across countries. For instance, it is negligible in Germany and Denmark accounting for less than 1p.p. of male earnings advantage, but it is important in Portugal and Greece accounting for more than 10p.p. of male earnings advantage. Moreover, a correlation coefficient between the selectivity component and the earnings gap shows an almost non-existing correlation (0.002) between the two. On the other hand, a correlation coefficient between the unexplained share of the earnings gap and the selectivity component reveals a strong negative relationship (-0.75). A possible interpretation could be that in those countries in which productivity differences explain only a small fraction of the gender earnings differential other factors that affect the decision to seek full-time paid employment play a more crucial role. In any case, correcting for selectivity bias has important consequences as far as the decomposition of the gap is concerned, but it does not change

the fact that differences in productivity characteristics account for only a small fraction of the earnings gap.

Kanellopoulos and Mavromaras (2002) find significant selectivity effect in Greece, which is greater than both explained and unexplained differences.[36] Our results are different for Germany compared to those of Beblo et al. (2003b), who report that unexplained differences account for less than 50% of the gap, but that could be the outcome of fewer explanatory variables in our case).[37] Our results are not directly comparable to those in Pontieux and Meurs (2005) (from now on P&M), since they use monthly earnings data and they adopt different selection criteria for their sample in the first stage of the Heckman method, thus differences are expected to occur. The overall sorting of countries based on gender earnings differentials is however similar (i.e. Ireland and Germany are at the top of the list, while Denmark, Portugal and Italy are at the bottom). To our view, these differences are the result of different specifications adopted (regarding both the dependent and the independent variables) and support the opinion of specification sensitive results.

[Graph 3]

Our next step is to define each variable's contribution to the earnings differential, based on the more detailed decomposition proposed by Yun. To facilitate the analysis, we have grouped variables into five major categories. That way, the unexplained share of the earnings gap can be further decomposed to differences in estimated human capital coefficients (e.g. education, years of potential experience) and differences in estimated labour market coefficients (e.g. public-private sector employment and occupation). A third component of the unexplained part is now differences in earnings equations'

[36] Kanellopoulos and Mavromaras (2002) use 1988 and 1994 Household Budget Surveys and report a decline of the unexplained part of the gap coupled by an increase of the gap itself.
[37] There is a prevalent opinion, already expressed in Oaxaca (1973), that the more explanatory variables are employed the less the explained part of the gap will be.

constant terms. In a similar manner, the explained part can be further decomposed to differences in human capital and labour market characteristics. The decomposition is performed for both Blinder-Oaxaca standard decomposition (Graph 4, see Table A3) and Neuman-Oaxaca selectivity corrected decomposition (Graph 5, see Table A3).

According to Graph 4 the two most powerful sources of the unexplained part of the earnings gap are differences in constant terms (ranging from around 1p.p. to almost 26p.p. of male earnings advantage) and differences in human capital estimated coefficients (ranging from less than 1p.p. to almost 24p.p. of male earnings advantage). The former is disturbing, since differences in constant terms equal differences in log hourly earnings by gender regardless of characteristics.[38] Differences in human capital rewards favour females in two countries (Denmark and Portugal), while different constant terms slightly favour females in only one country (Ireland) by narrowing male earnings advantage by less than 1.5p.p. It should be noted, that a high earnings gap is related to increased differences in human capital coefficients (corr.coef.: 0.54). Hence, it seems that in countries in which females suffer from higher wage penalties, labour markets tend to consider human capital characteristics more valuable when possessed by males. On the other hand, different labour market characteristics seem to drive differences in characteristics overall (the second most important component of the gap in Italy and Spain) and -in most countries- they contribute to the decrease of the earnings differential (more than 5p.p. of male earnings advantage in Germany, Italy, Portugal and Spain). In contrast, differences in human capital characteristics (less than 4p.p. of male earnings advantage) seem to be much less important and slightly favour males, since their contribution to the gap exceeds 3p.p. of male earnings advantage in just two countries (Greece and Portugal).

[38] An alternative explanation could be that there are other important earnings related factors that are not taken into account and adding them would limit this phenomenon. On the other hand, all available relevant information is already included and we need to employ another -more detailed- source of data to realise such a suggestion.

[Graph 4]

What happens when selectivity is brought into the picture? Graph 5 presents the results of the detailed selectivity corrected decomposition. Although different constant terms and human capital rewards are still the driving forces of the unexplained part and the overall earnings gap in most countries, correcting for selectivity bias has caused their shares to change. Thus, the contribution of the former increases in seven out of nine countries, while the contribution of the latter either increases or decreases depending on the country. The direct effect of the selection bias also seems to be a decisive factor of the earnings differential, especially in Greece (largest contribution), Ireland and Portugal (second largest contribution). As far as the rest of the shares are concerned, differences in rewards for labour market characteristics have increased slightly (in five countries), while differences in both human capital and labour market characteristics have changed only marginally. The ranking has not changed though, so that -despite selectivity bias correction- differences in labour market characteristics still dominate the characteristics share. To sum up, taking selection bias into account has a direct as well as an indirect effect on decomposing the earnings differential that differs across countries. In any case, the direct effect is much stronger and proves to be an important factor behind male earnings advantage.

[Graph 5]

Table 3 and Table 4 present the most interesting part of this study by calculating each variable's contribution to the earnings differential. In order to facilitate the reading of the tables we use bold and italics to identify those cases in which the contribution of the variable is higher than 1p.p. A quick look across both tables indicates that correcting for selectivity bias does not have a considerable impact on each variable's contribution to the gap, except for the constant term. Nevertheless, the direction of this impact varies

across countries, thus one cannot identify a uniform impact. The effect of λ itself is a little vague, since in most countries it seems to increase the earnings gap (exceptions are Austria, Denmark and Spain). In contrast, the effect of the constant term is a very important determinant of the size of the gap (except for Ireland) and it seems to increase it in most cases (except for Greece and Ireland). Since correcting for selection bias does not change the results drastically, we focus our analysis on Table 4.

Turning to the effect of education, it seems that lower secondary or less and tertiary education have on average a much more active role in determining the earnings differential compared to upper secondary education, mostly due to different rewards between males and females. The fact is though, that there are several countries in which the effect of education is lower than 1p.p. and thus relatively trivial. In general, relatively important differences, either explained or unexplained, in lower secondary education or less show that it decreases the gap. On the other hand, as far as tertiary education is concerned explained/unexplained differences seem to decrease/increase it. This means that females benefit from better education characteristics in any case and better rewards when it comes to lower secondary education graduates, while male tertiary education graduates benefit from better rewards. In general, education seems to be a much more crucial factor determining the gap in Italy and Portugal.

As far as years of potential experience are concerned, they seem to affect the gap more decisively than education, since their effect exceeds the threshold of 1p.p. More precisely, differences in characteristics favour males and lead to a wider gap. The same is true for differences in rewards (except for Denmark and Portugal). It should be noted, that the effect of potential experience exhibits a much higher variability across countries compared to other variables accounting from less than 1p.p. to around 40p.p.[39] of male earnings advantage. Contrary to potential experience, sector of employment does not seem to have a uniform effect on the gap, while there are only a few countries in which the effect is greater than 1p.p.

[39] This figure is found in Italy and it is due to almost 2.5 years more experience by males.

Finally yet importantly, being a legislator, senior official or manager (occ1) does not seem to be that important in aggregate, but in those countries where it is it seems to increase the gap due to differences in productivity characteristics. The opposite is true for professionals (occ2) and plant and machine operators and assemblers (occ6), since within these groups both explained and unexplained differences favour female earnings, although in the second group earnings differentials can be explained solely by differences in characteristics, if one combines low average pay and high degree of male concentration in these occupations. Gender seems to matter most amongst clerks (occ4) and services, sales, trade and skilled agriculture workers (occ5). One should also note that differences regarding the second group are always in favour of females, when it comes to productivity characteristics. Differences in rewards are responsible for the decrease of the earnings differential in technicians and associate professionals (occ3). Together with elementary occupations (occ7), technicians and associate professionals seem to be the group with the least influence in gender earnings differential across countries. Interestingly, according to differences in rewards (unexplained), more earnings equality is needed among professionals, technicians and associate professionals and, thus there is room for policy intervention, while females in services, sales, trade and skilled agriculture workers seem to do pretty well.

By summing up the effect of each dummy for occupation, country specific analysis shows that in most countries the effect is above the 1p.p. threshold.[40] In addition, explained differences seem to decrease the gap, while evidence regarding unexplained differences is mixed. Thus, in Denmark, Greece and Italy rewards seem to favour females in contrast to the situation in Finland, Germany, Portugal and Spain. This means that in the latter countries females are better paid than males with similar productivity characteristics, which is very interesting. [41]

[40] The results are not reported, but can be directly duplicated using Table 4.

[41] The segregation theory, referred to earlier, supports the view that females are concentrated to lower paying occupations (and sectors), therefore we would expect occupational differences to increase the earnings differential.

Why do countries have such diverse experiences when it comes to gender earnings differentials? To start with, differences in terms of participating in the labour market are probably the outcome of heterogeneous factors that vary in scale, history and social acceptance from one country to another. Further, institutional regulations, e.g. tax systems, make it more or less attractive for women who are married and/or have children to work and last, but not least, policies relating to systems of childcare and parental leave can either accommodate or discourage the participation of women in employment, especially full-time employment. (Pontieux and Meurs, 2005) As far as differences among working individuals are concerned, one must probably look for an answer in the different structure of wages and wage formation systems. (Rubery et al., 2002) For example, Meng and Meurs (2004), Lucifora and Meurs (2006), Gangji et al. (2006) all argue that when wage bargaining is decentralised with strong union presence or more regulated environments in wage setting exist (e.g. Italy and France), then gender earnings differentials tend to be lower.[42] Our results make clear that other factors, not accounted for in our analysis due to limited information available, constitute an important component of explaining male earnings advantage.[43]

V. Conclusions

Gender earnings differentials are common throughout Europe. What is not common is their size, which ranges from around 6% to 25% of male earnings. Irrespective of the decomposition method chosen, the results indicate that the greater part of gender earnings differential can not be attributed to differences in productivity related characteristics, although the experiences of countries differ significantly. It is worth mentioning, that in the absence of unexplained differences females would earn higher wages than males, due to their better productivity characteristics, in six out of nine

[42] Although Daly et al. (2006) argue that the least coordinated and centralised countries (UK and Australia) had the lowest gender wage gaps in the 1990's.
[43] Large differences regarding the constant terms of the earnings equations and large direct selectivity effect, especially in certain countries.

countries. Correcting for selectivity bias turns out crucial and puts forward another non-monetary source of different treatment between sexes, before even becoming a full-time employee. Our results seem to diverge somewhat from those of previous studies, but this divergence can probably be explained on the grounds of different specifications (both dependent and independent variables) and sample choice.

Our main contribution is the detailed decomposition of the earnings differential attempted, which pinpoints the two most powerful sources of the unexplained part of the earnings gap, namely differences in constant terms of the earnings functions and differences in human capital rewards.[44] Furthermore, males tend to benefit more from tertiary education in terms of better rewards, while females tend to benefit in terms of better qualifications. Potential experience seems to have a stronger impact on male earnings than education, while occupational choices play a complicated country-specific role. Without doubt, our analysis shows that a large share of the earnings differential is not accounted for and perhaps differences in wage setting schemes, wage bargaining institutions, union density and coverage, as well as other policies might be responsible for that and for divergences across countries.

As Rubery et al. (2002) put it, there is a need for gender mainstream policies and practices throughout Europe, but to our opinion country adjustments should be made in order to address each country's specific needs and peculiarities. In some countries, the regulatory framework already exists, but the application still lags behind. In order to achieve truly equal treatment of men and women in the labour market, men and women should be given the same opportunities and choices, perhaps before even making the decision to work or work full-time. Therefore, our suggestion is that instead of trying to remedy unequal treatment in the labour market one should attempt to prevent it from appearing.

[44] The fields of study mostly preferred by males (applied studies) and females (theoretical studies) may differ, thus leading to differences in rewards that are not accounted for when a tertiary education degree is used as a criteria of educational qualifications. This is an interesting topic for future research.

Table 1 – Hourly earnings by gender and earnings gap

	Private sector			Private and public sector
Country	Male earnings[(1)]	Female earnings[(1)]	Earnings gap[(1)] (%)	Unadjusted gross earnings gap[(2)] (%)
A	13.3	9.8	26.4	25.5
D	21.4	17.1	20.0	17.7
FIN	14.8	12.1	18.0	20.0
G	16.9	12.6	25.6	23.0
GR	8.0	5.9	25.5	21.5
I	11.1	9.0	18.9	5.1
IRL	18.3	13.5	26.4	17.1
P	5.7	4.6	19.6	8.3
S	9.1	6.8	25.0	17.1
EU-25	13.8	10.4	24.6	17.8
EU-15	15.5	11.9	23.2	18.3

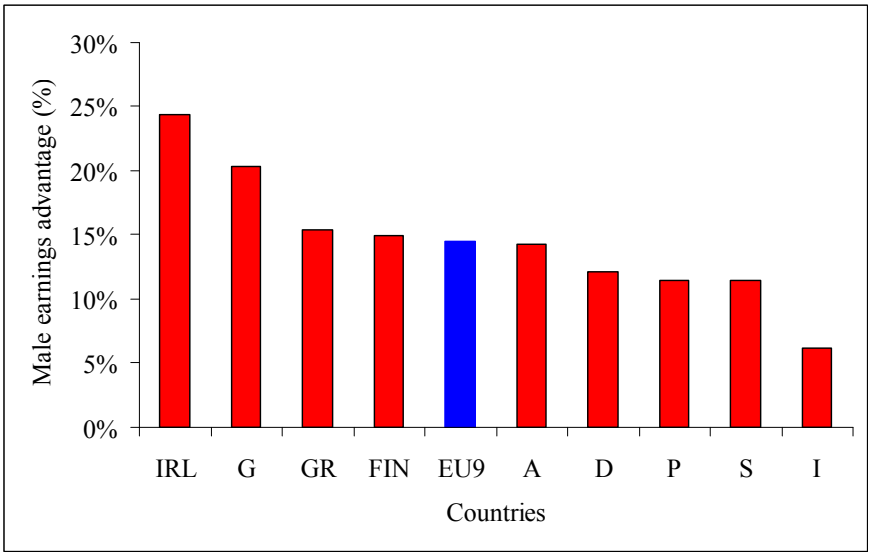
[(1)] Source: European Commission (2006), [(2)] Source: Eurostat (2007) available at (http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsiem040&plugin=1).
Note: the earnings gap is calculated as (av. male earnings-av. female earnings)/av. male earnings.

Table 2 – Descriptive statistics and stylised facts

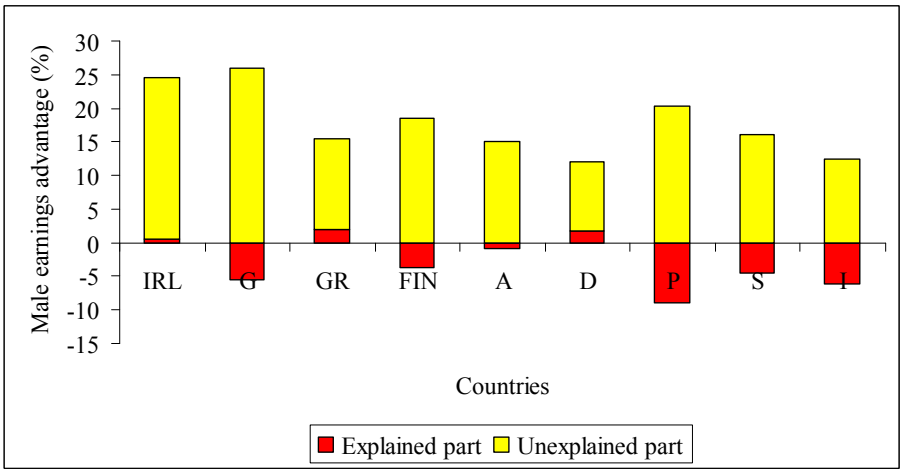
Country	Employment rate (%)[1]		Participation rate (%)[1]		Unemployment rate (%)[1]		Full-time employees over those working (%)[2]	Females over full-time employees (%)[2]	Female over male earnings (%)[2]
	Males	Females	Males	Females	Males	Females			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A	76.2	59.7	80.1	62.5	4.8	4.6	94.5	35.5	85.8
D	80.7	72.1	84.0	75.9	4.0	5.0	91.6	48.3	87.9
FIN	69.4	64.5	76.4	72.1	9.2	10.6	90.7	48.5	85.1
G	72.9	58.1	78.9	63.3	7.6	8.1	92.4	38.1	79.6
GR	71.3	41.3	77.1	49.7	7.5	16.9	68.1	43.3	84.6
I	68.2	39.6	74.3	46.3	8.2	14.6	72.8	40.6	93.9
IRL	75.6	53.3	79.1	55.7	4.5	4.2	88.0	38.7	75.5
P	76.3	60.5	79.0	63.8	3.3	5.2	83.6	46.2	88.6
S	72.7	42.0	80.4	52.9	9.6	20.6	83.3	36.2	88.5

Source: OECD Employment Outlook (2004) and ECHP.
[1] Estimates refer to year 2000 (sample).
[2] Estimates based on the 7th ECHP wave.

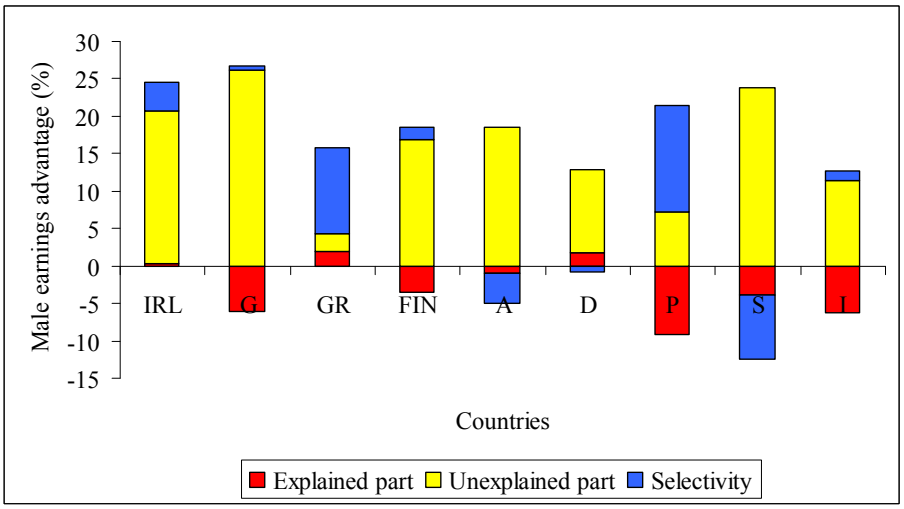
Graph 1 – Ranked gender earnings differentials as percentage of male earnings



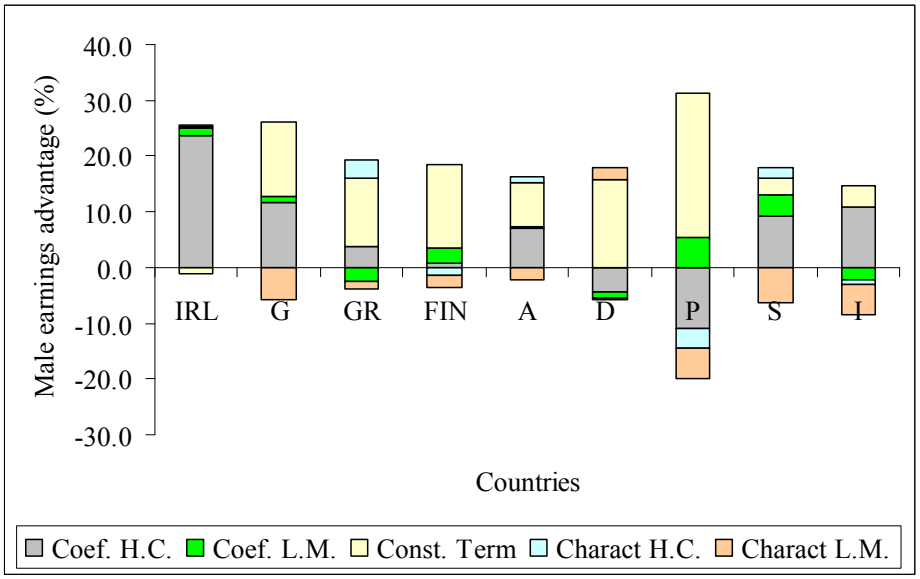
Graph 2 – Earnings differential decomposition (Blinder-Oaxaca)



Graph 3 – Earnings differential decomposition (Neuman-Oaxaca)



Graph 4 – Detailed earnings differential decomposition (Blinder-Oaxaca by Yun)



Graph 5 – Detailed earnings differential decomposition (Neuman-Oaxaca by Yun)

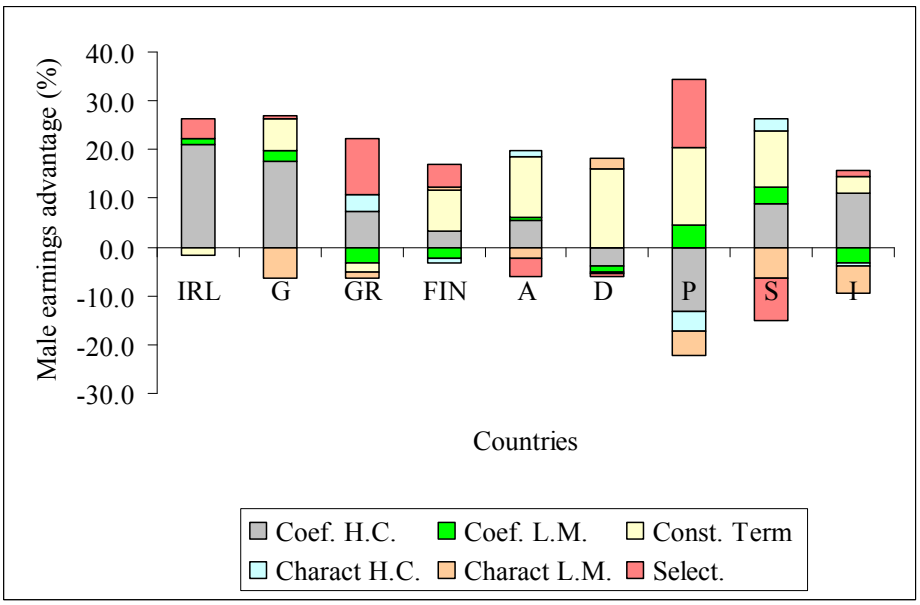


Table 3 - Yun's detailed Blinder-Oaxaca gender earnings differential decomposition (p.p. of male advantage)

	Variables	ls	us	tr	exp	pu	pr	occ1	occ2	occ3	occ4	occ5	occ6	occ7	cons
A	Explained	***1.0***	-0.5	-0.3	***1.1***	0.2	0.2	0.6	-0.6	-0.6	0.2	***-1.4***	***-1.4***	0.6	
	Unexplained	***-1.9***	***-3.7***	***1.3***	***11.3***	***-1.1***	***2.0***	-0.7	-0.1	***-1.2***	***-1.4***	***1.3***	0.4	***1.0***	***7.8***
D	Explained	-0.3	0.0	-0.2	0.1	***1.3***	***1.3***	0.6	0.7	-0.8	0.8	-0.4	***-1.2***	-0.2	
	Unexplained	0.1	-0.6	0.1	***-3.8***	-0.3	0.2	0.2	***-1.2***	0.5	-0.6	-0.2	0.0	0.1	***15.8***
FIN	Explained	0.0	-0.5	-0.6	-0.3	-0.4	-0.4	***1.0***	***-1.3***	-0.4	0.6	-0.5	-0.7	-0.2	
	Unexplained	***1.2***	***-2.5***	-0.9	***3.0***	***1.0***	-0.9	-0.5	0.3	***1.3***	-0.2	***2.0***	-0.1	0.0	***15.0***
G	Explained	0.1	0.0	0.2	-0.1	-0.3	-0.3	0.3	-0.3	-0.6	***-1.3***	***-1.7***	***-1.2***	-0.4	
	Unexplained	-0.2	-0.8	***1.0***	***11.5***	-0.8	***1.4***	-0.3	***-1.1***	-0.9	***1.7***	***1.2***	0.0	0.1	***13.2***
GR	Explained	-0.6	0.0	-0.8	***4.7***	-0.3	-0.3	0.4	-0.6	0.0	0.5	-0.5	***-1.0***	0.5	
	Unexplained	***-1.9***	***1.7***	***1.4***	***2.4***	***-1.8***	***2.4***	0.1	***-2.5***	0.2	***-2.0***	0.1	0.1	0.8	***12.4***
IRL	Explained	-0.1	0.0	-0.1	0.3	-0.1	-0.1	0.1	-0.2	0.1	0.4	0.0	-0.2	0.1	
	Unexplained	0.0	-0.6	0.4	***6.1***	-0.1	0.1	-0.1	0.1	-0.1	-0.3	0.6	0.0	0.0	-0.3
I	Explained	***-7.8***	0.6	***-3.2***	***7.6***	***-3.0***	***-3.0***	***3.6***	***-7.6***	0.0	***2.4***	***-9.0***	***-4.6***	-0.6	
	Unexplained	***-4.7***	***6.3***	0.9	***40.5***	-0.8	0.9	0.1	***-10.1***	***-1.9***	0.4	0.9	0.4	***1.3***	***15.1***
P	Explained	***-3.2***	0.1	***-3.2***	***2.7***	***-1.2***	***-1.2***	0.6	***-1.4***	-0.3	-0.7	***-2.5***	***-1.8***	***3.3***	
	Unexplained	***-2.9***	-0.2	***1.4***	***-9.1***	-0.3	0.6	-0.1	-0.5	***-1.4***	***1.9***	***5.7***	0.5	***-1.1***	***25.8***
S	Explained	***-2.2***	0.0	***-1.5***	***5.6***	-0.4	-0.4	***1.7***	***-2.9***	0.0	-0.4	***-3.0***	***-2.3***	***1.3***	
	Unexplained	-0.6	0.4	0.1	***9.4***	***-1.6***	***3.3***	0.0	***-2.0***	***-1.2***	***2.5***	***2.5***	-0.4	0.8	***2.9***

Notes: ls= lower secondary or lower (ref.group), us= upper secondary, tr= tertiary, ex= experience (plus experience squared/100), pu=public sector, pr=private sector (ref.group), occ1=legislators, senior officials and managers, occ2=professionals, occ3=technicians and associate professionals, occ4=clerks, occ5=service workers, shop and market sales workers, skilled agricultural & fishery workers, craft and related trades workers, occ6=plant and machine operators and assemblers, occ7=elementary occupations (ref.group), cons= constant term.

Table 4 - Yun's detailed Blinder-Oaxaca gender earnings differential decomposition corrected for selection bias (p.p. of male advantage)

	Variables	ls	us	tr	exp	pu	pr	occ1	occ2	occ3	occ4	occ5	occ6	occ7	cons	λ
A	Explained	***1.2***	-0.7	-0.4	1.1	0.2	0.2	0.6	-0.5	-0.7	0.0	***-1.5***	***-1.4***	0.6		
	Unexplained	***-2.4***	***-5.0***	***1.7***	***11.1***	***-1.3***	***2.2***	-0.7	-0.2	***-1.0***	***-1.0***	***1.2***	0.4	0.9	***12.4***	***-3.9***
D	Explained	-0.3	0.0	-0.2	0.1	***1.3***	***1.3***	0.6	0.7	-0.7	0.9	-0.4	***-1.2***	-0.2		
	Unexplained	0.1	-0.6	0.0	-3.3	-0.3	0.2	0.2	***-1.2***	0.5	-0.6	-0.2	0.0	0.1	***16.0***	-0.7
FIN	Explained	0.0	-0.5	-0.6	-0.3	-0.4	-0.4	***1.0***	***-1.3***	-0.4	0.6	-0.5	-0.7	-0.2		
	Unexplained	***1.2***	***-2.5***	-0.9	3.2	***1.0***	-0.9	-0.5	0.3	***1.3***	-0.2	***2.0***	-0.1	0.0	***13.1***	***1.7***
G	Explained	0.1	0.0	0.2	-0.1	-0.2	-0.2	0.2	-0.3	-0.8	***-1.4***	***-1.8***	***-1.3***	-0.4		
	Unexplained	-0.6	0.6	***1.7***	***15.8***	-0.4	0.6	-0.4	-1.0	0.3	***2.0***	***1.1***	0.0	0.0	***6.5***	0.6
GR	Explained	-0.6	0.0	-0.8	***4.7***	-0.3	-0.3	0.4	-0.6	0.0	0.5	-0.5	***-1.0***	0.5		
	Unexplained	***-2.3***	***1.4***	***2.3***	***6.0***	***-1.6***	***2.1***	0.2	***-2.8***	0.0	***-2.0***	0.3	0.1	0.5	***-1.8***	***11.6***
IRL	Explained	-0.1	0.0	-0.1	0.2	-0.1	-0.1	0.1	-0.2	0.1	0.4	0.0	-0.3	0.1		
	Unexplained	0.0	-0.6	0.4	***5.7***	0.0	0.1	-0.1	0.1	-0.1	-0.3	0.6	0.0	0.0	-0.4	***1.0***
I	Explained	***-7.2***	***1.0***	***-3.2***	***6.8***	***-2.9***	***-2.9***	***3.5***	***-7.3***	0.0	***2.4***	***-8.9***	***-4.5***	-0.6		
	Unexplained	***-5.2***	***6.4***	***1.2***	***40.4***	0.2	-0.2	0.2	***-11.2***	***-1.8***	***-1.1***	0.2	0.4	***1.2***	***13.2***	***4.6***
P	Explained	***-3.2***	0.1	***-3.2***	***2.3***	***-1.2***	***-1.2***	0.6	***-1.4***	-0.3	-0.7	***-2.4***	***-1.7***	***3.2***		
	Unexplained	***-4.1***	-0.2	***1.9***	***-10.5***	-0.4	0.9	-0.1	-0.9	***-1.4***	***1.9***	***5.5***	0.6	***-1.3***	***15.6***	***14.2***
S	Explained	***-1.9***	0.0	***-1.2***	***5.7***	-0.4	-0.4	***1.7***	***-2.9***	0.0	-0.5	***-3.1***	***-2.3***	***1.4***		
	Unexplained	-0.2	0.4	-0.8	***9.3***	***-1.7***	***3.5***	0.0	***-2.0***	***-1.2***	***2.5***	***2.3***	-0.4	0.7	***11.4***	***-8.7***

Notes: ls= lower secondary or lower (ref.group), us= upper secondary, tr= tertiary, ex= experience (plus experience squared/100), pu=public sector, pr=private sector (ref.group), occ1=legislators, senior officials and managers, occ2=professionals, occ3=technicians and associate professionals, occ4=clerks, occ5=service workers, shop and market sales workers, skilled agricultural & fishery workers, craft and related trades workers, occ6=plant and machine operators and assemblers, occ7=elementary occupations (ref.group), cons= constant term, λ=inverse mills ratio.

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Appendix

Table A1 – Estimated earnings and earnings differentials

Country	Unconditional hourly earnings in euros[1]		Conditional hourly earnings in euros[2]		Unconditional earnings differential[3]			Conditional earnings differential[3]		
	Males	Females	Males	Females	(%)	(log points)		(%)	(log points)	
A	9.49	8.14	9.41	8.14	14.2	0.153	*(7)*	13.5	0.145	*(8)*
D	9.95	8.74	9.95	8.74	12.1	0.129	*(9)*	12.1	0.129	*(10)*
FIN	8.04	6.84	8.04	6.84	14.9	0.162	*(8)*	14.9	0.162	*(7)*
G	9.76	7.77	9.66	7.65	20.4	0.228	*(2)*	20.8	0.233	*(2)*
GR	7.34	6.21	7.34	6.18	15.4	0.167	*(5)*	15.9	0.173	*(5)*
I	8.28	7.77	8.28	7.75	6.1	0.063	*(1)*	6.4	0.066	*(1)*
IRL	9.78	7.39	9.79	7.39	24.5	0.281	*(12)*	24.6	0.282	*(12)*
P	5.49	4.86	5.49	4.82	11.4	0.121	*(11)*	12.3	0.131	*(9)*
S	7.86	6.96	7.85	6.96	11.5	0.123	*(10)*	11.4	0.121	*(11)*

[1] Unconditional earnings refer to estimates using ordinary least squares (OLS).
[2] Conditional earnings refer to estimates after taking into account the probability of being an employee (selectivity bias-two stage Heckman method).
[3] The earnings differential is calculated as: (av. male earnings - av. female earnings)/(av. male earnings).

Table A2 – Gender earnings differential decomposition (% of male advantage)

	Blinder-Oaxaca decomposition		Neuman-Oaxaca decomposition			Number of observations [1]	
Country	Differences in productivity characteristics	Differences in coefficients: unexplained	Differences in productivity characteristics	Differences in coefficients: unexplained	Selectivity	Males (probit/OLS)	Females (probit/OLS)
A	-0.9	15.1	-1.1	18.4	-3.9	1004/919	535/460
D	1.8	10.3	1.8	11.1	-0.7	809/708	732/652
FIN	-3.6	18.5	-3.6	16.8	1.7	1080/851	992/850
G	-5.6	26.0	-6.0	26.2	0.6	2202/1947	1492/1238
GR	1.9	13.5	1.9	2.4	11.6	1114/735	715/518
IRL	0.6	23.9	0.3	20.5	3.8	631/521	376/346
I	-6.2	12.4	-6.2	11.4	1.2	2018/1437	1232/992
P	-9.0	20.4	-9.2	7.3	14.2	1886/1503	1426/1242
S	-4.5	16.0	-3.8	23.9	-8.6	2023/1592	1090/916

[1]: "Number of obs" refers either to the whole sample used in Heckman's method first step (i.e. the selection equation) or to the sample of full-time employees used in Heckman's method second step (i.e. the earnings equation).
Notes: In G, GR, I and P selectivity bias exists for both sexes. In the rest of the countries selectivity bias is an issue for either males or females.

Table A3 – Aggregate gender earnings differential decomposition (% of male advantage)

Country	Blinder-Oaxaca decomposition					Neuman-Oaxaca decomposition					
	Unexplained part			Characteristics		Unexplained part			Characteristics		Select.
	Coef. H.C.	Coef. L.M.	Const. Term	Charact H.C.	Charact L.M.	Coef. H.C.	Coef. L.M.	Const. Term	Charact H.C.	Charact L.M.	
A	7.0	0.3	7.8	1.2	-2.2	5.4	0.6	12.4	1.2	-2.3	-3.9
D	-4.3	-1.2	15.8	-0.4	2.1	-3.8	-1.2	16.1	-0.4	2.1	-0.7
FIN	0.7	2.9	15.0	-1.3	-2.3	0.9	2.9	13.0	-1.3	-2.3	1.7
G	11.6	1.3	13.2	0.1	-5.7	17.5	2.2	6.5	0.2	-6.2	0.6
GR	3.7	-2.5	12.4	3.2	-1.3	7.4	-3.1	-1.8	3.2	-1.3	11.6
IRL	23.7	1.2	-1.1	0.3	0.3	20.9	1.2	-1.6	0.1	0.2	3.8
I	10.8	-2.2	3.8	-0.7	-5.5	11.1	-3.2	3.4	-0.7	-5.5	1.2
P	-10.8	5.4	25.8	-3.6	-5.3	-13.1	4.7	15.7	-4.1	-5.1	14.2
S	9.3	3.8	2.9	1.8	-6.3	8.8	3.7	11.4	2.5	-6.4	-8.6

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