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**Part-time wage penalties in Europe:
A matter of selection or segregation?**

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Abstract

Different profiles of female participation and part-time employment can be observed within Europe. The aim of this paper is to estimate whether there still exists a wage penalty for part-time workers in four European countries (i.e. Austria, Italy, Poland, and the United Kingdom) after the introduction of Council Directive 97/81/EC concerning the Framework Agreement on part-time work and aiming at eliminate any form of discrimination against part-time workers. Full-time hourly wages exceed part-time hourly wages in all countries. Several explanations can be found in literature: different characteristics of part-time and full-time workers in terms of human capital accumulation, preferences, level of union membership, etc. Also the presence of discrimination against part-time workers within firms can explain this positive wage gap. However the magnitude of these explanations may differ between countries. Using the EU-SILC for the year 2009, we study the full-time/part-time pay differential focusing on the contribution of segregation and selection in explaining the observed positive wage gap. Results show that segregation matters in explaining the full-time/part-time wage gap. We find also evidence of a significant part-time wage premium in Austria and Poland once we control for sample selection.

Keywords: work status, part-time employment, wage gap, decomposition, discrimination.

JEL Classification: C31, J21, J22, J24, J31, J71.

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Introduction

For the past two decades, European labor markets have undergone major changes, with important consequences for the diffusion of part-time employment. The search for greater flexibility in employment for workers and employers has led to a huge increase in non standard jobs across Europe. Part-time is by far the most widespread form of nonstandard work, with nearly one in five workers working part-time in the EU-27 in 2009, most part-timers being women¹. The growing number of women in the labor market and the generalization of dual-earner couples have also led to the development of work arrangements, including part-time working, that enable parents to spend time with their children while remaining in employment. Moreover, in a context where more years must be spent in employment to maintain pension entitlements, some old workers continue to work on a part-time basis before retiring from employment. But this development of part-time work also answers the needs of employers and governments. It might be a way to reduce employers' labor costs (Kalleberg, 2000). For policy makers, part-time employment has been often used in Europe as a way to alleviate unemployment or to promote the reintegration of unemployed people.

Part-time employment differs from standard work arrangements in many respects. In particular, many studies have shown that part-timers usually have lower hourly earnings than full-timers, even after controlling for several individual characteristics (Jepsen et al., 2005; Manning and Petrongolo, 2008; Bardasi and Gornick, 2009; Kranz and Rodriguez-Planas, 2009). Part-time workers often receive unfair or discriminatory treatment in comparison with colleagues who do equivalent work full-time. More precisely, they are ineligible for certain social benefits (Houseman and Osawa, 1998); their career prospects are more limited (Tilly, 1990); their hourly wages are lower (Gornick and Jacobs, 1996; Fagan and O'Reilly, 1998; McGinnity and McManus, 2007). There are several explanations for this less favorable treatment of part-timers and, in particular, for the wage differential. Firstly, differences in preferences for work and leisure: women with young children, students or semi-retired people are probably more inclined to work part-time (Robertson, 1989; Sadler and Aungles, 1990). Secondly, there are differences in skills and human capital accumulation: part-time workers are more likely to have less work

¹ The part-time rate for women (32%) is four times the part-time rate for men (8%) (Eurostat, 2009).

experience (Blank, 1998) and, as a result, they may be less productive. Thirdly, part-time workers are less likely to be unionized (Belous, 1989; Owen, 1979; Riley, 1997). Fourthly, part-time workers are more concentrated in less valued occupations (Meulders and Plasman, 1993; Smith et al., 1998). Finally, the wage gap may be linked to the existence of fixed employment costs (Oi, 1962; Montgomery, 1988; Hamermesh and Rees, 1993; Lindbeck and Snower, 2000) that are proportional to the number of workers but independent of the number of hours worked (i.e., training costs, recruitment costs, administrative costs of maintaining records for each employee, etc.).

Evidence of a part-time wage penalty for European women has been found by recent studies. Bardasi and Gornick (2009), using the Luxembourg Income Study for the mid-1990s, found a part-time wage penalty among women working part-time in the United Kingdom, Germany and Italy. Jepsen et al. (2005), using the Structure of Earnings Survey for 1995, estimated the wage gap between part-time and full-time work for a sample of women from Belgium and found evidence of a part-time wage penalty. Kranz and Rodriguez-Planas (2009), using Spanish data from the 2006 wave of the continuous Sample of Working Histories, found that the part-time pay penalty is larger and more persistent for women with fixed-term contracts. Manning and Petrongolo (2008), using the Labor Force Survey for 2001-2003, found a part-time wage penalty for British women. However, since the end of the 1990s, many European countries have changed their labor market regulations under a European Union directive implemented in 1997² intended to eliminate discrimination against part-time workers, and in particular to guarantee pay equity between part-timers and full-timers. The aim of this study is to estimate whether a wage penalty still exists for part-time workers following the introduction of this directive. To do so, we decompose the full-time/part-time wage gap using more recent data from the EU-SILC for the year 2009.

There are wide variations across European countries in both the proportion of part-timers – ranging from 2% in Bulgaria to 48% in the Netherlands (Eurostat, 2009) – and the organization of part-time work. These differences result from differences in working-time cultures, in access to affordable childcare, in the availability of attractive part-time jobs and in legislation (Sandor,

² Council Directive 97/81/EC of 15 December 1997 concerning the Framework Agreement on part-time work.

2011). To capture the diversity of part-time working in Europe, we run a comparative analysis among four countries. We choose four countries that are representative of different welfare state regimes, labor market regulations, levels of part-time employment and family and employment reconciliation policies, i.e. Austria, Italy, Poland, and the United Kingdom. This comparative analysis aims to investigate whether countries with extensive use of part-time are those in which part-time working is better paid.

Previous studies have shown that a sizable part of the wage penalty is explained by different worker characteristics, and that controlling for occupation makes the wage penalty very small. For instance, Jepsen et al. (2005) found evidence of a part-time wage penalty in Belgium, but this price effect completely disappears once variables for sector and occupation are included in the regression. Other studies have shown that it is important to control for selection bias into part-time employment (Hardoy and Schøne, 2006). Since the level of part-time employment differs greatly between countries and between sectors, we analyze the impact of i) distribution of part-time employment across sectors and occupations on the full-time/part-time wage differential and ii) selection into employment. In other words, we analyze whether occupational segregation of part-time employment and different levels of female participation in employment and part-time employment can explain the unadjusted full-time/part-time wage differential in countries with different distributions of part-time employment across sectors and occupations. We estimate whether the wage penalty of part-time employment is mainly driven by individual characteristics, structure of employment or selection into full-time or part-time employment.

The article is organized as follows. Section 2 presents a cross-national analysis of female participation, part-time work and labor market regulations in Europe. Section 3 describes EU-SILC data for the year 2009, and summarizes some descriptive statistics. Sections 4 and 5 are devoted to a description of the estimation approach and to a discussion of the main results concerning estimations, wage gap decompositions and discrimination. Section 6 concludes the article.

Female Participation, Part-time Employment and Labor Market Regulations in Europe

Part-time employment has become a widespread working arrangement in Europe. However, it is not equally prevalent across Europe. The highest part-time employment rates are found in Northern European countries and the lowest in Southern ones. These differences in the diffusion of part-time employment at national level could be explained by differences among European countries as regards labor market regulations, extension of market activities relying on the use of part-time employment, tax and social security systems, economic situation, availability and organization of childcare provision, and cultures (O'Reilly and Fagan, 1998).

The four countries selected for our study, i.e. Austria, Italy, Poland, and the United Kingdom, are representative of different welfare state regimes as defined by Esping-Andersen's model of Capitalist Welfare States. They vary in terms of family and employment reconciliation policies, labor market regulations, and the level of part-time employment. Different family and employment reconciliation policies and norms regarding mother's employment explain country-specific levels of female labor market participation and part-time employment. Part-time legislation and labor market regulations such as the existence of a minimum wage also explain cross countries differences in part-time employment.

The United Kingdom is classified as a 'Liberal' regime under Esping-Andersen's (1999) typology, characterized by a low level of social protection with emphasis on poverty alleviation mainly based on means-tested benefits. Hence, the United Kingdom is specific in Europe (with Ireland) in having a large for-profit childcare provision sector, as opposed to a non-profit state sector (public or community-based), as is the case in other countries. Childcare is thus more expensive than in other European countries and its cost is mainly supported by parents³. The high flexibility of the labor market and the limited regulatory protection have facilitated the expansion of part-time employment in the United Kingdom. Part-time work has mainly been developed in a liberal context of a free labor market in response to employer demand. Part-time has only

³ Although there have been recent pledges to make childcare more affordable, especially to maintain lone mothers and low-income mothers in the labor market, and to tackle child poverty.

recently been used as a tool to reconcile work and family life through a reform (implemented in 2000) to allow parents of young children to switch from full-time to part-time work (Anxo and al. 2007). In the United Kingdom, a national hourly minimum wage was introduced in 1999 and it was increased several times in the following years. As underlined by the Low Pay Commission Report 2009⁴, around 65% of minimum wage jobs are held by women, and nearly 70% are women with a part-time job. As a result, the introduction of minimum wage legislation helped to reduce the number of low paid workers, and benefited women and part-time workers by increasing average wages.

Under the Esping-Andersen (1999) classification, Austria belongs to the conservative welfare state, characterized by policies geared at preserving existing statuses and traditional family forms, and where the provision of welfare is still mainly a family responsibility. Hence, a very small proportion of children are enrolled in external childcare – around 12% for children under three – and mostly on a part-time basis (Table 1). Consequently, the participation rate of mothers with a child under three is low (only 28% according to the OECD database). Two-third of mothers of a child under 15 are working, a large proportion on a part-time basis. In Austria, a country with low levels of childcare provision and time-limited school or care enrollment, mothers are increasingly opting for part-time working as a means to reconcile motherhood and a stronger desire to work. Indeed, the share of part-time workers has increased from 14% to 22% over the last decade. This trend concerns women especially, with a rate of 41% among women employees. Part-time working is a statutory right for parents of young children and the main reason for having a part-time job in Austria is related to child or adult care (Eurostat, 2009). Although the Austrian labor market is highly regulated in terms of job security, there is no statutory minimum wage. Minimum wages are laid down by trade unions that use collective bargaining to negotiate at the sector or firm level. Thus, the level of wages strongly depends on the firm size.

Among the four countries studied, Italy remains the most familialistic, in the sense of a strong reliance on family relations rather than on public support to provide help to families. As in other Southern Europe countries, motherhood is associated with a reduction in labor force participation. Furthermore, gender roles are still shaped in a traditional way, and the gender gap

⁴ http://www.lowpay.gov.uk/lowpay/rep_a_p_index.shtml

between time spent by men and women on unpaid work is one of the largest in Europe. In Italy, working time flexibility, that can help parents to reconcile work and family obligations, is very limited. For instance, it is not possible to take a parental leave on part-time basis. More generally, working part-time is quite uncommon and atypical (31% of working women and 7% of working men choose this option) because of trade union opposition and some disincentives for employers, e.g. a fixed cost per employee whether they work full or part-time (Del Boca, 2002). Since 2001, an agreement aiming at developing part-time work on a voluntary basis, increasing the quality of part-time jobs and reducing discrimination against part-time workers, has been implemented (Buddelmeyer and al. 2004), but the proportion of part-time workers has remained low. As a result, mothers are often forced to choose between not working or working full time (Del Boca, 2002). Thus, the employment rate for mothers with children under 15 is only 50%, one of the lowest in Europe. Low-paid workers are not covered by minimum wage legislation.

Table 1. Employment, family policies, part-time patterns (year 2007)

	Employment		Part-time employment (%)			Family-related public spending (% GDP)				Enrolment in formal care (%)		Minimum wage
	Female employment ratio (25-49 age cohort)	Maternal employment ratio (child under 15)	All	Men	Women	Cash	Services	Tax breaks for families	Total	Under 3 years	3 to 5 years	
Austria	79.5	66.8	24.6	8.7	43.0	2.1	0.5	0.0	2.6	12.1	77.6	No
Italy	61.1	50.0	14.3	5.1	28.0	0.6	0.7	0.0	1.4	29.2	97.4	No
Poland	73.4	56.6	8.4	5.8	12.0	0.8	0.3	0.5	1.6	7.9	47.3	Since 1990
United Kingdom	75.2	61.4	26.1	11.8	43.0	2.1	1.1	0.3	3.6	40.8	92.7	Since 1999

Source: European Labour force Surveys (2007-2008)

Source: Social Expenditure Database (www.oecd.org/els/social/expenditure) and ESSPROS

Source: Eurostat – Minimum wage statistics

Poland is classified among the post-communist welfare states characterized by lower levels of government programs and social well-being compared to Western countries. Since the end of the 1990s, a new welfare state has slowly emerged. For instance, family benefits that were based on an egalitarian scheme during the communist era were gradually replaced by a means-tested, earnings-related system. Policies aiming at reducing conflict between family and work are yet to be developed. Due to limited public childcare provision, long parental leave and strong family relations, the percentage of children below age three enrolled in formal childcare is very low, at

around 8%. The labor market is still rather rigid, as the standards of employment protection applied in state-owned enterprises have been extended and transferred to private businesses. In particular, part-time employment is quite rare, at around 8%, and is not increasing, mainly because part-time work does not provide a sustainable income for families and because there is a long tradition of full-time work for both men and women. As in other Central and Eastern European countries, the percentage of women working part-time among all working women is very low, at under 10%. As in Italy, there is no legislation on parents' rights or parental leave that entitles workers to opt for part-time working when they have young children. But unlike Italy, Poland introduced a minimum monthly wage in 1990. It covers all sectors and all employees.

This overview of part-time regulation in different countries reflects a broad variety of situations depending on the type of welfare regime. Part-time employment does not always serve simply as a means to promote the work-family balance, it may also be used as a flexible working arrangement imposed by employers. Even though the European Union directive on part-time employment states that part-time workers must be treated in the same way as full-timers and that part-time workers cannot be dismissed because they refuse to transfer from full-time to part-time work or vice versa, the history and prevalence of part-time employment differ greatly across countries. In the following sections, we will analyze whether outcomes of part-time employment differ across countries in terms of wage inequalities.

Data and Descriptive Statistics

The data used in the present study come from the European Union Statistics (Eurostat) on Income and Living Conditions (EU-SILC) for the year 2009. EU-SILC is an instrument for collecting comparable cross-sectional and longitudinal microdata on income, poverty, social exclusion and living conditions. When the EU-SILC project was launched in 2003, it covered Norway and six Member States of the European Union (i.e., Belgium, Denmark, Greece, Ireland, Luxembourg and Austria). Today, it records information for all EU-25 Member States together with Norway and Iceland.

The information collected is very extensive and varied. Detailed information on employment, education, income and health are collected at individual level (persons aged 16 and over). At the

household level, we have information about household composition, household non labor income, utilization of paid or unpaid childcare services for current household members not over 12 years old at the date of interview, degree of urbanization of area of residence, tenure status and characteristics of the dwelling.

Regarding personal income, we know the gross monthly earnings for employees. This amount corresponds to the monthly earnings in the main job for employees before tax and social contributions are deducted. It includes usual paid overtime, tips and commission. Any other payments, such as 13th or 14th month payments, holiday pay, profit sharing or bonuses are taken into account in a monthly basis. Another key variable in our study is the number of hours usually worked per week. According to Eurostat, this corresponds to the number of hours a person normally works in his/her main job. The definition includes extra hours, either paid or unpaid, which the person normally works, but excludes travel time between the home and the place of work as well as the main meal breaks. Both gross monthly earnings and hours usually worked per week are those recorded at the time of interview. Hourly wages are determined as the ratio between the gross monthly earnings and the number of hours usually worked per month (obtained by multiplying the number of hours usually worked per week and the average number of weeks in a month, i.e. 52/12) in the main job⁵.

In the present study, full-time and part-time employment are distinguished on the basis of the spontaneous answer given by the respondent rather than the number of hours worked⁶. As underlined by the Eurostat guidelines (2010), *it is impossible to establish a more exact distinction*

⁵ We excluded workers who reported working less than 5 hours per week or more than 60 hours per week. For working women with missing values for hours worked per week we imputed the average weekly working hours, distinguishing by country and by employment status (i.e. full-time or part-time). In our selected sample, 1076 women reported having a full-time job and working less than 30 hours per week. Most of them report being in education (71.38%) and working as professional, technician or associate professional (78.44%). For these full-time workers, the hourly wage, determined as the ratio between gross monthly earnings and the number of hours usually worked per week, could be overestimated. So, before computing the hourly wage, we correct reported hours by imputing the average weekly working hours of full-time workers that report: i) working more than 30 hours per week, ii) being in education and iii) working as a professional, technician or associate professional.

⁶ The Eurostat guidelines (2010) give a narrow definition of the “Self-defined current economic status”. Eleven different economic statuses are identified by Eurostat: 1) employee working full-time, 2) employee working part-time, 3) self-employed working full-time, 4) self-employed working part-time, 5) unemployed, 6) pupil, student, further training, unpaid work experience, 7) in retirement or in early retirement or has given up business, 8) permanently disabled or/and unfit to work, 9), in compulsory military community or service, 10) fulfilling domestic tasks and care responsibilities, 11) other inactive person.

between part-time and full-time work, due to variations in working hours between member states and also between branches of industry.

Our sample comprises women between 25 and 59 years old living in Austria, Italy, Poland, and the United Kingdom. We focused only on women because of the very limited number of men in part-time jobs in these countries. We excluded students, retired, self-employed, women in the military forces, family workers and observations with missing data⁷. The country sample size varies from 2853 observations for Austria to 9921 observations for Italy.

There are broad disparities in terms of women's labor market participation and wages across the selected European countries. As shown in Table 2, the female participation rate exceeds 70% in the United Kingdom and Austria, while the lowest participation rates are found in Italy and Poland. As mentioned previously, relative shares of full-time and part-time employment are very heterogeneous across European countries. Poland presents the lowest part-time rates, at less than 10%, followed by Italy at just above 10%. Austria and the United Kingdom, on the other hand, have relatively high part-time employment rates, at around 30%.

Table 2. Full-time, part-time and non-employment rates of women (%)

	Austria	Italy	Poland	United Kingdom
Full-time employment	38.70	43.86	63.77	47.84
Part-time employment	34.35	12.86	6.30	30.49
Employment	73.05	56.72	70.06	78.33
Non employment	26.95	43.28	29.94	21.67

Depending on their employment or activity status, differences are observed in women's socio-demographic characteristics. As shown in Table A1 (in Appendix), in all considered countries, the percentage of women with children who work full-time is lower than the percentage with children who have a part-time job or are not employed. So women with children are more likely

⁷ For some variables, such as firm and job characteristics, the non-response rate is relatively high. In order to exploit the largest number of observations, we exclude missing data from our sample in steps. For the first step estimations we exclude only those observations with missing data for variables used to explain employment status. In other words, at this step, we do not exclude observations with missing values for variables that explain wages but not employment status. These observations are excluded only when estimating the wage equations. However, the samples used are always representative of the respective populations.

to be economically inactive or in part-time employment. However, the figures differ across countries. In Austria, for example, less than 50% of women working full-time have children. Conversely, in Poland more than 80% of full-time working women are mothers.

Part-time employees differ from full-time employees in terms of individual and job characteristics. On average, women part-timers are less educated than full-timers. Moreover, if we compare potential experience (defined as age – number of years spent in education – 6) across employment status we observe that, on average, part-time workers have accumulated more experience during their working-life. This is mainly due to the lower average time spent in education by part-timers. In terms of job characteristics, women with a full-time job are more likely to have a managerial position with supervisory responsibility, to have a permanent contract and to work in a large company. They are more present in higher-level occupations, such as senior officials, managers, and professionals. By contrast, women working part-time are more likely to be employed as clerks, service or sales workers, or in elementary occupations. As regards the economic sector, about 50% of full-time workers are mainly employed in education, manual activities and in human health and social work activities. Part-time workers are also mainly employed in education and social work activities.

Table 3 shows the average hourly wage by country and by employment status. The highest average wages, both full-time and part-time, are found in Austria, followed by the United Kingdom. They are much lower in Poland. In all four countries under consideration, the full-time hourly wage exceeds the part-time hourly wage. The largest full-time/part-time wage differential in percentage terms is found in the United Kingdom and Poland where, on average, a full-time worker earns about 15% more than a part-time worker in terms of hourly wage. The wage gap is smaller in Austria and Italy.

The countries under study can thus be divided into two groups: in Austria and the United Kingdom part-time employment is common, while in Italy and Poland it is rare. But in both of these groups, the part-time /full-time wage gap is small in one country (Austria and Italy), and large in the other.

Table 3. Full-time and part-time average hourly wages (in Euros) and full-time/part-time wage gap (%)

	Austria	Italy	Poland	United Kingdom
Full-time average hourly wage (\bar{w}_{FT})	13.53	11.03	3.88	13.03
Part-time average hourly wage (\bar{w}_{PT})	12.32	9.89	3.31	11.05
Full-time/Part-time wage gap:				
$\frac{\bar{w}_{FT} - \bar{w}_{PT}}{\bar{w}_{PT}} (\%)$	8.94 (%)	10.34 (%)	14.69 (%)	15.20 (%)

Estimation Methodology

The main objective of this study is to measure the wage gap between part-time and full-time work and to check for the existence of an hourly wage penalty for part-time workers. To do so, we proceed by steps. First, we focus our analysis on the explanatory power of observed characteristics, such as human capital indicators, individual and household characteristics and job-related variables. Our objective is to measure the part of the wage gap explained by such variables. More importantly, we want to measure the importance of labor market segregation in explaining the wage gap between full-time and part-time workers. Next, we consider the sample selection problem. Since women differ by work status in terms of individual characteristics, we have reason to believe that the selection of women into employment and, more specifically, into full-time or part-time work is endogenous. In other words, the self-selection of women into employment status depends on observed individual and household characteristics and, also, on unobserved individual characteristics, such as ability, motivation, commitment and effort, values about motherhood affecting the decision to work. Moreover, some of these unobserved characteristics also affect the individual wage. Our objective, in this case, is to evaluate the contribution of sample selection to the full-time/part-time pay differential.

A baseline analysis of full-time/part-time wage penalty: a matter of segregation

To analyze the full-time/part-time pay differential, we estimate two separate log wage regression equations for full-time and part-time workers, respectively. We then apply the Blinder and

Oaxaca procedure (Blinder, 1973; Oaxaca, 1973) to decompose the full-time/part-time wage gap. Log wage equations for full-time and part-time workers

$$y_{ij} = x_i' \beta_j + \varepsilon_{ij} \quad (1)$$

are estimated by Ordinary Least Squares (OLS). The outcome variable y_{ij} is the logarithm of the hourly market wage of full-time or part-time workers i . x_i are exogenous independent variables, β_j is the parameter vector associated with the independent variables for each alternative $j = PT, FT$. ε_{ij} are error terms supposed normally distributed with mean 0 and variance σ_j^2 .

Once the log wage equations are estimated, we decompose the full-time/part-time wage gap using the Blinder-Oaxaca procedure (Blinder, 1973; Oaxaca, 1973). The procedure divides the full-time/part-time wage differential into two parts: i) an “explained part” that is the part of the raw wage differential explained by observable characteristics (i.e. human capital indicators, individual and household characteristics and job-related variables); ii) an “unexplained part” that is the part of the raw wage gap not explained by observed characteristics but due to different returns to identical characteristics or to unobserved heterogeneity. The two-fold decomposition, formulated from the viewpoint of part-time workers, is expressed as follows:

$$\bar{y}_{FT} - \bar{y}_{PT} = (\bar{x}_{FT} - \bar{x}_{PT}) \hat{\beta}^* + \left(\bar{x}_{FT} (\hat{\beta}_{FT} - \hat{\beta}^*) + \bar{x}_{PT} (\hat{\beta}^* - \hat{\beta}_{PT}) \right) \quad (2)$$

where \bar{y}_{FT} and \bar{y}_{PT} are the predicted means log hourly wage for full-time and part-time workers, respectively. Similarly, \bar{x}_{FT} and \bar{x}_{PT} are the average values of regressors for each type of worker. $\hat{\beta}_{FT}$ and $\hat{\beta}_{PT}$ are estimated parameters and $\hat{\beta}^*$ is non-discriminatory coefficient vectors. Given that discrimination is directed against only one group, in our case part-time workers (positive discrimination was never found in any country for full-time workers in our estimations when we used the full-time reference group in our specification), we follow Oaxaca (1973) and we set $\hat{\beta}^* = \hat{\beta}_{FT}$ ⁸. In other words, we assume that non-discriminatory parameters are the returns of characteristics of full-time workers. As a consequence expression (2) becomes

⁸ Other authors suggest using as an estimate of non-discriminatory parameters the average coefficients over both groups (Reimers, 1983) or a weighted sum of groups coefficients where the weights are given by group sizes

$$\bar{y}_{FT} - \bar{y}_{PT} = (\bar{x}_{FT} - \bar{x}_{PT})\hat{\beta}_{FT} + \bar{x}_{PT}(\hat{\beta}_{FT} - \hat{\beta}_{PT}) \quad (3)$$

The first term on the right-hand side of equation (3) is the explained part of the wage differential. It represents the part of the wage gap explained by differences in observed characteristics between the two types of workers. The second term in the right-hand side of expression (3) represents the unexplained part of the wage gap. This part captures not only differences in the returns of observed characteristics but also the effects due to differences in unobserved or omitted characteristics. More specifically, a positive value for the unexplained part means that a part-time wage penalty exists. Otherwise, a part-time wage premium exists.

We estimate two different specifications of equation (1) and, consequently, we apply two different wage gap decompositions as in equation (3). In the first specification, the vector of exogenous variables x_i includes only human capital indicators and individual and household characteristics. Human capital indicators comprise the level of education (four categories are defined: at most lower secondary education, upper secondary education, post-secondary non tertiary education, and tertiary education, with the former as the reference category), and a second order polynomial of potential experience. Potential experience is measured by the formula (age – number of years spent in education – 6). However, this measure of individual work experience is likely to overestimate the real experience of women because it does not consider child-related career interruptions. Individual and household characteristics comprise country of birth (dummy variable equal to 1 if the country of birth is the country where she lives), health status (three categories are defined: good and very good health, fair health, bad and very bad health, with the latter as the reference category), the number of children by age group (we distinguish among children aged 0-5, children aged 6-11, and children aged 12 and above), the region of residence (information is not available for the United Kingdom), and the degree of urbanization of area of residence (dummy variable equal to 1 if densely populated or intermediate area). In the second specification we also add job-related variables, i.e. the occupation (9 dummies coded under the ISCO-88 (COM) International Standard Classification of Occupations, with service, shop and market sales workers as the reference category), the firm size (dummy variable equal to 1 if the

(Cotton, 1988). Alternatively, we can use the estimate of non-discriminatory parameters obtained from a pooled regression over both groups (Neumark, 1988).

local unit has more than 11 employees), the type of contract⁹ (dummy variable equal to 1 for a permanent job), being in a managerial position (dummy variable equal to 1 if she has supervisory responsibility), and the economic sector of the local unit (12 dummies coded according the NACE Statistical Classification of Economic Activities, with agriculture, forestry and fishing as the reference category).

We expect to find evidence of a part-time wage penalty everywhere when we control only for human capital indicators and individual and household characteristics. However, once we also control for job-related variables we expected to find a significant reduction in the part-time wage penalty or even its disappearance, in line with other studies on this subject (Rodgers, 2004; Jepsen et al., 2005; Hardoy and Schøne, 2006; Bardasi and Gornick, 2009). Our aim, here, is to see how much labor market segregation matters in explaining the wage gap.

A more exhaustive analysis of full-time/part-time wage gap: a matter of segregation and selection

In the second step of our analysis, we consider the problem of sample selection. The estimation is run in three steps. In the first step, we model the individual choice with respect to the status in employment, i.e. non-employment¹⁰, part-time employment and full-time employment, as an ordered probit model¹¹ (see also Ermish and Wright, 1993). What we can observe is a variable z that takes the value 0 if the individual is not-employed, 1 if she is employed part-time and 2 if she is employed full-time. Let us define z^* the latent unobserved variable,

$$z^* = w' \gamma + u \quad (4)$$

⁹ The non-response rate for this variable is relatively high in the United Kingdom. For the United Kingdom only, a dummy variable equal to one is added into the log wage equations if information on the type of contract is missing.

¹⁰ We do not distinguish between inactivity and unemployment because of data availability.

¹¹ An alternative method for modeling individual choice about work status is the multinomial logit model (Lee, 1982, 1983). However, it is based on the assumption of Independence of Irrelevant Alternatives (IIA) that is violated in our samples.

where w is a vector of exogenous variables (w does not contain a constant¹²), γ is a parameter vector and u is the error term assumed to be normally distributed with mean 0 and variance 1. We have

$$z = \begin{cases} 0 & \text{if } z^* \leq \alpha_1 \\ 1 & \text{if } \alpha_1 < z^* \leq \alpha_2 \\ 2 & \text{if } z^* > \alpha_2 \end{cases} \quad (5)$$

where the unknown cut points α_1 and α_2 , with $\alpha_1 < \alpha_2$, are estimated together with γ . The individual is in category 0 if $u \leq \alpha_1 - w'\gamma$, in category 1 if $\alpha_1 - w'\gamma < u \leq \alpha_2 - w'\gamma$ and in category 2 if $u > \alpha_2 - w'\gamma$. It is straightforward to derive the response probability:

$$\begin{aligned} P(z = 1|w) &= P(z^* \leq \alpha_1|w) = \Phi(\alpha_1 - w'\gamma) \\ P(z = 2|w) &= P(\alpha_1 < z^* \leq \alpha_2|w) = \Phi(\alpha_2 - w'\gamma) - \Phi(\alpha_1 - w'\gamma) \\ P(z = 3|w) &= P(z^* > \alpha_2|w) = 1 - \Phi(\alpha_2 - w'\gamma) \end{aligned} \quad (6)$$

The variables w included in the selection equations are: i) human capital indicators such as the level of education and a second order polynomial of potential experience; ii) individual and household characteristics such as country of birth, health status, number of children by age group, region of residence, and degree of urbanization of area of residence; iii) instruments such as partner's annual labor income (this variable is equal to zero if there is no partner because individual is never-married, separated, divorced or widowed), other annual family non labor income (including income from rental of a property or land, interest, dividends, profit from capital investments in unincorporated business, housing allowances and alimonies), availability of unpaid childcare (dummy variable equal to 1 if unpaid care outside parents is available), and home ownership (dummy variable equal to 1 if individual owns the dwelling where she lives)¹³.

¹² Suppose that vector w includes also a constant term γ_0 . Then γ_0 , α_1 and α_2 are not individually identified. What we can identify is the difference $(\alpha_1 - \gamma_0)$ and $(\alpha_2 - \gamma_0)$. The model is usually identified by setting $\gamma_0=0$ or $\alpha_1=0$.

¹³ Partner's labor income, other family non labor income, availability of unpaid childcare, and home ownership are excluded from the wage equations. So they are used to identify the individual participation decision in employment. Partner's labor income and other family non labor income correspond to the 12-month income reference period. Article 4 of the EU-SILC framework regulation states: "This may be a fixed 12-month period (such as the previous calendar or tax year) or a moving 12-month period (such as the 12 months preceding the interview) or be based on a comparable measure. If a fixed income reference period is used, fieldwork for the survey component shall be carried out over a limited period as close as possible to the income reference period or to the tax declaration period so as to minimise time lag between income and current variables." We also estimated another specification for the ordered probit model including a dummy variable equal to 1 if the woman lives in a couple (zero otherwise) and a unique instrument for other household incomes. Other household incomes are measured by household non labor income if

In the second step, log wage equations for full-time and part-time workers

$$y_{ij} = x_i' \beta_j + \sigma_j \rho_j \lambda_i + \eta_{ij} = x_i' \beta_j + \delta_j \lambda_i + \eta_{ij} \quad (7)$$

are estimated by Ordinary Least Squares (OLS), with $j = z_i$. As in the second specification of equation (1), the vector x_i includes human capital indicators, individual and household characteristics, and job-related variables. Differently from equation (1), equation (7) includes the selection-correction term λ_i . It is computed from estimates obtained in the first step, more precisely:

$$\lambda_i = \begin{cases} \frac{\phi(\hat{\alpha}_1 - w' \hat{\gamma}) - \phi(\hat{\alpha}_2 - w' \hat{\gamma})}{\Phi(\hat{\alpha}_2 - w' \hat{\gamma}) - \Phi(\hat{\alpha}_1 - w' \hat{\gamma})} & \text{if } z_i = 1 \\ \frac{\phi(\hat{\alpha}_2 - w' \hat{\gamma})}{1 - \Phi(\hat{\alpha}_2 - w' \hat{\gamma})} & \text{if } z_i = 2 \end{cases} \quad (8)$$

where ϕ denotes the normal density function and Φ the normal cumulative distribution function, as shown in equation (6). In equation (7), ρ_j is the correlation between the error terms in the selection and in the outcome equations, $\delta_j = \sigma_j \rho_j$ and η_j are errors terms assumed to be normally distributed with mean 0 and variance σ_j^2 . If the coefficient δ_j associated with the selection-correction term λ_i is significantly different from zero, this means that the selection of employment status is endogenous (i.e., the error terms in the selection and in the wage equations are correlated). In other words, unobserved characteristics that affect participation are also correlated with individual wage. A positive and significant selection term (i.e. $\delta_j \lambda_i > 0$) means that unobservable factors which increase the likelihood of full-time or part-time participation tend to be associated with a higher wage. A negative and significant coefficient (i.e. $\delta_j \lambda_i < 0$) indicates that a higher participation probability in full-time or part-time employment is related to an above average wage.

Once the log wage equations are estimated, we decompose, in a third step, the full-time/part-time wage gap using the Neuman-Oaxaca procedure (2004). The procedure divides the full-time/part-

the woman does not live in a couple. Otherwise, they are measured by the sum of household non labor income and her partner's labor income.

time wage differential into three parts: i) an “explained part” that is the part of the raw wage differential explained by observable characteristics; ii) an “unexplained part” that is the part of the raw wage gap not explained by observed characteristics but due to different returns to identical characteristics or to unobserved heterogeneity; iii) the “selection part” that is the part of the raw pay differential due to self-selection of women into full-time or part-time employment. The two-fold decomposition, formulated from the viewpoint of part-time workers and with the returns of characteristics of full-time workers as non-discriminatory parameters, is expressed as follows:

$$\bar{y}_{FT} - \bar{y}_{PT} = (\bar{x}_{FT} - \bar{x}_{PT})\hat{\beta}_{FT} + \bar{x}_{PT}(\hat{\beta}_{FT} - \hat{\beta}_{PT}) + (\bar{\lambda}_{FT}\hat{\delta}_{FT} - \bar{\lambda}_{PT}\hat{\delta}_{PT}) \quad (9)$$

where, like previously, \bar{y}_{FT} and \bar{y}_{PT} are the predicted mean log hourly wage for full-time and part-time workers, respectively. \bar{x}_{FT} and \bar{x}_{PT} are the average values of characteristics of workers, $\hat{\beta}_{FT}$, $\hat{\beta}_{PT}$, $\hat{\delta}_{FT}$, and $\hat{\delta}_{PT}$ are estimated parameters.

The first term on the right-hand side of equation (9) is the explained part of the wage differential, and the second term represents the unexplained part. The third term is the selection term. This part, like the unexplained part, is also related to unobserved characteristics.

Wage equations and wage gap decomposition results

In this section we present the estimation results of wage equations for full-time and part-time workers and wage gap decomposition results.

In the first specification we include only human capital indicators and individual and household characteristics in log wage equations. The results of the estimations of hourly wages are similar to those usually found in the literature (Table A2). In all countries, the higher the level of education attained the greater the impact on wages, for both full-time and part-time workers. As expected, potential experience has a positive effect on wages. When they are significant, living in a densely populated or intermediate area, being in good health, and being born in the country of residence have a positive effect on wages. The variables related to number of children by age group are almost non-significant, except in Italy where having children aged 0-5 or 6-11 has a

positive effect on wages. This result may be due to a selection effect since mothers who work with young children are very positively selected. Conversely, having children aged 12 or above has a negative effect on wages in Poland and the United Kingdom. This may reflect lower wages at labor market re-entry after child-related interruption.

Results for the decomposition of the full-time/part-time wage differential are presented in Table 4. In all considered countries, we find evidence of a part-time wage penalty. In the United Kingdom, only 28.7% of the wage differential is explained by the differences in observable characteristics between full-time and part-time workers (i.e., differences in educational level, potential experience, family composition, etc.). The remaining part, i.e., the unexplained part, is thus equal to 71.3%. In other words, 71% of the wage gap remains unexplained after controlling only for human capital indicators and individual and household characteristics in the log-wage equations. In the other countries, the percentage of the wage differential explained by observable characteristics is much higher and observable characteristics explain around half of wage full-time/part-time differences: 43.2% in Austria, 44.0 % in Poland, and 53.1 % in Italy.

Table 4. Oaxaca Decomposition: Model with only human capital indicators, individual and household characteristics in log wage equations

	Austria	Italy	Poland	United Kingdom
Prediction log wage for FT	2.511	2.326	1.234	2.455
Prediction log wage for PT	2.386	2.212	1.018	2.253
Difference	0.125***	0.113***	0.216***	0.202***
Explained part	0.054*** (43.2%)	0.060*** (53.1%)	0.095*** (44.0%)	0.058*** (28.7%)
Unexplained part	0.071*** (56.8%)	0.053*** (46.9%)	0.121*** (56.0%)	0.144*** (71.3%)

Note: a) *Statistically significant at the 0.1 level, **at the 0.05 level, ***at the 0.01 level.

In the second specification we also add job-related variables among regressors to capture the specific distribution of part-time employment in specific jobs or occupations. These variables include some measures of vertical and horizontal segregation. By vertical segregation we mean better career opportunities (for advancement and wages) and more rewarded positions for some workers, in our case full-timers relative to part-timers. This might create a “glass ceiling” and/or a “sticky floor”. As proxy of vertical segregation, we include the occupation and being in a managerial position. Horizontal segregation refers to the situation where a certain type of worker

is concentrated in certain sectors of economic activity, in certain types of firms and in a particular type of contract. The firm size, the type of contract, and dummies for the economic activity of the firm are indicators of horizontal segregation.

As shown in Table A3, to be occupied as senior officials and managers, professionals, technicians, associate professionals or clerks, with respect to service and sales workers, almost always has a positive and significant effect on wages in all countries. To be occupied in low-skilled occupations always has a negative effect on wages. As expected, having a managerial position has a positive effect. Concerning horizontal segregation, working in a firm with more than 11 employees and having a permanent work contract also has a positive effect on wages. The sector of activity has an effect mainly in Italy and Poland, with a wage premium of working full-time in finance and insurance, and in public administration and social security relative to agriculture, forestry and fishing.

Table 5 shows the wage gap decomposition results. The most important finding that emerges is the disappearance of the previously observed wage penalty. In other words, we find no evidence of a part-time wage penalty when we control for job-related variables. Once job-related variables are included in the log wages equations, the portion of the wage gap explained by differences in observable characteristics between part-time and full-time workers increases considerably in all countries. As a result, the unexplained part decreases, even falling to zero, in all countries. The second remarkable finding is the huge magnitude of the contribution of job-related variables to the explained part. In Austria more than 70% of the explained part is due to job-related variables. In the other countries, this percentage exceeds 80%. Horizontal segregation is important and represents between 20% and 40% of the explained wage gap. So, beyond individual characteristics, we can assert that the raw full-time/part-time pay differential is also explained by the horizontal segregation of part-time workers in low paid sectors. Moreover, part-time employees are more likely to hold a temporary job and work in small companies where wages are less collectively negotiated. But, vertical segregation also has a strong impact on the wage penalty, even greater than horizontal segregation. Part-time workers less often hold positions at the top of the occupational hierarchy, or are less likely to be promoted to positions of responsibility. Vertical segregation has a particularly strong impact in the United Kingdom and in Poland. In other words, the full-time/part-time wage differential is explained much more by the

concentration of part-timers in low-skilled and less valued occupations than by their prevalence in specific sectors. This result contrasts with those of the literature that mainly focus on horizontal segregation as the main explanation for the full-time /part-time gender wage gap (Bardasi and Gornick, 2009). It is difficult to establish whether this result stems from discrimination and/or self-selection – part-timers might be less career-oriented for instance– into specific jobs.

Table 5. Oaxaca Decomposition: Model with human capital indicators, individual and household characteristics and job-related variables in log wage equations

	Austria		Italy		Poland		United Kingdom	
Prediction log wage for FT	2.511		2.326		1.234		2.455	
Prediction log wage for PT	2.386		2.212		1.018		2.253	
Difference	0.125***		0.113***		0.216***		0.202***	
Explained part §								
Human capital indicators	0.032***	(34.4%)	0.031***	(23.5%)	0.036***	(15.2%)	0.021***	(10.9%)
Individual and household characteristics	-0.006	(-6.5%)	-0.010***	(-7.6%)	0.002	(0.8%)	0.007	(3.6%)
Vertical segregation	0.047***	(50.5%)	0.060***	(45.5%)	0.123***	(51.9%)	0.115***	(59.6%)
Horizontal segregation	0.020	(21.5%)	0.051***	(38.6%)	0.076***	(32.1%)	0.050***	(25.9%)
Total	0.093***	(74.4%)	0.132***	(116.8%)	0.237***	(109.7%)	0.193***	(95.5%)
Unexplained part	0.032	(25.6%)	-0.018	(-16.8%)	-0.021	(-9.7%)	0.009	(4.5%)

Note: a) §: human capital indicators include education and potential experience; individual and household characteristics include the number of children by age group, nationality, health status, the region of residence (with the exception of the United Kingdom), the degree of urbanization of the area of residence; vertical segregation includes occupational variables and managerial position; horizontal segregation includes activity sector, type of contract and firm size; b) *Statistically significant at the 0.1 level, **at the 0.05 level, ***at the 0.01 level.

In the final stage of the analysis, possible sample selection of working women is controlled for. Indeed, some women might have decided to stop working or to work part-time because of family and health reasons for instance. We start by presenting the estimation results for individual choice with respect to employment status. As coefficients are quite difficult to interpret at first glance, the marginal effects on the response probabilities are presented in Table A4¹⁴. The results show

¹⁴ The marginal effect of a regressor on the probabilities is not equal to the estimated coefficient. For the three probabilities the marginal effects of a change in the regressor are

that, compared to women with lower secondary education at most, more educated women are more likely to work full-time and less likely to work part-time. The probability of working full-time increases with the level of education in each country, but the magnitude is higher in Italy and Poland, countries where female labor market participation and part-time employment are low, especially in Italy. In other words, part-time workers exhibit far fewer differences in terms of educational level when part-time employment is widespread. Experience also positively affects the probability of working full-time, except in the United Kingdom, while it negatively affects the likelihood of working part-time, but with a small magnitude.

Employment status strongly depends on family situation and opportunities for childcare. Hence, having children has a negative and significant effect on the probability of working full-time and a positive and significant effect on the probability of working part-time (with the exception of Italy where we find a positive and not significant effect on the probability of working part-time). In general, the magnitude of the effect diminishes as the children grow older. As expected, mothers with younger children (ages 0-5 years) are less likely to work full-time. Moreover in all countries, the availability of unpaid childcare has a positive and significant effect on the probability of working full-time and a negative and significant impact on the probability of having a part-time job. Part-time employment clearly serves as a tool to balance work and family, especially in countries where it is much more prevalent, as is the case in Austria and the United Kingdom.

The effect of income-related variables on the employment status decision varies across countries. They affect this decision much more strongly in the United Kingdom and in Poland, where income inequalities are larger compared to the other two countries. Hence, the availability of other sources of income has a significant effect on the probability of working in the United Kingdom and Poland. In these two countries, non labor income has the expected positive effect on the probability of working part-time and a negative impact of the probability of working full-time. Partner's labor income, with zero values for singles, also has a negative and significant

$$\begin{aligned}\frac{\partial P(z=1|w)}{\partial w} &= -\phi(\alpha_1 - w'\gamma)\gamma \\ \frac{\partial P(z=2|w)}{\partial w} &= [\phi(\alpha_1 - w'\gamma) - \phi(\alpha_2 - w'\gamma)]\gamma \\ \frac{\partial P(z=3|w)}{\partial w} &= \phi(\alpha_2 - w'\gamma)\gamma\end{aligned}$$

The marginal effect of the regressor w on the probabilities of not working $P(z=1)$ has the opposite sign from the associated estimated coefficient γ . The marginal effect of the regressor w on the probabilities of working full-time $P(z=3)$ has the same sign as the associated estimated coefficient. The sign of the marginal effect of the regressor w on the probability of working part-time $P(z=2)$ is ambiguous.

effect on the probability of working full-time and a positive and significant effect on the probability of working part-time in these two countries. In Italy, it has no significant effect on the probability of working part-time while in Austria it also has a negative and significant effect on the probability of working part-time. Home ownership has a positive and significant effect on the probability of working full-time (with the exception of Austria where the estimated parameter is not significant) and a negative and significant effect on the probability of working part-time (with the exception of Austria and Italy where estimates are not significant). Regarding the instruments used to explain participation in employment (and not wages), i.e. non labor income, partner's labor income, availability of unpaid childcare and home ownership, we found that their effects go in the same way, although the magnitude may differ across countries (see Table A4). This makes us confident about the selection equation.

As shown in Table A5, we find evidence of sample selection in Austria where the coefficient associated with the selection-correction term is high for both full-time and part-time workers. For Poland, the results show evidence of sample selection only for full-time workers. The introduction of the correction term for selectivity in the log wage equations has an important effect on the value of coefficients associated with human capital indicators and individual and household characteristics. Comparing the estimation results reported in Table A3 and in Table A6 shows that the effect of children becomes negative almost everywhere and confirms our initially formulated hypothesis about selection effects. Whatever their age, children have a negative and significant effect on wages after selection of mothers is taken into account, especially for Austria. But the change in the magnitude of coefficients associated with job-related variables is marginal once the selection term is included in the log wage regressions.

The results regarding wage gap decomposition differ from those initially found without selection correction (Table 6), which illustrates the importance of taking account of selection into employment status. We find evidence here of a significant part-time wage premium in Austria and Poland. In these countries, when we control for sample selection, the explained part increases, in particular in the case of Austria, and the selection part is positive and significantly different from zero. As previously underlined for the case of Austria, when we control for sample selection, the magnitude of the coefficients associated with human capital indicators and individual and household characteristics increases considerably. On the contrary, the explanatory

power of job-related variables does not change significantly. As a result, the wage differential is mainly explained by differences in human capital indicators and, above all, by individual and household characteristics between part-time and full-time workers. Only 25.6% of the explained part is due to segregation. In a country such as Austria where working part-time is the norm for mothers, full-time workers are highly selected; they might be women with stronger financial constraints who are ‘forced’ to work full-time. Different considerations apply for Poland. Following the introduction of the selection-correction term among the regressors in the log wage equations, the magnitude of the estimated coefficients varies with respect to the estimates obtained in the second specification but, if we look at the wage gap decomposition results, most of the explained part is due to segregation.

Table 6. Oaxaca Decomposition: Model with human capital indicators, individual and household characteristics, job-related variables and selection in log wage equations

	Austria		Italy		Poland		United Kingdom	
Prediction log wage for FT	2.511		2.326		1.234		2.455	
Prediction log wage for PT	2.386		2.212		1.018		2.253	
Difference	0.125***		0.113***		0.216***		0.202***	
Explained part [§]								
human capital indicators	0.044***	(17.1%)	0.034***	(24.8%)	0.057***	(26.4%)	0.020***	(10.8%)
individual and household characteristics	0.148***	(57.4%)	-0.008**	(-5.8%)	0.009*	(4.2%)	-0.000	(-0.1%)
vertical segregation	0.046***	(17.8%)	0.060***	(43.8%)	0.122***	(56.5.0%)	0.115***	(62.2%)
horizontal segregation	0.020***	(7.8%)	0.051***	(37.2%)	0.076***	(35.27%)	0.050***	(27.0%)
Total	0.258***	(206.4%)	0.137	(121.2%)	0.264***	(122.2%)	0.185***	(91.6%)
Unexplained part	-0.668***	(-534.4%)	-0.066	(-58.4%)	-0.133**	(-61.6%)	0.026	(12.9%)
Selection	0.535***	(428.0%)	0.042	(37.2%)	0.085**	(39.4%)	-0.010	(-4.5%)

Note: a) §: human capital indicators include education and potential experience; individual and household characteristics include the number of children by age group, nationality, health status, the region of residence (with the exception of the United Kingdom), the degree of urbanization of the area of residence; vertical segregation includes occupational variables and managerial position; horizontal segregation includes activity sector, the type of contract and the firm size; b) *Statistically significant at the 0.1 level, **at the 0.05 level, ***at the 0.01 level.

The wage gap decomposition results for Italy and the United Kingdom remain fairly consistent with those presented in Table 5. The selection correction does not substantially modify the results. In Italy, the selection mainly operates on the choice between working or not working

rather than between working part-time or full-time, since part-time work is very uncommon. In consequence, the selection correction does not affect the full-time/part-time wage gap so strongly.

To conclude, with the exception of Austria where the role of self-selection is predominant, in the other countries the raw full-time/part-time pay differential is largely due to labor market segregation. Both horizontal and vertical segregation are responsible for this result. In other words, part-timers tend to work in lower-paid occupations, they face barriers to career advancement regardless of their skills or achievements, and occupy less valued jobs. This could be the result of a discriminatory behavior against part-time workers based on stereotypes and prejudices.

Conclusion

The prevalence of part-time employment differs greatly between European countries. Full-time hourly wages generally exceed part-time hourly wages for women, with large cross-country differences in the magnitude of this wage gap. The aim of this paper is to evaluate whether the full-time/part-time pay differential is entirely explained by differences in characteristics (individual, household and job-related characteristics) between full-timers and part-timers, or whether a wage penalty for part-time workers still exists, especially following the introduction of a new European Union directive aiming to eliminate all forms of discrimination against part-time workers. We selected four countries according to their welfare regime and the share of part-time employment. Two of these countries have a high prevalence of part-time employment, i.e., Austria and the United Kingdom, with a small wage gap between full-time and part-time employment in Austria and a relatively large one in the United Kingdom. Part-time employment is much less widespread in the two other countries, i.e., Italy and Poland. The full-time/part-time wage gap also differs between these two countries: it is small in Italy and large in Poland.

We first focus on the contribution of individual and household characteristics in explaining the full-time/part-time wage gap. We find evidence of a significant part-time wage penalty in all four countries. But after controlling for job-related variables the part-time wage penalty disappears in

all countries, which is in line with other studies. Estimates show that most of the full-time/part-time wage gap is driven by segregation. In other words, the full-time/part-time gap in hourly wages is more caused by segregation across part-time and full-time jobs than by pay discrimination against part-time workers within firms. Both vertical and horizontal segregation are responsible for this result, but vertical segregation has a much stronger magnitude. Thus, part-time and full-time jobs are not equally distributed along the occupational distribution and this unequal allocation participates to the full-time/part-time gender wage gap.

Finally, controlling for selection into employment status (not working, working part-time or working full-time) does not change the huge impact of segregation but produces contrasting results by country. In the United Kingdom, where part-time employment is widespread, mainly in response to employers' search for greater flexibility, and the wage gap is sizeable, selection is not significant. Almost the entire full-time/part-time wage gap is due to the segregation of employment. The same conclusion, i.e. the quasi-exclusive role of occupational segregation and the absence of selection effect also applies to Italy, in spite of a different context (few part-timers and small wage gap). By contrast, we find evidence of a positive selection effect in Poland and, especially, in Austria. In these two countries we also find evidence of a part-time wage premium, once selection is taken into account.

In consequence, it appears that after taking into account the occupational structure of employment, there is no longer a wage difference between part-time and full-time employment. However, part-time employment is limited to certain sectors, and to the lower level of the occupational hierarchy. Thus, discrimination against part-time employment for women occurs mainly through occupational segregation, rather than through selection or pure employer discrimination. The presence of horizontal segregation suggests that policies should continue to develop part-time work in some sector in which the prevalence is still rare. But the evidence of an even stronger effect of vertical segregation calls for measures aiming at developing part-time possibilities in the top of the occupational distribution. Women who want to access to managerial positions are more likely and also more constrained to work full-time. Moreover, family policy, by providing affordable and of high quality childcare, may also allow women at the bottom of the employment hierarchy to work full-time, and thus they can contribute to reduce full-time part-

time job segregation. Since women are the majority of part-time workers, the next step of this work would be to measure to what extent the occupational segregation of part-time and full-time jobs also plays a role in the more general gender wage gap.

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Appendix

Table A1. Descriptive Statistics

	Austria			Italy			Poland			United Kingdom		
	FT	PT	NE	FT	PT	NE	FT	PT	NE	FT	PT	NE
Hourly wage (Euros)	13.53	12.32		11.03	9.89		3.88	3.31		13.03	11.05	
Education: at most primary education (%)	11.59	17.14	28.35	22.34	34.17	55.05	4.39	9.85	18.43	9.03	11.6	25.72
Education: lower secondary education (%)	47.92	54.59	49.28	45.00	48.43	32.84	51.76	61.36	67.82	44.83	55.34	46.39
Education: upper secondary education (%)	17.03	13.16	9.62	7.06	6.03	3.54	8.95	7.32	4.99	3.73	3.80	5.78
Education: tertiary education (%)	23.46	15.10	12.74	25.60	11.36	8.57	34.90	21.46	8.76	42.41	29.26	22.11
Potential experience (years)	23.93	24.45	23.18	24.05	24.38	27.59	22.00	23.74	24.46	23.48	25.34	22.00
Number of children in age group 0-5	0.04	0.18	0.51	0.17	0.24	0.22	0.13	0.16	0.27	0.09	0.28	0.61
Number of children in age group 6-11	0.10	0.37	0.40	0.18	0.33	0.25	0.22	0.23	0.29	0.15	0.39	0.55
Number of children in age group 12-more	0.57	0.79	0.60	0.81	0.81	1.00	1.06	1.06	1.1	0.58	0.79	0.67
Health status: good and very good (%)	83.15	82.14	71.65	80.37	75.55	71.38	73.27	61.36	60.65	91.62	88.71	78.18
Health status: fair (%)	14.31	15.41	20.94	17.26	21.00	23.15	23.09	30.30	28.89	7.53	9.86	17.77
Health status: bad and very bad (%)	2.54	2.45	7.41	2.37	3.45	5.47	3.64	8.34	10.46	0.85	1.43	4.05
Availability of unpaid childcare (%)	5.43	18.27	12.87	12.69	18.03	5.73	12.94	11.62	7.33	9.10	20.53	15.17
Annual other family income /100	14.86	19.21	19.02	17.48	15.86	11.87	1.43	1.60	2.58	11.46	14.50	32.93
Annual partner's labor income /100	213.0	308.8	266.6	193.7	237.7	195.5	68.2	64.9	68.1	211.1	290.4	272.9
Home ownership (%)	53.80	66.63	50.72	77.15	72.26	68.33	67.94	57.83	63.04	80.10	79.36	51.88
Occupation (%) :												
legislators, senior officials and managers	4.72	0.65		2.09	0.86		4.69	0.26		16.25	4.97	
professionals	16.32	9.49		14.00	4.23		27.70	17.14		17.77	10.36	
technicians and associate professionals	20.28	18.21		32.34	21.24		15.86	9.21		17.97	13.85	
clerks	27.08	25.30		19.42	21.87		12.10	10.49		24.14	23.89	
Service, shop and market sales workers	17.64	26.94		12.71	24.06		17.11	29.41		15.25	33.30	
skilled agricultural and fishery workers	0.47	0.76		0.62	0.47		0.30	0.51		0.00	0.00	
craft and related trades workers	1.04	1.20		5.01	6.11		6.90	5.37		0.86	0.21	
plant and machine operators and												
assemblers	1.51	1.09		5.06	2.56		4.54	1.02		2.92	1.48	
elementary occupations	10.94	16.36		8.76	18.57		10.79	26.60		4.84	11.95	
Managerial position (%)	46.32	29.99		20.13	10.03		16.99	4.86		42.64	18.60	
Economic activity (%) :												
agriculture forestry and fishing	0.38	0.98		1.63	1.80		1.20	2.05		0.33	0.21	
mining; manufacturing; electricity; etc..	10.85	6.98		18.64	13.71		20.28	12.28		8.89	2.85	
construction	2.74	3.16		1.91	1.41		1.30	0.51		2.19	1.59	
wholesale and retail trade	14.06	23.12		10.43	16.30		15.76	24.55		10.41	17.23	
transport and storage	3.49	2.73		2.87	1.72		3.71	2.05		2.19	2.54	
accommodation and food service	5.85	7.63		3.36	9.01		3.06	3.84		1.92	4.65	
information and communication	1.89	0.87		2.09	2.66		0.98	0.77		2.52	1.48	
financial and insurance	6.13	3.60		4.25	3.06		4.29	3.32		5.90	4.76	
real estate; professional, scientific and												
technical; etc.	8.96	12.65		8.21	13.09		5.92	9.72		10.61	6.45	
public administration, social security	10.85	7.31		8.32	5.64		9.69	4.09		11.60	7.51	
education	14.43	9.38		17.95	6.35		18.07	16.37		16.64	22.09	

human health and social work	16.13	17.56	13.68	12.38	12.77	12.53	23.08	23.15
arts and entertainment; private								
households; etc.	4.25	4.03	6.67	12.85	2.96	7.93	3.71	5.50
Firm size: More than 11 employees (%)	72.45	57.36	68.86	49.61	81.05	61.38	85.54	76.54
Type of contact: Permanent job (%) *	94.53	94.00	87.66	77.82	79.25	44.50	98.27	96.79

Note: a) *For UK the percentage is calculated when information is available.

Table A2. Estimation of wage equations (specification 1: model with human capital indicators and individual and household characteristics in log wage equations)

	Austria		Italy		Poland		United Kingdom	
	FT	PT	FT	PT	FT	PT	FT	PT
Constant	1.359*** (0.098)	1.499*** (0.152)	1.123*** (0.049)	1.469*** (0.104)	-0.069 (0.149)	0.330* (0.181)	1.800*** (0.144)	1.469*** (0.203)
Lower secondary education	0.295*** (0.038)	0.228*** (0.044)	0.303*** (0.013)	0.161*** (0.026)	0.237*** (0.033)	0.264*** (0.092)	0.157*** (0.042)	0.147*** (0.055)
Upper secondary education	0.533*** (0.044)	0.459*** (0.058)	0.395*** (0.021)	0.206*** (0.049)	0.436*** (0.038)	0.570*** (0.128)	0.098 (0.068)	0.151 (0.096)
Tertiary education	0.728*** (0.043)	0.765*** (0.057)	0.597*** (0.015)	0.326*** (0.040)	0.838*** (0.035)	0.879*** (0.110)	0.593*** (0.044)	0.616*** (0.061)
Potential experience	0.022*** -0.005	0.015 (0.009)	0.034*** (0.002)	0.023*** (0.005)	0.042*** (0.003)	0.027** (0.011)	0.029*** (0.005)	0.023** (0.009)
Potential experience squared	-0.000* (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)	-0.000* (0.000)	-0.000*** (0.000)	-0.000** (0.000)
Number of children in age group 0-5	0.028 (0.047)	0.042 (0.040)	0.064*** (0.012)	0.048* (0.025)	0.011 (0.018)	-0.020 (0.063)	0.0191 (0.035)	0.081** (0.036)
Number of children in age group 6-11	-0.008 (0.031)	0.045 (0.028)	0.033*** (0.011)	0.032 (0.020)	0.004 (0.012)	0.061 (0.053)	-0.006 (0.026)	-0.006 (0.028)
Number of children in age group 12-more	-0.016 (0.014)	-0.018 (0.020)	-0.007 (0.006)	-0.007 (0.014)	-0.032*** (0.007)	-0.075*** (0.026)	-0.061*** (0.013)	-0.003 (0.0197)
Country of birth	0.219*** (0.031)	0.181*** (0.045)	0.212*** (0.017)	0.119*** (0.033)	0.220 (0.138)	d -	0.002 (0.034)	0.024 (0.059)
Good and very good health status	0.181*** (0.070)	0.134 (0.097)	0.089*** (0.032)	0.051 (0.058)	0.050 (0.034)	-0.042 (0.094)	0.036 (0.115)	0.115 (0.139)
Fair health status	0.049 (0.074)	-0.000 (0.102)	0.041 (0.033)	0.017 (0.062)	-0.0081 (0.035)	-0.118 (0.097)	-0.122 (0.121)	0.101 (0.146)
Living in a densely populated or intermediate area	0.072*** (0.025)	0.076** (0.031)	-0.007 (0.012)	0.023 (0.026)	0.073*** (0.014)	0.043 (0.055)	0.025 (0.060)	0.065 (0.071)
Observations	1060	917	4351	1276	3985	391	1508	946
R-squared	0.343	0.246	0.335	0.149	0.245	0.292	0.261	0.194

Note: a) Std. Err. are in brackets. b) d = dropped because of collinearity; c) Regions are included with the exception of the United Kingdom; d) The reference category for education is 'at most primary education', for health status is 'bad or very bad health status'. e) *Statistically significant at the 0.1 level, **at the 0.05 level, ***at the 0.01 level.

Table A3. Estimation of wage equations (specification 2: model with human capital indicators, individual and household characteristics and job-related variables in log wage equations)

	Austria		Italy		Poland		United Kingdom	
	FT	PT	FT	PT	FT	PT	FT	PT
Constant	1.436*** (0.195)	1.712*** (0.216)	1.238*** (0.060)	1.628*** (0.132)	0.052 (0.141)	0.378 (0.262)	1.753*** (0.249)	1.499*** (0.405)
Lower secondary education	0.187*** (0.039)	0.116*** (0.045)	0.142*** (0.014)	0.034 (0.027)	0.061** (0.024)	0.213** (0.090)	0.042 (0.038)	0.030 (0.054)
Upper secondary education	0.363*** (0.046)	0.275*** (0.060)	0.184*** (0.021)	0.042 (0.048)	0.090*** (0.034)	0.375*** (0.126)	-0.004 (0.060)	0.045 (0.090)
Tertiary education	0.498*** (0.049)	0.452*** (0.067)	0.281*** (0.018)	0.093** (0.042)	0.319*** (0.031)	0.413*** (0.124)	0.300*** (0.043)	0.273*** (0.066)
Potential experience	0.020*** (0.005)	0.006 (0.001)	0.023*** (0.002)	0.012*** (0.006)	0.092*** (0.003)	0.011 (0.010)	0.021*** (0.004)	0.011 (0.009)
Potential experience squared	-0.000** (0.000)	0.000 (0.000)	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000 (0.000)
Number of children in age group 0-5	0.065 (0.044)	0.025 (0.038)	0.055*** (0.011)	0.009 (0.023)	0.003 (0.016)	-0.006 (0.060)	0.008 (0.030)	0.030 (0.033)
Number of children in age group 6-11	-0.002 (0.030)	0.042 (0.026)	0.013 (0.010)	0.010 (0.019)	0.009 (0.012)	0.050 (0.050)	0.0170 (0.023)	-0.010 (0.025)
Number of children in age group 12-more	-0.014 (0.013)	-0.008 (0.019)	-0.005 (0.005)	-0.010 (0.013)	-0.013** (0.006)	-0.052** (0.025)	-0.034*** (0.012)	-0.005 (0.018)
Country of birth	0.116*** (0.031)	0.093** (0.044)	0.085*** (0.017)	-0.032 (0.033)	0.071 (0.119)	d -	-0.042 (0.030)	-0.015 (0.054)
Good and very good health status	0.143** (0.066)	0.055 (0.093)	0.070** (0.029)	0.058 (0.054)	0.035 (0.029)	-0.092 (0.093)	-0.049 (0.101)	0.019 (0.127)
Fair health status	0.061 (0.070)	-0.020 (0.098)	0.042 (0.030)	0.029 (0.057)	0.015 (0.0303)	-0.121 (0.096)	-0.170 (0.106)	0.059 (0.134)
Living in a densely populated or intermediate area	0.020 (0.024)	0.041 (0.030)	-0.022** (0.011)	-0.011 (0.025)	0.040*** (0.012)	0.0081 (0.054)	-0.018 (0.059)	0.019 (0.065)
Legislators, senior officials and managers	0.249*** (0.057)	0.179 (0.178)	0.306*** (0.034)	-0.171 (0.108)	0.516*** (0.034)	0.684 (0.451)	0.429*** (0.037)	0.262*** (0.077)
Professionals	0.244*** (0.047)	0.286*** (0.071)	0.249*** (0.021)	0.229*** (0.057)	0.443*** (0.025)	0.552*** (0.108)	0.428*** (0.037)	0.357*** (0.058)
Technicians and associate professionals	0.149*** (0.037)	0.187*** (0.047)	0.131*** (0.017)	0.132*** (0.035)	0.357*** (0.024)	0.333*** (0.096)	0.262*** (0.035)	0.272*** (0.056)
Clerks	0.145*** (0.037)	0.131*** (0.044)	0.087*** (0.018)	0.088*** (0.033)	0.177*** (0.024)	0.142 (0.093)	0.147*** (0.033)	0.057 (0.044)
Skilled agricultural and fishery workers	-0.040 (0.151)	-0.085 (0.163)	-0.048 (0.060)	0.186 (0.160)	0.059 (0.111)	-0.143 (0.337)	d -	d -
Craft and related trades workers	-0.073 (0.106)	-0.028 (0.135)	-0.080*** (0.025)	-0.140*** (0.049)	-0.019 (0.032)	0.004 (0.144)	-0.094 (0.104)	-0.419 (0.311)
Plant and machine operator and assemblers	-0.162* (0.089)	0.010 (0.143)	-0.069*** (0.026)	0.029 (0.069)	0.152*** (0.035)	-0.215 (0.255)	-0.150** (0.067)	-0.237* (0.123)

Table A3. Estimation of wage equations (specification 2: model with human capital indicators, individual and household characteristics and job-related variables in log wage equations) – continued

	Austria		Italy		Poland		United Kingdom	
	FT	PT	FT	PT	FT	PT	FT	PT
Elementary occupation	-0.019 (0.044)	-0.166*** (0.051)	-0.103*** (0.022)	-0.117*** (0.036)	-0.059** (0.025)	-0.0032 (0.077)	-0.003 (0.051)	-0.003 (0.053)
Managerial position	0.084*** (0.022)	0.036 (0.032)	0.098*** (0.011)	0.044 (0.0337)	0.100*** (0.016)	-0.020 (0.108)	0.110*** (0.021)	0.047 (0.041)
Mining, manufacturing, electricity, water supply, ...	-0.047 (0.169)	0.0601 (0.152)	0.061 (0.038)	0.045 (0.089)	0.116** (0.057)	0.250 (0.191)	0.107 (0.166)	0.420 (0.321)
Construction	0.033 (0.177)	-0.033 (0.164)	0.050 (0.0481)	0.140 (0.117)	0.090 (0.072)	0.120 (0.361)	0.073 (0.174)	0.360 (0.331)
Wholesale and retail trade	-0.030 (0.169)	-0.107 (0.145)	0.021 (0.040)	0.100 (0.087)	0.066 (0.058)	0.058 (0.181)	-0.112 (0.165)	-0.028 (0.312)
Transport and storage	0.015 (0.175)	-0.193 (0.167)	0.095** (0.045)	0.049 (0.112)	0.126** (0.062)	-0.030 (0.232)	0.088 (0.173)	0.277 (0.323)
Accommodation and food service	-0.259 (0.172)	-0.260* (0.150)	0.021 (0.045)	0.024 (0.091)	0.050 (0.064)	0.057 (0.207)	-0.322* (0.175)	0.088 (0.316)
Information and communication	0.011 (0.182)	0.059 (0.207)	0.099** (0.047)	0.123 (0.102)	0.137* (0.078)	0.812*** (0.312)	0.162 (0.172)	0.639* (0.333)
Finance and insurance	0.109 (0.171)	0.061 (0.161)	0.231*** (0.043)	0.302*** (0.102)	0.275*** (0.062)	0.321 (0.211)	0.202 (0.167)	0.418 (0.318)
Real estate, professional, scientific and technical administrative	-0.015 (0.170)	-0.088 (0.147)	0.028 (0.040)	0.047 (0.087)	0.096 (0.059)	0.146 (0.183)	0.041 (0.164)	0.233 (0.315)
Public administration, social security	0.046 (0.169)	-0.080 (0.151)	0.147*** (0.040)	0.091 (0.094)	0.132** (0.058)	0.039 (0.200)	0.116 (0.165)	0.306 (0.315)
Education	-0.062 (0.171)	-0.013 (0.150)	0.116*** (0.039)	0.184** (0.092)	0.0390 (0.057)	0.241 (0.182)	-0.049 (0.164)	0.120 (0.311)
Human health and social work	0.019 (0.169)	-0.105 (0.146)	0.130*** (0.039)	0.124 (0.088)	0.0460 (0.058)	0.051 (0.184)	0.043 (0.163)	0.284 (0.312)
Arts and entertainment, private households, extra-territorial bodies	-0.016 (0.177)	-0.080 (0.179)	0.012 (0.040)	-0.009 (0.086)	0.072 (0.063)	0.083 (0.187)	0.022 (0.169)	0.080 (0.316)
Work in a firm with more than 11 employees	0.087*** (0.024)	0.103*** (0.031)	0.089*** (0.010)	0.132*** (0.021)	0.113*** (0.015)	0.049 (0.054)	0.162*** (0.028)	0.118*** (0.035)
Permanent job	0.041 (0.047)	0.130** (0.060)	0.129*** (0.014)	0.138*** (0.026)	0.127*** (0.014)	0.052 (0.048)	0.033 (0.149)	0.129 (0.168)
Observations	1060	917	4351	1276	3985	391	1508	946
R-squared	0.469	0.343	0.462	0.296	0.517	0.437	0.450	0.351

Note: a) Std. Err. are in brackets. b) d = dropped because of collinearity; c) Regions are included with the exception of the United Kingdom; d) The reference category for education is 'at most primary education', for health status is 'bad or very bad health status', for occupation is 'service, shop and market sales workers', for economic activity is 'agriculture, forestry and fishing'. e) *Statistically significant at the 0.1 level, **at the 0.05 level, ***at the 0.01 level.

Table A4. Estimation of the marginal effects for the Ordered Probit

	Austria		Italy		Poland		United Kingdom	
	FT	PT	FT	PT	FT	PT	FT	PT
Upper secondary education	0.109*** (0.024)	-0.019*** (0.005)	0.213*** (0.012)	-0.004*** (0.001)	0.162*** (0.024)	-0.016*** (0.002)	0.126*** (0.029)	-0.045*** (0.010)
Secondary education but not tertiary education	0.237*** (0.034)	-0.081*** (0.017)	0.320*** (0.020)	-0.040*** (0.005)	0.262*** (0.018)	-0.043*** (0.004)	0.077 (0.049)	-0.031 (0.023)
Tertiary education	0.275*** (0.032)	-0.095*** (0.017)	0.415*** (0.014)	-0.050*** (0.004)	0.428*** (0.016)	-0.061*** (0.004)	0.222*** (0.031)	-0.090*** (0.015)
Potential experience (years)	0.022*** (0.004)	-0.004*** (0.001)	0.030*** (0.002)	0.000 (0.000)	0.037*** (0.003)	-0.004*** (0.000)	-0.004 (0.004)	0.001 (0.002)
Potential experience squared (years)	-0.001*** (0.000)	0.000*** (0.0000)	-0.001*** (0.000)	0.000 (0.000)	-0.001*** (0.000)	0.000*** (0.000)	-0.000 (0.000)	0.000 (0.000)
Number of children in age group 0-5	-0.409*** (0.021)	0.070*** (0.010)	-0.169*** (0.012)	-0.000 (0.001)	-0.233*** (0.016)	0.024*** (0.002)	-0.388*** (0.019)	0.138*** (0.010)
Number of children in age group 6-11	-0.201*** (0.017)	0.035*** (0.005)	-0.144*** (0.011)	-0.000 (0.001)	-0.075*** (0.013)	0.008*** (0.001)	-0.212*** (0.016)	0.076*** (0.007)
Number of children in age group 12-more	-0.067*** (0.011)	0.012*** (0.002)	-0.052*** (0.006)	-0.000 (0.000)	-0.026*** (0.006)	0.003*** (0.001)	-0.079*** (0.010)	0.028*** (0.004)
Country of birth	0.054*** (0.022)	-0.007*** (0.002)	0.101*** (0.016)	0.004*** (0.001)	0.150 (0.141)	-0.010** (0.004)	0.033 (0.027)	-0.011 (0.009)
Fair health status	0.120** (0.050)	-0.031* (0.017)	0.084*** (0.028)	-0.002 (0.001)	0.140** (0.024)	-0.016*** (0.003)	0.137** (0.069)	-0.060* (0.035)
Good and very good health status	0.203*** (0.036)	0.001 (0.009)	0.124*** (0.025)	0.004** (0.002)	0.228*** (0.027)	-0.019*** (0.002)	0.283*** (0.050)	-0.032*** (0.012)
Degree of urbanization of area of residence	0.065*** (0.018)	-0.010*** (0.003)	0.004 (0.012)	0.000 (0.000)	0.057*** (0.014)	-0.006*** (0.002)	0.080* (0.041)	-0.023** (0.009)
Availability of unpaid childcare	0.073*** (0.029)	-0.017** (0.009)	0.190*** (0.017)	-0.013*** (0.002)	0.171*** (0.016)	-0.024*** (0.003)	0.094*** (0.026)	-0.038*** (0.012)
Home ownership	0.012** (0.019)	-0.002 (0.003)	0.045*** (0.011)	0.001 (0.000)	0.034*** (0.014)	-0.003** (0.001)	0.158*** (0.020)	-0.045*** (0.005)
Other household non labor income/100 (Euros)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.002** (0.001)	0.000** (0.000)	-0.001*** (0.000)	0.000*** (0.000)
Partner's labor income/100 (Euros)	-0.000*** (0.000)	0.000*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)	0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)
Observations	1104	980	4351	1276	4011	396	1528	974

Note: a) Std. Err. are in brackets. b) Regions are included with the exception of the United Kingdom; c) The reference category for education is 'at most primary education', for health status is 'bad or very bad health status'. d) *Statistically significant at the 0.1 level, **at the 0.05 level, ***at the 0.01 level.

Table A5. Estimation of wage equations (specification 3: model with human capital indicators, individual and household characteristics, job-related variables and selection term in log wage equations)

	Austria		Italy		Poland		United Kingdom	
	FT	PT	FT	PT	FT	PT	FT	PT
Constant	0.382 (0.296)	1.470*** (0.207)	1.131*** (0.135)	1.551*** (0.189)	-0.321** (0.156)	0.411 (0.265)	1.796*** (0.202)	1.495*** (0.232)
Lower secondary education	0.311*** (0.052)	0.199*** (0.061)	0.160*** (0.024)	0.057 (0.040)	0.123*** (0.031)	0.203** (0.081)	0.035 (0.043)	0.040 (0.056)
Upper secondary education	0.595*** (0.074)	0.449*** (0.091)	0.210*** (0.037)	0.077 (0.063)	0.203*** (0.044)	0.353** (0.148)	-0.009 (0.063)	0.055 (0.089)
Tertiary education	0.753*** (0.076)	0.651*** (0.105)	0.315*** (0.040)	0.139* (0.074)	0.466*** (0.052)	0.376* (0.192)	0.290*** (0.055)	0.290*** (0.077)
Potential experience	0.041*** (0.007)	0.021** (0.011)	0.025*** (0.003)	0.016*** (0.006)	0.037*** (0.004)	0.008 (0.014)	0.021*** (0.004)	0.011 (0.008)
Potential experience squared	-0.001*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000** (0.000)	-0.001*** (0.000)	-0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)
Number of children in age group 0-5	-0.417*** (0.104)	-0.308** (0.130)	0.045*** (0.015)	-0.005 (0.030)	-0.051** (0.021)	0.009 (0.076)	0.025 (0.054)	0.006 (0.064)
Number of children in age group 6-11	-0.213*** (0.052)	-0.119* (0.064)	0.004 (0.014)	-0.003 (0.024)	-0.006 (0.012)	0.056 (0.061)	0.025 (0.034)	-0.0231 (0.039)
Number of children in age group 12-more	-0.088*** (0.022)	-0.067** (0.028)	-0.009 (0.007)	-0.016 (0.017)	-0.020*** (0.006)	-0.050* (0.028)	-0.031** (0.016)	-0.010 (0.021)
Country of birth	0.173*** (0.029)	0.143*** (0.048)	0.094*** (0.020)	-0.020 (0.039)	0.120 (0.099)	d -	-0.045 (0.023)	-0.010 (0.065)
Good and very good health status	0.379*** (0.075)	0.230** (0.095)	0.081** (0.033)	0.072 (0.064)	0.101*** (0.037)	-0.108 (0.124)	-0.064 (0.078)	0.042 (0.111)
Fair health status	0.188*** (0.066)	0.077 (0.082)	0.050 (0.033)	0.040 (0.065)	0.062* (0.034)	-0.133 (0.126)	-0.178** (0.083)	0.069 (0.111)
Living in a densely populated or intermediate area	0.088*** (0.030)	0.088*** (0.034)	-0.022** (0.011)	-0.011 (0.027)	0.050*** (0.012)	0.005 (0.055)	-0.021 (0.048)	0.023 (0.075)
Legislators, senior officials and managers	0.254*** (0.055)	0.180 (0.114)	0.305*** (0.050)	-0.172 (0.155)	0.516*** (0.036)	0.686*** (0.133)	0.429*** (0.039)	0.262*** (0.099)
Professionals	0.239*** (0.045)	0.286*** (0.070)	0.248*** (0.022)	0.227*** (0.061)	0.442*** (0.024)	0.555*** (0.117)	0.427*** (0.035)	0.356*** (0.068)
Technicians and associate professionals	0.147*** (0.037)	0.183*** (0.045)	0.130*** (0.017)	0.134*** (0.033)	0.359*** (0.023)	0.333*** (0.123)	0.262*** (0.035)	0.272*** (0.057)
Clerks	0.153*** (0.035)	0.122*** (0.044)	0.087*** (0.017)	0.089*** (0.030)	0.179*** (0.024)	0.141 (0.089)	0.146*** (0.028)	0.058 (0.039)
Skilled agricultural and fishery workers	-0.035 (0.092)	-0.091 (0.109)	-0.048 (0.054)	0.182 (0.227)	0.068 (0.123)	-0.139 (0.133)	d -	d -
Craft and related trades workers	-0.065 (0.077)	-0.047 (0.187)	-0.080*** (0.026)	-0.140** (0.055)	-0.016 (0.030)	0.005 (0.131)	-0.092 (0.225)	-0.411 (0.747)

Table A5. Estimation of wage equations (specification 3: model with human capital indicators, individual and household characteristics, job-related variables and selection term in log wage equations) - continued

	Austria		Italy		Poland		United Kingdom	
	FT	PT	FT	PT	FT	PT	FT	PT
Plant and machine operator and assemblers	-0.160** (0.070)	-0.002 (0.165)	-0.068*** (0.024)	0.032 (0.077)	0.153*** (0.032)	-0.214 (0.150)	-0.150** (0.069)	-0.236** (0.113)
Elementary occupation	-0.018 (0.052)	-0.161*** (0.061)	-0.104*** (0.022)	-0.116*** (0.036)	-0.057** (0.022)	-0.002 (0.076)	-0.003 (0.060)	-0.003 (0.054)
Managerial position	0.083*** (0.023)	0.035 (0.030)	0.098*** (0.012)	0.046 (0.034)	0.099*** (0.018)	-0.015 (0.099)	0.110*** (0.021)	0.047 (0.043)
Mining, manufacturing, electricity, water supply, ...	-0.040 (0.177)	0.073 (0.147)	0.062 (0.042)	0.045 (0.117)	0.124*** (0.043)	0.249 (0.168)	0.105 (0.106)	0.410*** (0.104)
Construction	0.041 (0.181)	-0.028 (0.165)	0.051 (0.053)	0.141 (0.146)	0.096 (0.062)	0.121 (0.163)	0.072 (0.115)	0.358* (0.188)
Wholesale and retail trade	-0.023 (0.176)	-0.089 (0.144)	0.022 (0.043)	0.102 (0.115)	0.075* (0.044)	0.058 (0.152)	-0.113 (0.109)	-0.032 (0.071)
Transport and storage	0.011 (0.180)	-0.192 (0.159)	0.096** (0.047)	0.050 (0.133)	0.132*** (0.050)	-0.030 (0.167)	0.087 (0.116)	0.274*** (0.088)
Accommodation and food service	-0.253 (0.179)	-0.242 (0.150)	0.023 (0.049)	0.025 (0.117)	0.061 (0.053)	0.055 (0.175)	-0.324** (0.129)	0.085 (0.075)
Information and communication	0.013 (0.183)	0.046 (0.163)	0.100** (0.050)	0.123 (0.124)	0.142* (0.085)	0.816* (0.468)	0.160 (0.132)	0.632*** (0.149)
Finance and insurance	0.101 (0.178)	0.070 (0.150)	0.233*** (0.046)	0.302** (0.127)	0.284*** (0.051)	0.321* (0.168)	0.200* (0.109)	0.415*** (0.099)
Real estate, professional, scientific and technical administrative	-0.001 (0.175)	-0.080 (0.145)	0.030 (0.044)	0.047 (0.115)	0.102** (0.045)	0.146 (0.147)	0.040 (0.105)	0.230*** (0.082)
Public administration, social security	0.051 (0.178)	-0.073 (0.162)	0.148*** (0.043)	0.091 (0.121)	0.140*** (0.044)	0.041 (0.152)	0.114 (0.105)	0.302*** (0.083)
Education	-0.045 (0.177)	-0.012 (0.149)	0.117*** (0.041)	0.183 (0.123)	0.047 (0.042)	0.240 (0.156)	-0.050 (0.106)	0.116* (0.061)
Human health and social work	0.028 (0.177)	-0.093 (0.152)	0.132*** (0.043)	0.124 (0.117)	0.054 (0.043)	0.050 (0.146)	0.041 (0.104)	0.280*** (0.067)
Arts and entertainment, private households, extra-territorial bodies	-0.013 (0.181)	-0.060 (0.173)	0.013 (0.044)	-0.001 (0.116)	0.079 (0.050)	0.083 (0.177)	0.021 (0.115)	0.077 (0.096)
Work in a firm with more than 11 employees	0.086*** (0.026)	0.109*** (0.032)	0.089*** (0.010)	0.131*** (0.022)	0.113*** (0.015)	0.049 (0.052)	0.162*** (0.033)	0.119*** (0.041)
Permanent job	0.041 (0.046)	0.122** (0.062)	0.129*** (0.015)	0.138*** (0.029)	0.127*** (0.015)	0.053 (0.047)	0.031 (0.087)	0.128 (0.132)
Lambda	0.606*** (0.127)	0.337*** (0.130)	0.050 (0.054)	0.043 (0.054)	0.198*** (0.051)	-0.027 (0.083)	-0.028 (0.078)	0.028 (0.064)
Observations	1060	917	4351	1276	3985	391	1508	946
R-squared	0.451	0.348	0.463	0.297	0.519	0.437	0.450	0.351

Note: a) Std. Err. are in brackets. b) d = dropped because of collinearity; c) Regions are included with the exception of the United Kingdom; d) The reference category for education is 'at most primary education', for health status is 'bad or very bad health status', for occupation is 'service, shop and market sales workers', for economic activity is 'agriculture, forestry and fishing'. e) *Statistically significant at the 0.1 level, **at the 0.05 level, ***at the 0.01 level.