WHERE DO WOMEN WORK? : ANALYSING PATTERNS IN OCCUPATIONAL SEGREGATION BY GENDER (*)

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ABSTRACT

Recent studies have shown that the degree of occupational segregation by gender is declining in the case of high-educated female workers, while it has remained fairly steady for less-educated women. This suggests that education is a key factor in explaining occupational segregation. Nonetheless, despite a strong upward trend in the educational attainments of the female population, female participation in the labour market varies widely across countries, not just in terms of magnitude but also in terms of the nature of jobs held by women.

Our goal in this paper is twofold. First, to uncover some determinant factors, besides education, which may help at explaining differences between the EU and the US in occupational segregation by gender. Secondly, to examine its relationship with job characteristics, remuneration and promotion opportunities of female employees. The main findings are that: i) occupational segregation is still higher in the EU than in the US and is mostly due to a lower share of women in executive and managerial jobs, ii) there is a strong positive correlation between overall occupational segregation by gender and the share of part-time jobs; and iii) there is, however, weaker evidence on the existence of a positive relationship between residual gender pay differences and the proportion of women across occupations.

1. INTRODUCTION

With the ongoing progression of women's status in the labour market in many OECD countries throughout the 1990s, the topic of occupational segregation by gender has remained considerably active in both academic research and policy discussion (see OECD, 2001). Behind the interest in this topic there is the long-standing concern that the progressive transition from work at home to paid work may be hiding the crowding of women in specific jobs (see Bergman, 1974) with negative consequences for the narrowing of the gender pay differential (see Blau and Khan, 1997) and/or for the promotion opportunities of women towards higher professional levels in their careers (see Cain, 1986). While there is still controversy about the extent to which the occupational composition of male and female employment reflects genuine productivity differences or discrimination against women[1], Blau et al. (1998)'s view that *"there can be little doubt that the extent of occupational segregation is an important indicator of women's economic status in the labour market"* provides a balanced picture on the state of this subject.

When looking at this topic from a European perspective, it is important to emphasise that a large proportion of the "European job deficit" can still be blamed on the low female employment rate. For instance, in comparison with the US, the gap in the aggregate female employment rate (about 12 percentage points lower by 2001) can be further broken down into about 10 percentage points due to lower labour market participation and 4 percentage points due to higher unemployment.[2] Hence, any detailed investigation of future trends in EU labour markets, should

[1] See Polachek (1981).

[2]. In 2001, the employment rates of women of 15-64 years of age were 54.9% in the EU and 67.1% in the US; participation rates were 60.1% and 70.1%, respectively, while unemployment rates were 8.7% and 4.7%, respectively.

pay a great deal of attention to the consequences of increasing the weight of female employment and the reasons accounting for its variability across countries.

Recent studies have shown that increasing female participation in the labour market has been followed by declining occupational segregation by gender, in the case of high-educated female workers, but not in the case of women with lower educational attainments.[3] Yet, despite the fact that the differences in the educational level of the female population have narrowed down across OECD countries, the gender occupational structure of employment still presents some strong differences. For instance, European women have a larger share of employment in social services, while North-American women have larger a larger employment share in private services, although the rate at which highly educated young women are getting jobs in the private services sector, relative to older cohorts, is higher in the EU than in the US. Within the EU there are also noticeable differences in the nature of jobs held by women with, perhaps surprisingly, the Southern European countries displaying a lower degree of occupational segregation than the Scandinavian countries.

Economic theory suggests that there are both demand and supply factors, besides investment in education, explaining occupational segregation by gender. Among the demand factors, discrimination against women or the employers' perception that women are on average less qualified than men may contribute to segregation. Also, occupational changes brought up by biased technological progress and higher international integration are changing the relative demand of skilled workers and, therefore, affecting the occupational composition of female employment (see, for instance, Black and Juhn, 2000, for the US). Those occupational changes

have accelerated the entry of women into non-traditional female careers with significant economic and social effects both on the distribution of resources within the family and the working of the labour market (see Costa, 2000).

On the supply side, there is the standard explanation, based on the human capital theory, that suggests that since women generally anticipate shorter and less continuous careers and are forced to choose jobs that are compatible with their household tasks- due to "societal discrimination" in the distribution of family responsibilities- it is in their own interest to take occupations which require smaller human capital investment and impose lower penalties for breaks in their careers (see, Mincer and Polachek, 1974).

In this paper, we build upon our previous work (Dolado et al., 2001) aiming at uncovering some determinant factors, besides education, which may help at explaining EU-US differences in occupational segregation by gender, and at measuring the impact of such segregation on gender pay differences and some other relevant aspects of women's labour market careers. We set the stage by offering a broad picture of the recent trends in the evolution and composition of female employment in both areas, to later concentrate on their specific implications for occupational segregation. Our primary databases are the 1999 *European Labour Force Survey* (Eurostat) for thirteen EU countries[4], which facilitates the use of comparable information about occupational and personal characteristics of workers, and the 1999 *Current Population Survey* (March Supplement) for the US. In the absence of sufficiently long time-series on homogenous data for

[3] See Miller (1987), Rubery and Fagan (1993), Anker (1998), Blau et al. (1998) and Dolado et al. (2001).
[4] Due to lack of homogenous data on occupational categories with other EU Member States, Ireland and Luxembourg are excluded from the analysis.

the EU countries, we have focused on a single cross-section to compare the labour market status of women belonging to different age groups, conditioning in all cases on their educational attainments.[5] Contrasting the labour market experiences of younger to older female cohorts in the EU and the US offers an indirect measure of the evolution of their opportunities and outcomes over time. Further, under the assumption that age/cohort effects are similar in both areas, these admittedly raw comparisons will shed some light on the existence of convergence patterns in the female structure of employment across both sides of the Atlantic.

The rest of the article is organised as follows. We start in Section 2 by documenting the most salient facts regarding female employment, such as its composition and its occupational structure. Since changes in women's employment status are heavily dependent upon age cohorts and educational attainments, we perform this descriptive analysis conditioning on those two key personal dimensions. Section 3, in turn, deals specifically with the US-EU differences in the evolution of occupational segregation by gender, across age cohorts and educational levels, paying particular attention to understand whether predominantly female occupations pay less, offer lower promotion possibilities or tend to be concentrated in non-standard jobs. Finally, Section 4 contains some final remarks and a few policy implications that can be drawn from our analysis.

[5] Unfortunately, harmonised LFS information on workers' employment status, classified by educational attainment and age for EU countries is only available since 1992 (since 1995, in the case of the new Member Sates: Austria, Finland and Sweden). The lack of longer time series dictates the choice of a single year, i.e. 1999, as the basis of comparison.

2. FEMALE EMPLOYMENT: THE MAIN FACTS

2.1. Employment rates by age and education

During the last decade, a common feature of labour markets across many countries has been the continuation of the narrowing of the gender employment gap as a result of employment gains for women and reductions for men. As illustrated in panel I of Table 1, the US-EU gap in aggregate employment rates reached 11.3 percentage points (p.p.) at the end of the 1990s with the gap in female employment rates (14.7 p.p.), which almost doubles the gap in male employment rates (8.2 p.p.), standing out as the main determinant of the overall gap. Likewise, according to panel II of the table, while the male-female gaps in employment rates at the beginning of the 1990s were 26.0 p.p. in the EU and 16.7 p.p. in the US, they have fallen to 18.7 p.p. and 12.9 p.p., respectively, at the end of the decade.

[TABLE 1 ABOUT HERE]

This narrowing process has applied in two different contexts. On the one hand, there are some countries where women's accession to the labour market was mainly completed during the 1970s, implying that only a relatively small reduction of the gap has taken place during the 1990s. This is the case of the Nordic countries and, to a lesser extent, of the Anglo-Saxon economies, where the small differences between the employment gaps at the beginning and the end of the 1990s should be interpreted as a sign of a high degree of women's presence in the labour market, given the high male employment rates in those countries. On the other hand, the assessment is very different for some of the Southern Mediterranean countries where, despite substantial reductions in the male-female employment gaps during the 1990s, the gains obtained

by women over that decade has not been large enough to generate an appreciable closing of the gap by the end of the decade.

Table 1 also shows that the gender differences in employment rates are heavily dependent on educational levels. Typically, for the population with university degrees, the gender gap in employment rates is around 10 p.p. (11.6 p.p. in the Us, 8.4 p.p. in the EU), while for the population without university studies, it is above 20 p.p. (with the exceptions of Scandinavian countries, the UK and Portugal), and it is even higher (around 45 p.p.) in some Southern European countries, such as Spain, Italy, and Greece.

Another important issue to be highlighted when comparing the gender distribution of employment in both areas is the identification of those sub-groups of the population which contribute most to the differences. To do this, we draw on the conclusions reached by companion paper of us (see Dolado et al., 2001), which precisely addresses this issue by performing the following simple decomposition of the US-EU gap in employment rates:

$$e^{US} - e^{EU} = \sum_i a_i^{US} e_i^{US} - \sum_i a_i^{EU} e_i^{EU} = \sum_i e_i^{EU} (a_i^{US} - a_i^{EU}) + \sum_i a_i^{US} (e_i^{US} - e_i^{EU}) \quad (1)$$

where e^{EU} and e^{US} are the aggregate employment rates in the EU and the US, respectively, and e_i and a_i are the employment rate and the weight in total population of group *i,* distinguishing among gender, three age cohorts (15-24, 25-54, and 55-64), and two educational levels (tertiary education, and less than tertiary education). According to (1), the overall employment rate gap between the US and the EU can thus be broken down into two components: i) *a population*

[6] Due to common behavioural patterns, the ordering of the EU countries in the different tables along the article corresponds to their geographical location in four main areas: Nordic countries, Central-European countries, South-Mediterranean countries, and the United Kingdom.

composition effect, which focuses on the consequences of differing population weights, holding employment rates constant (at EU levels), and ii) *an employment incidence effect*, due to differing employment rates, holding population weights constant (at the US levels). The decomposition applied to 1999 data yields that 70% of the US-EU gap arises from the population composition and employment incidence effects attributable to women, in accord with the diagnosis offered at the beginning of this section. More specifically, two "European deficits" explain a large share of the previous female contribution: i) the lower proportion of women 25-54 years of age with tertiary education in the EU relative to the US (6.5% vs. 9.6%, respectively) which accounts for 22% of the total spread, and ii) the lower employment rate of women 25-54 years of age with less than tertiary education in the EU relative to the US (60% vs. 71%) which explains 24.1% of the spread.[7] In other words, if the EU were to have both the same population weight of highly-educated women aged 25-54 years old as the US and an identical employment rate of less-educated women in the same age bracket, then the current US-EU differential of 12 p.p. in the aggregate employment rates would be almost halved.[8]

As argued in that paper, the fact that the population weight of women aged 25-54 with a tertiary level of education is 3.1 percentage points lower in the EU than in the US can be explained by differences in the relative weight of women aged 35-54 years in the working age population (about 2 p.p. higher in the US), and by differences in the proportion of female graduates in the 45-54 age group (about 11 p. p. lower in the EU). The difference in the

[7] These results are qualitatively similar when using the alternative decomposition based on the employment rates of the US and the population weights of the EU as benchmarks, with the two above-mentioned groups accounting for 22.1% and 24.9% of the US-EU gap in employment rates.

[8] The lower employment rates of youths and older workers (55-64) with less than tertiary education explains roughly the other half of the employment rate differential. Educational and pension systems, respectively, are the main institutions affecting the employment rates of these two groups.

population weight may be attributed to fact that the peak of the baby-boom took place about a decade earlier in the US than in the EU, leading to a higher relative size of prime-age women in the US population during the 1990s. Notwithstanding, this deficit is bound to vanish slowly once the European baby boomers' full accession to the labour market takes place. As for the difference in higher education, there is again evidence that the educational upgrading of women started much earlier in the US than in the EU (see Costa, 2000), as shown in panel III of Table 1 where the ratio of the female share in tertiary education between the younger (25-34) and the older age (55-64) cohorts is 1.41 in the EU but only 1.18 in the US. When looking at the individual Member States of the EU, the North-South dichotomous picture reappears. The Scandinavian countries, with higher educational qualifications than the US for almost all age cohorts, are at one extreme of the spectrum, while at the other end there is the case of the South-Mediterranean countries (with the exception of Portugal) and Austria and Germany[9], which exhibit substantial lower educational attainments for the two older age cohorts. Nonetheless, the rate of accumulation of tertiary education in the youngest cohort in most EU countries exceeds the one in the US, a feature which is bound to close the gender employment gap in the future, as illustrated by the much lower gaps among highly- educated males and females listed in panel IV of Table 1

As regards the lower employment rates of low-educated women aged 25-54 years old, the picture is different since the EU-US employment gaps remain fairly constant across ages. For example, the employment rates of women aged 25-64 with less than secondary education is 6 p.p.

[9] In Austria and Germany, the deficit in higher education should be accounted by the prevalence of the dual vocational system at the transition from school to work, which is not included in the definition of tertiary education used in this paper.

higher in the US (45.7%) than in the EU (39.7%) and that gap remains fairly invariant for younger less-educated female workers in the 25-35 age cohort. This diagnosis, however, again conceals large differences among EU Member States, with the Nordic countries enjoying even higher employment rates than the US and some of the Southern European countries (Greece, Italy and Spain) suffering from much lower (20 to 30 p.p. depending on age) employment rates.

2.2. The occupational structure of female employment

We now examine the nature of jobs held by women. Firstly, we summarise again some of the results reached by Dolado et al. (2001) as regards the distribution of women across aggregated occupations in the EU and the US. Secondly, we present some new, more disaggregate, descriptive evidence related to horizontal and vertical occupational segmentation by gender.

To characterise the distribution of female employment, we rely upon the classification of occupations/sectors used in Dolado et al. (2001) where the following ten occupational groups are considered: professionals, non-manual low-skill occupations, and manual occupations in agriculture, manufacturing and utilities, private services and social services. According to their results (see Table 2 in Dolado et al., 2001), the main sources of the differences between the US and the EU in this respect are: i) the smaller weight of female employment in private services in the EU (being these differentials larger for women with lower levels of education); and ii) the larger employability of less educated women into non-manual low skill jobs in social services in the US. This last fact may just reflect the smaller availability of low-productivity jobs in both private and social services in the EU due to the existence of wage floors implied by various labour market regulations. In particular, the differences tend to be larger in those EU countries

(like, Belgium, Greece, Italy and Spain) where collective bargaining establishes minimum wages which are effectively well above the statutory minima reducing in this way the employability of low-skilled workers (see Dolado et al, 1997). By contrast, the only occupations in which the proportion of female employment is significantly higher in the EU than in the US are professional jobs in social services for highly educated women, especially for the cohort aged 35-54. This fact can be rationalised in terms of the larger size of the public sector in the EU which, in many instances, has set in the past strong affirmative employment actions for women. However, in common with the convergence patterns found for the female employment rates in the EU and the US, they find that the rate at which highly educated young women are getting jobs in the private service sector, relative to the older generations, is higher in the EU than in the US, as a consequence of the higher accumulation of tertiary education by young women in the EU. Hence, if that pattern were to remain during the current decade or so, the differential is bound to disappear in the future. Convergence is, however, more unlikely for the employment shares of less-educated women in both private and social service sectors, where differentials across age cohorts remain roughly constant between the US and the EU.

Any description of the occupational structure by gender based on very aggregate data may obscure the full extent of gender segregation if women and men work in different detailed occupations or sub-sectors. In Table 2 we use occupational information at the most detailed level (108 occupations described below in footnote 12) to analyse the extent to which male and female workers are concentrated in a small number of occupations (horizontal segregation). The Table reports an index of concentration based on the minimum number of occupations accounting for at least 75% of total female (male) employment. As it can be observed, while about three quarters of male workers in the EU are employed in 30 out of 108 occupations, two-thirds of male

workers in the US are concentrated in 29 occupations. Drivers, construction workers, mechanics and, at a higher skill level, architects, engineers and finance professional turn out to be typical occupations for men in both areas. By contrast, two- thirds of female workers are concentrated in a smaller number of occupations (21 and 18 in the US and the EU, respectively). Despite the smaller degree of occupational concentration in the US, women are found to be concentrated in both areas in almost the same type of jobs, namely, salespersons, domestic helpers, personal care, secretaries and, at a higher skill level, primary and secondary school teachers.

[TABLE 2 ABOUT HERE]

As for the presence of barriers to women in moving up the occupational hierarchy (vertical segregation), Table 3 presents the female representation ratios (defined as the ratio of the female share in a given occupation and the female share in total wage and salary employment) for both areas in the three top sub-major occupational groups with a larger supervisory role (Legislators, senior officers and managers) contained in our more aggregated classification of occupations (see footnote 12 below). Although the definition of these narrowly-defined top occupations is subject to national differences (see Elias and Mc Knight, 2001), the broad picture one can draw from this tabulations is that women tend too be more under-represented in the EU than in the US in most of the top administrative and managerial positions, with the exception of the UK and few central European countries in the category of "general managers". Of particular interest is the fact that, contrary to previous expectations about the Nordic countries being a notable example of perfect integration of women into labour markets, vertical segmentation seems to be larger in those countries than in the US, an aspect which we will discuss at more length below in Section 3.

[TABLE 3 ABOUT HERE]

3. PATTERNS IN OCCUPATIONAL SEGREGATION

3.1 An occupational segregation index

Since the 1980s, the acceleration of both biased technological progress and trade globalisation have increased the demand of skilled labour in developed countries. To the extent that women experienced a more intense skill upgrading than men, this has favoured female employment. Occupational changes have also tended to increase employment in "typical" female occupations (e.g. services) and to reduce employment in "typical" male occupations (manual/production jobs). Moreover, the entry of women into "careers" makes them more prone to succeed at "typical" male occupations. Both changes in the occupational mix of employment and changes in the sex composition of each occupation have resulted into a reduction of occupational segregation by gender (i.e., the tendency for women to work in different occupation than men)[10] during the 1980s. In order to check if this decline in occupational dissimilarity by gender has continued at a similar rate in US and in the EU over the 1990s we compute the widespread-used Duncan and Duncan (1955) index of segregation (S_t) for 1999, distinguishing by age cohorts and educational attainments. This index is defined as follows:

$$S_t = \frac{1}{2} \sum_i | m_{it} - f_{it} | \qquad (2)$$

where m_{it} (f_{it}) is the proportion of the male (female) labour force employed in occupation i at time t.[11] This index, expressed as a percentage, can be loosely interpreted as the proportion of women (or men) who would have to change occupations for the occupational distribution of men and

[10] See, for instance, Blau, Simpson, and Anderson (1998) and Costa (2000) for the US during the 1970-90 period, and Anker (1998) and Rubery and Fagan (1993) for EU countries during the 1980s.

[11] This index is not additively decomposable, so that segregation indexes over different age cohorts do not add up to the overall segregation index by gender. An alternative additively decomposable index has been recently proposed by Mora and Ruiz-Castillo (2000).

women to be the same. A value of 0% indicates that the distribution of women across occupations is the same as that of men, while a value of 100% indicates that women and men work in completely different occupations. To construct comparable indices across the US and the EU countries, we consider 108 occupations by combining 9 occupational groups and 12 industrial sectors. [12]

Table 4 lists the Duncan & Duncan occupational segregation index by age cohort and education in the US as well as its difference with respect to the EU and its Member States. We observe higher occupational segregation by gender in the EU than in the US (particularly for highly educated women aged 35-44) in agreement with the broad-brush picture obtained in Section 3. In both areas, segregation has declined across age cohorts for the female workers with higher education, while it has remained more or less stable for the less- educated ones. The EU countries appear to be very different in this regard, with the Scandinavian countries and, to a lesser extent, Austria and Germany showing the highest levels of occupational segregation, while the Southern European countries have levels of segregation closer to those in the US. Both results are in agreement with the evidence contained in Anker (1998) and Rubery and Fagan (1993), using a much finer occupational classification. The reason why occupational segregation by gender is highest in Nordic countries comes mainly from their unusually high weight of female employment in female-dominated occupations such as education, health care, and some social services (such as child-care minders and other care-givers) which, on the other hand, help to support the high labour market participation of women in these countries (see Anker, 1998). In

[12]The occupations considered are: 1. Executives, officials and managers, 2. Professionals, 3. Technicians and associate professionals, 4. Clerical personnel, 5. Sales and service workers, 6. Craft and related trade workers, 7. Manual workers, 8. Elementary occupations, 9. Agricultural workers. The industrial sectors are: 1. Agricultural, hunting and foresting, 2. Mining and quarrying, 3. Manufacturing, 4. Electricity and other utilities, 5. Construction,

turn, the low level of segregation in the Mediterranean countries (especially Greece and Italy) can be interpreted in terms of the relative scarcity of occupations that are traditionally either male or female dominated, such as professionals in private and social services.

[TABLE 4 ABOUT HERE]

Next, in order to improve our understanding of the observed changes in the segregation index across the three age cohorts, we adopt Blau et al.'s (1998) decomposition method of the change in the segregation index over time, adapting it to our framework by interpreting older and younger age cohorts as beginning and end periods in their original procedure. The decomposition yields a breakdown of the total change in the index between two periods (age cohorts in our case) into two effects: (i) a "*sex composition"* effect within occupations, holding constant the size of occupations, and (ii) an *"occupation mix"* effect due to changes in the occupational mix of the economy, holding sex composition within occupations constant. Denoting by M_{ic} (F_{ic}) the number of male (female) workers belonging to the age cohort c in occupation i, total employment of workers belonging to age cohort c in occupation i can be written as $T_{ic} = M_{ic} + F_{ic}$ Aggregating over all occupations, then the segregation index in (2) for workers in a given cohort c can be expressed as follows:

$$S_c = \frac{1}{2}\sum_i \left| (q_{ic}T_{ic} / \sum q_{ic}T_{ic}) - (p_{ic}T_{ic} / \sum p_{ic}T_{ic}) \right| \qquad (3)$$

where $q_{ic} = M_{ic}/T_{ic}$ and $p_{ic} = (1-q_{ic}) = F_{ic}/T_{ic}$ are the proportions of men and women of a given age cohort in each occupation, respectively. Let S_{ks} denote the segregation index computed with gender weights (q), corresponding to cohort k, and occupation-size weights (T), corresponding to cohort s. Then, letting k,s=0,1, where "1" denotes the younger age cohort and "0" the older age

6. Wholesale trade, and personal and social services, 7. Transportation, 8. Finance and Real State, 9. Public Administration, 10. Education, 11. Health and social work, and 12. Household and domestic services.

cohort ("0" and "1" would correspond to the beginning and end years if the decomposition of the index takes place over time), it is immediate to check that:

$$S_{11} - S_{00} = (S_{10} - S_{00}) + (S_{11} - S_{10}) \quad (4)$$

where the first term in the right-hand-side of (4) is the "*sex composition*" effect, namely, the change in the index between cohorts 1 and 0 that would have occurred if the size of each occupation had remained fixed at its level for cohort 0, and the second term is the "*occupation mix* " effect, that is, the change in the index if the sex composition had remained fixed at the level for cohort 1.

Tables 5a and 5b display the results of the previous decomposition, distinguishing between the two levels of education, where cohorts 0 and 1 are the age groups 25-34 and 35-44, 35-44 and 45-54, and 25-34 and 45-54, respectively. They indicate that the "*sex composition"* effect has played a major role in explaining the reduction of the index across age cohorts. For example, in the case of highly educated women aged 25-34 versus the 35-44 group, the index declined by 4.6 percentage points in the US (from 36.0 to 31.4) out of which the "*sex composition*" effect explains 85% of the fall. Likewise, that effect explains 91% of the decrease of 5.7 percentage points in the EU. This result remains valid for the other comparisons undertaken, though it can be noticed that, for the two older age cohorts in the EU, the "*occupational mix* "effect has moved towards increasing the segregation index, opposite to what has happened in the US. It is interesting to highlight that the comparisons across age cohorts in the US are not too different from the results that Blau et al. (1998) report using Census data for 470 detailed occupations in the years 1970,1980 and 1990. Without distinguishing by educational attainment, they obtain that the "*sex composition* " effect explains 68% of a decline of 6.3 percentage points in the index

during the 1980s, whereas our comparison of the 35-44 and 45-54 age cohorts, yields a contribution of 76% and 77% for highly-educated and less-educated women, respectively. The similarity between the two contributions seems to support the view that the distorting effects of mixing the cohort effects and the time trends in our analysis are not too important.

[TABLES 5a and 5b ABOUT HERE]

Given the previous results about the relevance of the "*sex composition"* effect in explaining the reduction in occupational segregation across age cohorts, an important issue to address is whether the changes in the sex composition of occupations represent shifts in female or male employment. Tables 6a and 6b present the distribution of female workers, again distinguishing by educational attainment, in occupations which have been previously defined as "male", "integrated" and 'female", where a "male" ("female") occupation is one where $p_{ic} \leq (P_c - .10)$ ($p_{ic} > (P_c + .10)$) and "integrated" jobs are the rest, being P_c the weight of female employment in total employment for age cohort. *c*. In the US, it can be observed that, as we move from older to younger age cohorts, there has been a clear shift from "female" to "integrated" occupations, for both educational attainments, and that, with the exception of the youngest graduates, the proportion of women working in "male" jobs is larger than in the EU. By contrast, in the EU, there is a clear shift from "female" occupations to both " integrated" and "male" jobs for female graduates (especially in some of the Nordic countries, the Netherlands and the U.K), and a much smaller shift from "female" to "integrated" jobs for less-educated women. This evidence is broadly in agreement with the diagnosis made in section 3 about the lower employability of that type of EU female workers in the services sector.

[TABLES 6a and 6b ABOUT HERE]

3.2. Some descriptive regression analysis

Some descriptive regression analysis is carried out in order to uncover possible correlations between the level of occupational segregation (by country, educational level and age cohort) and a number of variables that have been discussed in the literature as being potentially related to it[13]. *First*, we examine the relationship between segregation (SG) and the proportion of part-time jobs (PT) among female workers. It has been argued elsewhere (see, e.g., Rubery and Fagan, 1993) that SG is bound to be positively correlated with PT since many women, after suffering an interruption in their working careers (due, for example, to maternity leave) end up in part-time jobs. Therefore, according to this viewpoint, those countries/groups/sectors with a higher incidence of part-time work tend to have higher occupational segregation by gender. From a policy standpoint, the important question is whether of such a positive correlation ought to be interpreted as discriminatory behaviour in labour markets. Two alternative hypothesis can be considered. On the one hand, the crowding of females in part-time jobs maybe due to employers' discriminatory behaviour for pure tastes-based reasons or for tax reasons (i.e., higher payroll taxes for full time jobs or the cost to the employer of granting maternity leave). Yet, on the other hand, self-selection of women in part-time jobs may just reflect a rational decision by a sub-group of the working population who seek to enjoy the higher flexibility provided by these jobs in order to combine work and other activities, in which case no policy intervention is needed. Trying to discriminate between the two explanations is therefore key in offering useful policy prescriptions and an attempt to do so will be discussed below. *Secondly*, we look at the

[13] Although there might be simultaneity in the determination of the dependent and independent variables considered in some of the regressions, the choice of instrumental variables or longitudinal data to correct for possible biases is hampered by the use of a single cross-section as the basis of our analysis. Thus, the estimated results should be broadly interpreted as partial correlations rather than structural effects.

relationship between the residual gender wage gap (WG) and the "femaleness" of occupations measured by the ratio of the ratio of female to total employment (FEM) in each of the occupations considered here. In this case, as pointed out in the literature[14], the sign of the effect of FEM on WG depends on whether the gender composition effect reflects taste-based discrimination by employers or co-workers, leading to the prediction of a wage premium for males over females, or "quality sorting", whereby only the less-productive male workers are the ones who accept "female" jobs, leading to a lower gender pay gap in those jobs. *Finally*, we consider the effect of SG on the female representation (FR) ratios in jobs with a supervisory roles, corresponding to the weighted average of the sub-major occupations considered in Table 3, in order to analyse the extent to which crowding of women in specific occupations either holds them back from attaining higher-level jobs (negative effect) or improves their promotion possibilities (positive effect).

To address these issues, we estimate regressions with a pooled set of 126 observations for the above-defined variables SG, WG, FEM and FR, stemming from to the interaction of number of countries (14), age cohorts (3) and educational levels (3). It should be noted that, in contrast with the use of only two aggregate groups in the previous sections of the paper, we chose to extend the number of educational categories to three in the regression analysis (by splitting the previous "Less-than-tertiary education" category into "Upper education and "Less-than upper education") in order to increase the availability of degrees of freedom in the pooled regressions presented below[15].

[14] See, e.g., Bergman (1974), and Macpherson and Hirsch (1995).

Before presenting the regression results, however, it is convenient to discuss how the WG variable was constructed. We used individual wage-data information from the 5-th *European Household Panel Survey* (1999)[16] and the *Current Population Survey* (1999) for the hourly earnings of wage and salary employees with full-time jobs, to estimate 18 Mincerian earnings equations for each country (9 for each gender, stemming from the interaction of three age cohorts and three educational categories)[17]. The dependent variable (hourly earnings) refers to gross monthly earnings in the main job divided by 52/12 and then by usual weekly hours of work. The controls in each earning equation have been the following: four dummies for seniority (0-2, 3-5,6-10 and above 10 years in the firm), one dummy for civil status (married), one dummy for presence of children, nine dummies for occupation, one dummy for permanent contract, three dummies for sector, a dummy for public sector, potential experience and its square, and firm size. The well-known Oaxaca-Blinder decomposition has then been used to split the total wage gap into two components: one due to differences in observed skills/characteristics (denoted as *characteristics*) and another due to different market returns for the same characteristics (denoted as *residual*). The WG variable corresponds to the latter component that is typically associated to unobserved traits and/or discrimination.

Tables 7a and 7b list the total male-female wage differentials and the (percentage) contribution of the two components in the above decomposition, distinguishing as usual by age

[15] Regressions results with 84 observations, corresponding to two educational categories are also available upon request.

[16] For Sweden, micro-data from Sweden Statistics based on the Statistics Yearbook of Salaries and Wages, 2000, was used.

[17] The overall number of observations were: US (7,843) , Denmark (1,614), Finland (6,576), Sweden (3,392), Austria (4 ,419), Germany (5,230), Belgium (4,605), France (10,194), Netherlands (8,232)Greece (4,415), Greece (6,630), Italy (7,630), Portugal (6,614), Spain (7,610) and UK (7,203).

cohorts and educational attainments[18]. Table 7a shows that the total gender wage gap for highly-educated employees has been declining in both the EU and the US across age cohorts and that it has been quite higher in the EU than in US except for the youngest cohort where there are clear signs of convergence. This decreasing trend accords well with the available evidence for the US[19] where despite a rising overall wage inequality during the 1980s and the first half of the 1990s, the male-female pay gap has been falling. The fact that women have been "swimming upstream" during this period, according to Blau and Khan (1997), can only be explained if women's skills and/or the treatment of women improved sufficiently to offset the negative effects of trends in the overall wage structure. As regards less-educated workers, the gender wage gaps reported in Table 7b show a decreasing pattern across age cohorts for both areas and tend to be lower in the EU, in agreement with the less dispersed wage distribution prevailing there as a result of wage-narrowing institutions like collective bargaining and minimum wages As for the contribution of the *characteristics* and *residual* components in explaining the gender pay gap, the latter seems on average to be about twice more important than the former. It is also worth noticing that the total gender wage gaps are larger for the less educated than for high-educated employees although the contribution of the *residual c*omponent in the former seems to be lower, particularly in the EU. This feature could be attributed to the stronger role of unions in removing the unobserved gender pay differences among less-educated workers relatively to high-educated workers whose pay often exceeds that established in collective bargaining (see Dolado et al., 1997). When considering the individual Member States of the EU vis-à-vis the US, we tend to observe lower gender wage gaps for higher-educated workers in the Scandinavian countries, Belgium, Greece and the Netherlands and higher differentials in Austria and Portugal. These results are in broad

[18] Given that results for the two lower educational levels were qualitatively similar across ages, in order to save space, Table 7b just reports gender wage gaps and contributions of the merged "Less than tertiary education" group.

agreement with those reported by Blau and Kahn (2000, Table 3) in their international comparisons of male-female earning ratios for the period 1994-1998 .

[TABLES 7a and 7b ABOUT HERE]

The estimated equations are reported in Table 8 where four dummy variables, two by education (tertiary and upper secondary) and two by age (25-34 and 35-44 cohorts), plus a set of fourteen country dummies to capture differences in the operation of the various labour markets across countries having been used as further controls in all cases. For the sake of brevity, we will not report the estimated coefficients for country dummies. The estimation method is Weighted Least Squares (WLS), where each observation has been weighted by the inverse of the square root of the size of the occupation in each age cohort/education cell.

The first column of Table 8 presents the results of regressing SG on PT. A very significant positive coefficient on PT is found, implying that a an increase of 10 p.p. in the rate of temporary jobs tends to increase the segregation index by about 3.0 p.p. in accord with the interpretation that women tend to crowd in part-time jobs. In order to identify which of the two alternative interpretations (*discrimination* vs. *self-selection*) is more relevant, we have correlated PT with a job satisfaction index in part-time jobs. This index, which is only available for the EU countries, is weighted average by country, age and education of job satisfaction scores by women whose main job is a part-time one and ranges from a value of 1 ("not at all satisfied") to a value of 4 ("very satisfied")[20]. To the extent that the self-selection explanation is the right one, a positive correlation should be found between PT and job satisfaction. By contrast, a negative correlation would be favourable to the discrimination argument. The estimated correlation is –0.22 with a t-

[19] See Katz and Murphy (1992), Juhn et al. (1993).

[20] Data has been tabulated from question 38 of the "European Survey of Working Conditions" (2000).

ratio of 1.54 but the result seems to be dominated by an outlier corresponding to The Netherlands, the country with the largest proportion of part-time jobs (33% in 2000) and where the job satisfaction index is highest (3.1 vs. an EU average of 1.8). Eliminating the observations of that country from the sample increases the correlation to –0.31 with a t-ratio of 2.37 yielding some more favourable evidence for the discrimination explanation.

[TABLE 8 ABOUT HERE]

The second column in Table 8 presents the results of regressing WG on FEM and the remaining controls. In this case, the estimated coefficient on FEM (0.14) is positive, albeit marginally significant, indicating that an increase of 10 p.p. in would increase the "unexplained" gender pay gap by about 1.4 p.p. Thus, there is weak evidence that women earn less in relation to men as the proportion of females in an occupation increases. It should be noticed, however, that the estimated coefficient on FEM in a similar regression using the total gender wage gap instead of the residual component is much higher (0.27) and statistically significant (t-ratio=2.67), implying that controlling for skill and job-related characteristics reduces quite drastically the gender composition effects. In other words, it seems that the occupational skills of women in predominantly female jobs are quite smaller than those of men. In combination with the previous evidence about the effect of PT on SG, it seems likely that the total gender pay gap increases with the proportion of females workers because typically female jobs generally require less training to acquire proficiency, and because these occupations are more likely to have large numbers of part-timers and a lower level of worker tenure.

Next, the third column in the table displays the results from the regression of FR on SG and the controls. Here, the estimate on the SG coefficient is negative (-0.46) and quite significant

indicating that the higher the level of segregation in an occupation is the larger the degree of under-representation of women at higher-job levels relative to men is. In accordance with the previous evidence, it seems that a plausible hypothesis to explain this effect would be the fact that women tend to work in jobs which offer fewer possibilities of promotion particularly in countries where the rise in female labour market participation has involved a transfer to the labour market of tasks traditionally performed at home (healthcare, social care and education) which have been absorbed by many women entering into the labour market.

Finally, a brief comment is due on the estimated coefficients for the controls. As regards education and age, the reported results in Table 8 point out that the younger and more educated women fare much better than their older and less-educated counterparts in the gender composition effects examined here. This suggests that the newer cohorts of women entering the labour market are increasingly well positioned relative to men for successful labour market participation, despite the fact that our empirical analysis makes clear that some historical patterns of sex discrimination may still have important effects on the gender composition of occupations.

4. CONCLUDING REMARKS

In this paper we have looked at the occupational structure of female employment. Due to the lack of sufficiently long time series in the EU regarding a common detailed occupational classification by age and education in the different Member States, we have opted for the use of a single cross-section of data, as of 1999, trying to uncover US-EU convergence patterns across different dimensions of the female labour market. To do so, we proceed by comparing these differences for three age cohorts (25-34, 35-44 and 45-54) and two educational levels (tertiary

and less-than-tertiary education). To the extent that age/cohort effects are not too different across countries, those differences will offer an indirect measure of how female workers are catching up with their US counterparts over time, as well as over the life-cycle, in terms of labour market participation, job composition, pay gap and promotion possibilities with respect to male workers.

Our main findings can be summarised as follows:

i) Occupational segregation by gender seems to be positively correlated with the share of part-time jobs in the economy, in the sense that those jobs are predominantly "female" ones. Although there are strong reasons to believe that women rationally prefer these flexible working arrangements, our results point out that some discriminatory forces remain in this choice since, in general, the degree of job satisfaction by women is not high in those jobs.

ii) The gender wage gap has been declining in both the EU and the US and it seems that the "unexplained" component is the most important one in explaining the male-female wage differential. However, the correlation between the level of occupational segregation and the gender gap in pay is weak once personal and job characteristics are controlled for.

iii) Segregation also takes place at the vertical level and those occupations where female are over-represented tend to be those in which the proportion of women with supervisory roles are smaller.

The results above could help to shed light on some of the policy issues concerning one of the primary policy goals of the EU governments, that is, to close the gap with the larger US employment rate during the current decade. At the Lisbon's summit held in June 2000, EU

governments pledged to reach an employment rate target of 70% by the year 2010. Our previous findings indicate that the introduction/extension of policy measures favouring equal opportunities in the labour market (such as tax incentives for dual earners couples, child allowances, lower Social Security contributions for replacement of women under maternity leave, equal social rights of part-time workers, and other work-family reconciliation policies) are certainly indispensable but does not appear to be sufficient since, according to our results, the labour market penalty attached to low-education seems to be a very relevant determinant of the lack of labour market gender equality. In this sense, policies targeted to maintain, or even increase in the future, the strong educational drive undertaken by the younger European female cohorts and supply-side reforms directed to achieve more flexibility in the wage-setting process, in order to expand the employment opportunities of less-educated women, should be key in achieving such a target.

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TABLE 1
Employment rates and gender gaps by education and age in the US and the EU, 1999
(%)

	Employment rates [a]			Male-Female Gaps in Employment rates [1999, 1990]			Female share in Tertiary education by age			Male-Female Gaps in Employment rates by Education [b]	
	I			II			III			IV	
	A	M	F	1999	1990	Change	25-34	35-54	55-64	T	S
US	73.9	80.5	67.6	12.9	16.7	-3.8	53.3	50.0	45.0	11.6	24.6
EU	62.6	71.6	52.9	18.7	26.0	-7.3	53.5	46.7	38.0	8.4	26.5
Denmark	76.5	81.2	71.6	9.6	9.5	0.1	55.4	53.1	38.4	4.5	9.3
Finland	66.0	68.4	63.5	4.9	5.2	-0.3	59.3	52.9	46.7	8.0	8.3
Sweden	72.4	74.8	70.9	3.9	4.2	-0.3	53.1	53.7	51.3	4.3	14.6
Austria	68.2	76.7	59.7	17.0	21.2	-4.2	50.3	39.0	25.0	9.3	17.6
Germany	65.4	73.7	56.8	16.9	23.5	-6.6	45.8	39.1	29.3	10.5	21.9
Belgium	58.9	67.5	50.2	17.3	27.3	-10.0	53.7	49.7	43.3	8.7	32.3
France	59.8	66.8	53.0	13.8	19.4	-5.6	54.0	50.8	46.5	8.5	23.6
Netherlands	70.9	80.3	61.3	19.0	28.5	-9.5	50.5	41.8	37.5	8.8	31.9
Greece	55.4	70.9	40.7	30.2	36.0	-5.8	55.2	42.9	30.3	8.7	45.5
Italy	52.9	67.6	38.3	29.3	33.0	-3.7	55.3	46.9	39.7	12.5	46.6
Portugal	67.3	75.5	59.4	16.1	24.7	-8.6	60.5	57.6	49.6	2.7	19.7
Spain	55.0	70.8	39.1	31.7	39.4	-7.7	55.4	46.2	33.3	14.8	45.1
UK	71.7	78.4	64.9	13.5	19.3	-5.8	46.8	47.0	36.4	8.0	17.3

(a) A: Aggregate, M: Male, F: Female
(b) T: Tertiary Education, S: Less than Tertiary Education
Sources: European Labour Force Survey (1999) and Current Population Survey (March supplement. 1999).

TABLE 2
Occupational concentration of male and female workers , 1999

	Male		Female	
	No. of occupations	**Average Male share**	**No. of occupations**	**Average Female share**
US	28	67	22	65
EU	30	73	18	69
Denmark	32	73	19	68
Finland	30	76	20	77
Sweden	32	71	21	76
Austria	36	73	16	74
Germany	32	70	19	70
Belgium	24	76	15	66
France	31	73	18	68
Netherlands	32	71	22	65
Greece	29	75	14	70
Italy	30	71	18	61
Portugal	27	72	21	74
Spain	31	76	15	66
UK	29	71	17	69

Sources: Authors´ tabulations European Labour Force Survey (1999) and Current Population Survey (March supplement. 1999).

TABLE 3
Female representation ratios in managerial occupations , 1999

	Legislators and Senior Officials	Corporate managers	General managers
US	1.1	0.8	0.8
EU	0.6	0.5	0.8
Denmark	0.4	0.4	0.9
Finland	0.8	0.6	0.4
Sweden	0.6	0.7	0.7
Austria	0.5	0.5	1.2
Germany	0.5	0.4	0.8
Belgium	0.6	0.5	1.0
France	0.7	0.6	1.0
Netherlands	0.4	0.4	1.0
Greece	0.5	0.5	0.6
Italy	0.3	0.4	0.4
Portugal	0.5	0.5	0.8
Spain	0.6	0.4	0.6
UK	1.0	0.8	0.7

Sources: Authors´ tabulations from European Labour Force Survey (1999) and Current Population Survey (March supplement. 1999) using sub-groups 110, 120 and 130 of 2-digit of the ISCO-88 (COM) classification for the EU and SOC for the US .

TABLE 4
Segregation index, 1999 (%)

	Tertiary level of education			Less- than- tertiary level of education		
	25-34	**35-44**	**45-54**	**25-34**	**35-44**	**45-54**
US	31.4	36.0	42.3	49.6	49.1	50.9
Differences between the US and the EU						
EU	-3.8	-4.9	0.4	2.7	0.5	2.7
Denmark	-13.1	-20.4	-11	-0.5	-8.2	-7.1
Finland	-12.9	-15.2	-7.8	-0.7	-9.6	-7.6
Sweden	-15.0	-13.0	-7.3	0.5	-11.0	-12.4
Austria	-7.5	-8.1	-4.8	-3.0	-3.4	-1.2
Germany	-9.7	-8.3	-1.0	-1.6	-2.5	1.6
Belgium	-3.7	1.4	-1.0	-4.9	-6.6	-5.4
France	-4.3	-3.1	2.8	-2.5	-3.4	-0.7
Netherlands	-1.7	-2.5	10.0	0.3	-7.3	-3.6
Greece	-1.5	2.8	10.5	6.1	6.3	6.2
Italy	1.1	1.7	-3.8	9.8	8.8	9.5
Portugal	-5.0	-6.2	-0.5	6.1	1.9	2.7
Spain	-5.6	-7.1	-7.2	-0.6	1.9	-0.8
UK	-3.9	-11.6	-8.8	-0.3	-7.6	-6.9

Sources: European Labour Force Survey (1999) and Current Population Survey (March supplement. 1999).

TABLE 5a
Differences in segregation indexes between age cohorts
Tertiary level of education, 1999 (%)

	Sex composition			Occupational mix		
	25-34/ 35-44	35-44/ 45-54	25-34/ 45-54	25-34/ 35-44	35-44/ 45-54	25-34/ 45-54
US	-3.9	-4.8	-9.1	-0.7	-1.4	-1.8
EU	-5.2	-2.1	-7.5	-0.5	1.2	0.8
Denmark	-6.4	-2.1	-8.1	-5.5	5.1	-0.7
Finland	-4.3	-3.0	-5.5	-2.6	4.1	-0.4
Sweden	-2.2	-5.0	-6.3	-0.4	4.4	3.1
Austria	-6.3	-7.9	-14.2	1.0	4.9	6.0
Germany	-2.7	0.5	-2.0	-0.5	0.5	-0.3
Belgium	-0.2	-9.0	-7.6	0.7	0.3	-0.7
France	-3.3	-4.0	-6.9	-0.1	3.7	3.2
Netherlands	-2.1	3.0	3.1	-3.3	3.2	-2.3
Greece	-2.6	-0.7	-1.4	1.8	2.2	2.1
Italy	-1.8	-9.6	-9.2	-2.2	-2.2	-6.6
Portugal	-4.8	-1.6	-5.2	-1.0	1.1	-1.1
Spain	-7.4	-5.0	-12.6	1.3	-1.4	0.2
UK	-11.2	-4.9	-15.8	-1.2	1.4	-0.1

Sources: European Labour Force Survey (1999) and Current Population Survey (March supplement 1999).

TABLE 5b
Differences in segregation indexes between age cohorts
Less than tertiary level of education, 1999 (%)

	Sex composition			Occupational mix		
	25-34/ 35-44	35-44/ 45-54	25-34/ 45-54	25-34/ 35-44	35-44/ 45-54	25-34/ 45-54
US	1.3	-1.4	-0.2	-0.8	-0.4	-1.1
EU	-1.0	-0.3	-1.3	-0.7	0.8	0.0
Denmark	-5.4	0.5	-3.8	-1.7	-1.2	-4.1
Finland	-4.3	1.2	-4.9	-4.1	-1.0	-3.3
Sweden	-5.7	-4.9	-8.7	-5.3	1.7	-5.5
Austria	-1.3	0.5	-1.9	1.4	-0.1	2.5
Germany	-0.4	0.2	-0.1	-0.1	2.2	2.1
Belgium	-0.1	-2.6	-2.9	-1.1	2.0	1.1
France	1.1	-0.9	0.5	-1.5	1.8	-0.1
Netherlands	-5.6	3.0	-3.2	-1.5	-1.0	-2.0
Greece	2.1	-3.9	-2.7	-1.4	2.0	1.5
Italy	2.3	-1.1	1.2	-2.8	0.0	-2.8
Portugal	-3.2	-3.5	-7.7	-0.5	2.5	3.0
Spain	2.2	-5.8	-4.1	0.8	1.3	2.6
UK	-5.8	-0.8	-6.3	-1.0	-0.3	-1.6

Sources: European Labour Force Survey (1999) and Current Population Survey (March supplement 1999).

TABLE 6a
Distribution of workers by sex composition of occupational category by age cohorts
(Tertiary level of education, 1999)

	25-34			35-44			45-54		
	Male	**Integrated**	**Female**	**Male**	**Integrated**	**Female**	**Male**	**Integrated**	**Female**
US	17.1	31.1	51.8	20.5	24.3	55.2	21.3	15.6	63.1
EU	20.5	24.4	55.2	17.2	18.7	64.1	14.6	14.1	71.3
Denmark	20.2	30.9	48.9	11.9	30.3	57.8	11.5	36.8	51.7
Finland	20.7	25.2	54.0	22.7	22.0	55.3	11.4	24.8	63.8
Sweden	14.5	20.5	65.0	21.1	12.0	66.8	20.5	4.0	75.6
Austria	18.5	37.0	44.4	17.0	20.8	62.3	16.7	8.3	75.0
Germany	14.8	21.4	63.7	16.3	19.8	63.9	13.7	28.2	58.1
Belgium	21.5	27.5	51.0	15.8	16.8	67.5	12.1	17.2	70.7
France	20.6	34.3	45.2	18.6	30.8	50.6	20.5	14.4	65.2
Netherlands	26.1	25.0	48.9	17.0	20.7	62.3	8.5	52.9	38.6
Greece	14.6	34.0	51.4	16.5	26.2	57.3	0.0	47.9	52.1
Italy	14.1	44.7	41.1	19.1	31.2	49.7	16.8	16.9	66.3
Portugal	18.0	36.0	46.0	18.5	18.5	63.1	11.6	53.5	34.9
Spain	8.2	33.2	58.6	17.1	10.2	72.7	10.2	13.0	76.8
UK	20.3	23.4	56.3	20.6	11.5	67.9	13.5	8.1	78.4

Sources: European Labour Force Survey (1999) and Current Population Survey (March supplement 1999).

TABLE 6b
Distribution of workers by sex composition of occupational category by age cohorts
(Less than tertiary level of education, 1999)

	25-34			35-44			45-54		
	Male	**Integrated**	**Female**	**Male**	**Integrated**	**Female**	**Male**	**Integrated**	**Female**
US	16.3	25.3	58.4	16.5	21.2	62.3	16.2	19.6	64.1
EU	15.2	21.0	63.8	15.5	18.5	66.1	14.3	19.2	66.6
Denmark	9.5	28.5	62.0	18.2	6.9	74.9	10.7	21.5	67.7
Finland	13.9	19.5	66.7	14.7	20.4	64.9	15.6	14.6	69.9
Sweden	11.2	24.9	63.9	14.2	12.9	72.8	14.4	8.5	77.1
Austria	11.5	16.6	71.9	12.6	10.6	76.9	12.7	19.3	68.0
Germany	13.8	14.6	71.8	11.9	23.3	64.8	9.5	25.9	64.7
Belgium	12.5	22.3	65.3	14.6	14.8	70.5	14.7	10.4	74.9
France	15.7	15.0	69.4	11.2	23.7	65.1	14.8	19.1	66.2
Netherlands	8.5	25.5	66.0	15.4	16.3	68.3	15.1	18.7	66.2
Greece	10.1	21.0	68.9	5.0	41.1	53.9	2.7	25.5	71.9
Italy	16.1	20.0	63.9	13.2	21.7	65.1	14.6	32.0	53.4
Portugal	5.0	41.0	54.1	4.0	30.4	65.6	8.2	21.9	70.0
Spain	12.9	16.7	70.5	7.2	29.1	63.8	11.3	19.9	68.8
UK	11.2	24.3	64.5	14.8	15.1	70.1	15.5	14.4	70.1

Sources: European Labour Force Survey (1999) and Current Population Survey (March supplement 1999).

TABLE 7 a
Gender wage differentials by age cohorts
(main full-time jobs, tertiary level of education)

	25-34			35-44			45-54		
		% due to			*% due to*			*%t due to*	
	Total	**Characte-ristics**	**Residual**	**Total**	**Characte-ristics**	**Residual**	**Total**	**Characte-ristics**	**Residual**
US	16.3	32.5	68.5	19.2	29.5	71.5	23.4	30.1	69.9
EU	17.6	28.9	71.9	25.6	26.0	74.0	31.6	23.4	76.6
Denmark	15.3	39.6	60.4	20.9	32.6	67.4	29.5	27.9	72.1
Finland	20.4	41.1	58.9	31.8	35.7	64.3	28.3	36.3	63.7
Sweden	12.2	25.5	74.5	18.7	22.5	67.5	26.5	23.2	76.8
Austria	22.9	37.0	63.0	27.2	29.4	70.6	29.1	23.5	76.5
Germany	27.5	28.5	71.5	38.2	27.5	62.5	34.0	31.1	68.9
Belgium	16.3	23.3	76.7	22.2	19.7	80.3	32.2	16.5	83.5
France	14.9	42.3	57.7	35.4	39.8	60.2	36.3	29.8	79.2
Netherlands	16.0	36.3	63.7	24.8	35.1	64.9	38.3	17.3	82.7
Greece	18.0	15.3	84.7	17.7	12.6	87.4	35.1	18.8	81.2
Italy	12.6	16.9	83.1	35.3	16.4	83.6	28.4	19.9	80.1
Portugal	31.5	27.9	72.1	28.3	25.4	74.6	33.5	24.3	75.7
Spain	11.4	19.6	81.4	16.7	19.3	81.7	32.0	15.5	84.5
UK	14.4	22.7	77.3	28.0	21.7	78.3	27.7	19.7	80.3

Sources: European Community Household Panel (1999) and Current Population Survey (February 1999, Job Tenure Supplement).

TABLE 7b
Gender wage differentials by age cohorts
(Main full-time jobs, less than tertiary level of education)

	25-34			35-44			45-54		
		Amount due to			*Amount due to*			*Amount due to*	
	Total	**Characte-ristics**	**Residual**	**Total**	**Characte-ristics**	**Residual**	**Total**	**Characte-ristics**	**Residual**
US	23.5	34.2	65.8	29.7	30.5	69.5	30.3	36.2	63.8
EU	18.6	37.2	62.8	24.7	37.5	62.5	26.9	36.0	64.0
Denmark	13.8	43.2	56.8	21.0	40.8	59.2	19.6	35.6	64.4
Finland	17.8	44.7	55.3	24.1	43.2	56.8	24.5	39.4	61.6
Sweden	13.9	35.9	64.1	23.2	37.3	62.7	27.6	38.6	61.4
Austria	31.3	34.3	65.7	32.2	33.8	66.2	35.5	36.8	63.2
Germany	20.7	32.3	67.7	24.2	36.5	63.5	46.1	29.6	70.4
Belgium	14.8	34.6	65.4	19.5	34.3	65.7	24.4	31.9	68.1
France	15.1	40.4	59.6	26.4	41.9	58.1	23.6	40.4	59.6
Netherlands	16.4	38.9	61.1	26.2	39.6	61.4	28.6	37.3	62.7
Greece	15.3	44.9	55.1	22.2	43.2	14.0	28.1	38.4	61.6
Italy	15.5	34.8	65.2	17.7	32.6	67.4	23.4	30.2	69.8
Portugal	29.5	35.5	64.5	25.7	38.6	62.4	24.2	37.2	62.8
Spain	17.8	32.3	67.6	21.7	35.3	64.7	30.7	41.2	58.8
UK	19.6	31.5	68.5	27.6	29.8	70.2	31.1	29.7	70.3

Sources: European Community Household Panel (1999) and Current Population Survey (February 1999, Job Tenure Supplement).

TABLE 8
Regression Results

Explanatory Variables	Dependent Variable		
	SG Coeff. (t-ratio)	**WG** Coeff. (t-ratio)	**FR** Coeff. (t-ratio)
D25-34	-3.48* (-2.96)	-4.59* (-4.78)	1.68* (2.48)
D35-44	-1.38 (-0.80)	-1.56* (-2.02)	3.16 (2.67)
DHE	-2.56* (-5.62)	-2.03* (-2.57)	2.78* (4.11)
DUE	-0.97 (-1.02)	1.21* (2.12)	
PT	0.32* (3.85)	---	---
SG	---	---	-0.46* (-3.12)
FEM		0.14 (1.61)	---
Constant	45.34* (21.54)	21.41* (7.78)	53.62* (13.40)
Adjusted R Squared	0.42	0.32	0.46
Standard Error	6.32	8.27	5.23
N. obs.	126	126	126

Note: D25-34 and D35-44 are age cohort dummies. DHE and DUE stand for higher- education and upper secondary education dummies. Thirteen country dummies (excluding the US) have been used as further controls. The estimation method is WLS; (*) denotes statistically significant at 5% level.