

The Pros and Cons of Occupational Gender Segregation in Europe

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Cet article examine les politiques européennes concernant la ségrégation professionnelle et l'écart entre les salaires selon le sexe, à la lumière de quelques faits de base, stylisés. En utilisant trois sources de données comparables pour les pays d'Europe, nous montrons que: (i) la ségrégation est liée de manière positive à l'emploi des femmes; (ii) la redistribution des emplois féminins entre des occupations diverses, suivant le schéma des emplois masculins, a un effet minime et contradictoire sur l'écart entre les salaires selon le sexe, tandis qu'une redistribution interne des emplois suivant l'échelle hiérarchique a un effet plus important; (iii) la dispersion des salaires est liée de manière négative à l'écart entre les salaires selon le sexe. Il est démontré que ces faits peuvent impliquer des compromis lorsqu'on poursuit simultanément la déségrégation, l'élimination de l'écart entre les salaires et l'accroissement des emplois féminins.

This paper reviews European policy toward occupational segregation and the gender earnings gap in the light of some basic stylized facts. Using three sources of comparable data for European countries it shows that (i) segregation associates positively with female employment; (ii) redistribution of female employment between occupations toward the male pattern has low and contradictory effect on the gender gap whereas within-occupation redistribution up the hierarchical ladder has some significant impact; and (iii) dispersion of earnings associates negatively with the gender gap. It is argued that these facts may imply trade-offs when desegregation, closing of the gender gap and higher female employment are simultaneously pursued.

INTRODUCTION

Recent European initiatives in devising and implementing equal opportunity policy have come from the central rather than the national level. Equal opportunity policies are an integral component of the European Union (EU) employment strategy, which seeks to harmonize and coordinate action at the national level by issuing a set of commonly agreed guidelines. Within these guidelines the commitment to equal opportunities in general, and to goals like occupational desegregation and closing the gender pay gap in particular, is ostensibly strong.

However, the scope and effectiveness of these guidelines are limited by the fact that responsibility for labour market policy still lies primarily with each member country, with action at the central level being restricted to coordination, promotion, and financial support. In this paper I argue that an additional factor undermining effectiveness is the perception among policymakers, albeit without clear or consistent recognition, that trade-offs may exist between competing goals, and specifically between boosting (female) participation and employment on the one hand, and pursuing desegregation and closing the gender pay gap on the other.

Perception of these trade-offs has partly evolved out of the European debate on occupational segregation and the gender pay gap. This debate differs in some important respects from that on the other side of the Atlantic, although the differences have often been obscured by the dominance of North American literature in this area. Two key differences are first, awareness that segregation may carry advantages as well as disadvantages for female employment, and second, wide recognition that, via segregation, the overall dispersion of earnings significantly influences both level and changes in the gender pay gap.

Patterns of occupational segregation are known to be relatively stable, at least in the medium term. Within the European debate it soon became recognized that, depending on the specific impact of the cycle on the industrial structure, this rigidity of segregation might protect female employment from cyclical volatility and not just expose it. Econometric evidence has confirmed this presumption for Italy, the United Kingdom, and France during the 1970s and the 1980s (Rubery 1987). This same rigidity, it is argued, may also boost the growth of female employment whenever feminized occupations grow more quickly, as happened throughout most of the postwar period with the growth of feminized service occupations (Bettio 1988; Rubery *et al.* 1998b; Melkas and Anker 1998). Hence the need may arise to trade off higher and more stable female employment for slower desegregation, depending on the evolution of the industrial structure. Specific attention is paid in this respect to the role of the public sector. It is argued that, by organizing and financing the transfer of unpaid housework and care work into feminized public sector employment (Bettio and Villa 1998; Esping Andersen 1997), and at same time by providing “female-friendly” job conditions in occupations that have become quickly feminized, the public sector has promoted female employment while opposing desegregation (Emerek *et al.* 2001).

The second trade-off concerns the dispersion of earnings. There are two steps in this line of reason-

ing. The first is the independent effect of segregation on relative female pay. It is widely believed that segregation still has an independent, adverse impact on women’s pay relative to that of men. Besides earlier evidence relating to the 1970s and 1980s, fresh evidence has been brought in support of this belief by case study analysis (Rubery *et al.* 1998a) and by econometric analysis of cohort data (Paci, Joshi and Makepeace 1995) or data from employers surveys (Meyersson *et al.* 2001; Millward and Woodland 1995; Lucifora and Reilly 1990). However, while it is often recognized that for policy purposes one should differentiate among the consequences on women’s pay of vertical segregation (between hierarchically ordered occupations) as opposed to horizontal segregation (between occupational groups, industries or firms), this has produced few attempts to put figures to this differentiation.

The next step in the argument is that, insofar as segregation confines most female industries or occupations to the bottom of the pay pyramid, a wider dispersion of earnings is bound to magnify its adverse impact on relative female wages. And to the extent that the strategy to boost employment in Europe entails wider earnings dispersion — via labour market deregulation, removal of minimum wages or something else — progress in closing the gender pay gap is slowed down and may even be reversed. The gender pay gap did, in fact, widen over the late 1980s and (part of the) 1990s in at least two European countries, Sweden and Italy, with time series and cross-sectional evidence in both cases showing that the trends in pay differentials in the postwar, gender differentials in particular, mirror change in the dispersion of earnings (Bettio 1988; Ericksson and Ichino 1995; Manacorda 2000). Apart from Sweden and Italy, the debate on the relationship between earnings dispersion and gender-pay differentials is long-standing in Europe, where it is part of the wider debate on the influence of payment structures over all pay differentials (Bardone, Gittleman and Keese 1998; Grismshaw, Whitehouse and Zetlin 2000; Rowthorn 1992; Whitehouse 1992).

Despite the importance of the above issues, they are still under-researched at the comparative, pan-European level, partly because comparable pan-European data on incomes and wages have only recently become available. In what follows I shall make a preliminary step in this direction, making use of two European data sets known as ESES (European Structure of Earnings Survey) and ECHP (European Community Household Panel) to explore the above issues in a comparative perspective.

I first present some pan-European stylized facts on the issues of gender segregation and the dispersion of earnings, offering *prima facie* evidence that the above trade-offs are salient for policy-making. In particular I show that: (i) a positive association exists between the level of segregation in each country and that of female employment, partly stemming from north-south differences in the extent of marketization of women's housework and care work; (ii) according to both ESES and ECHP sources, European countries with higher dispersions of earnings tend to exhibit wider gender pay gaps. This part of the paper draws largely on the work carried out for the European Commission in 2001 by the Gender and Employment Network, of which I was a member.

Second, I carry out a counterfactual exercise on individual data from ECHP in order to explore the relative impact of horizontal and vertical segregation on the gender pay gap. The main findings in this respect are that changing the female occupational distribution to that observed for males at a broad occupational level has mixed and small impacts on the wage gap, whereas giving females the male within-occupation hierarchical distribution consistently reduces the gender wage gap in the vast majority of countries.

Third, I briefly review recent developments in equal opportunity policy at central European level and use the findings in the previous sections to discuss current dilemmas and possible options with regard to segregation and gender pay disparities.

OCCUPATIONAL SEGREGATION IN EUROPE: A BOOST FOR FEMALE EMPLOYMENT?

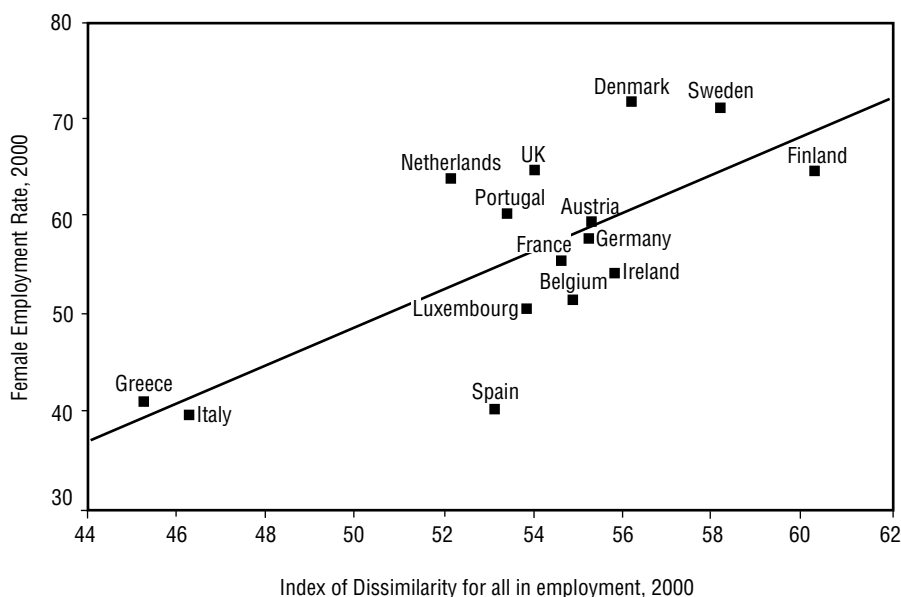
Can occupational segregation favour female employment, and if so, how? Some basic statistical facts presented below suggest that it has probably done so, at least in Europe, and that the role of the state in facilitating the marketization of care work is a likely candidate for an explanation.

The scatterplot in Figure 1 plots the female employment rate in 15 European countries in 2000 against the Index of Dissimilarity (ID). The data source is the European Labour Force Survey, and the values for the ID index are calculated on all employed persons using the finest occupational breakdown afforded by this source: 110 occupations, three-digits ISCO88.¹

The Pearson correlation coefficient between the female employment rate and the Index of Dissimilarity measures 0.71 and is statistically significant at a 1 percent level (two-tail test).² The ranking of countries in terms of both variables displays a clear north-south division, with Nordic countries consistently at the top and mainly Mediterranean countries at the bottom. Finally, the relationship between the employment rate and the ID index is equally well approximated by a quadratic or a linear regression: in both cases the ID index accounts for more than half of the variance in the female employment rate ($R^2=0.52$; Figure 1 displays the quadratic fitting curve).

It is worth looking more closely at the reasons given in the literature to account for this fact. The more general reason put forward is that, for at least part of the postwar period, it is likely that the industrial and occupational structures have benefited female employment more than would have happened if there had been an even expansion of industrial demand. Rubery has found that this applies to nine European countries between 1982 and 1993 (Rubery *et al.* 1998b, p. 102).

FIGURE 1
Segregation and the Female Employment Rate



Source: European Labour Force Survey 2000 for the employment rate; Emerek *et al.* (2001) for the ID index.

A specific reason suggested is the role of the public sector. Consider in particular the contrast between the Nordic countries and Mediterranean countries like Italy and Greece, which stand at the opposite extremes of the current league table of segregation in Europe. Historically, one of the engines of female employment growth has been the “externalization” or “outsourcing” of nurturing (catering, cleaning, clothing) and care work typically performed within the household. While feminization of clerical work was a major contribution to the expansion of female employment well before the end of World War II — in Italy, for example, it was the scarcity of men during World War I that precipitated women’s entry into clerical work within public administration and in banking (Curli 1998) — marketization of care and nurturing work may have

been more important in the postwar period. This is reportedly the case for northern countries like Sweden or Denmark with advanced state-based welfare systems, where care work has mainly taken the form of feminized female work within the public sector (Jonung 1984, p. 50; Rubery *et al.* 1998b, p. 110). On the demand side, the state financed the growth of jobs providing substitutes for household production, and on the supply side these substitutes freed up time for housewives, thus easing their entry into the labour market. By contrast, family-based welfare systems like those that typify Italy, Greece or Spain tend to keep female nurturing and care work within the family. Here the substitutability of external services for domestic work is often perceived as being poor: traditional standards of care within the family are high and external alternatives are often

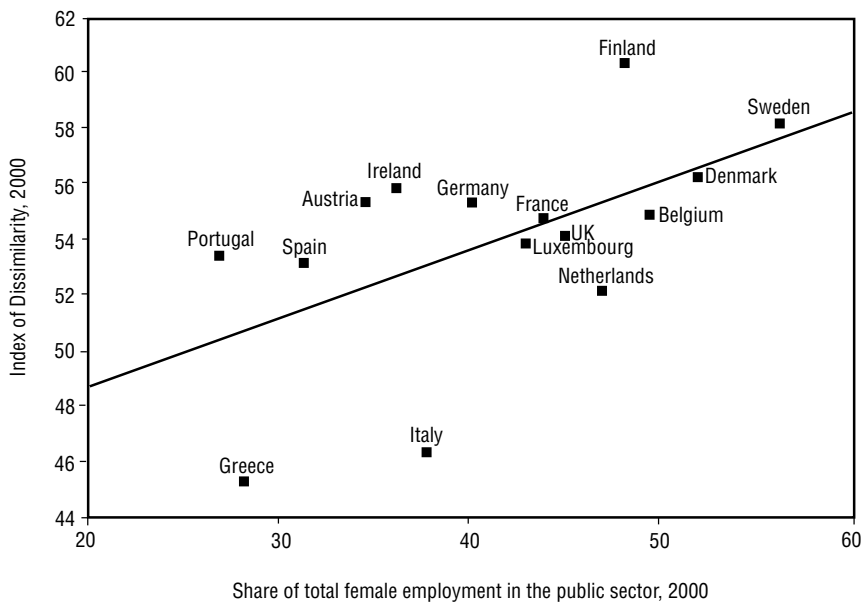
presumed to compare unfavourably. This hinders the growth of market substitutes and fails to apply pressure for the expansion of affordable and good quality public substitutes, adding to the difficulties of developing a welfare system in countries that have come late to the process of industrialization. In turn, thin external supply often means a relatively high cost of substitutes, with poorly educated women finding that it may simply not pay to take on wage employment (Bettio and Villa 1998).

An additional factor may be at work: namely, employment conditions in the public sector. In countries like Sweden or Denmark where the two-breadwinner model is the norm, so-called family-friendly work schedules (long leaves, options to move between part-time and full-time regimes, flexi-time, etc.) are often provided within the public sector

to enhance compatibility between work and family further, and such opportunities are usually taken up by the female breadwinner (Emerek *et al.* 2001). Given that these conditions reduce the physical and monetary costs of combining care and work, it is plausible that women are eager to enter occupations offering family-friendly schedules, especially if the attached wage penalty is low, as it is in the public sector.

Higher shares of women in public sector jobs are actually found in high-segregation countries, and this provides suggestive evidence in favour of the role of the public sector in boosting female employment and in increasing segregation. Figure 2 plots the value of the ID index in 2000 against the estimated share of women working in the public sector. Public sector employees are defined as employees

FIGURE 2
Segregation and Female Employment in the Public Sector



Source: Emerek *et al.* (2001) for the variables on both axis.

who work in public administration, defence, and compulsory social security; education; health and social work; other community, social and personal service activities; extra-territorial organizations and bodies.³ The Pearson coefficient measures 0.56 and is significant at the 5 percent level. In this case the best fitting curve is a linear regression where public sector employment accounts for about one-third of the variance in the Index of Dissimilarity ($R^2=0.32$).

To summarize, the possibility that segregation has boosted female employment at specific junctures in the development process of some European countries cannot be discarded, although the above evidence should by no means be taken to imply that it always does or did. Nevertheless, this complicates policy choices, given the widespread belief that segregation lowers female relative pay.

WHICH OCCUPATIONAL SEGREGATION WORSENS THE GENDER PAY GAP?

For well-known reasons, the relationship between segregation and gender disparities in earnings is especially complex. Unlike discrimination, occupational segregation is a descriptive term denoting the final outcome of a slow and sticky process of allocation of individuals to jobs involving choices and investments in human capital that reflect past and present discrimination as well as genuine preferences or social norms. Because of its stickiness, this process is also bound to be affected by independent change in the industrial and wage structure, as repeatedly noted. Since all these factors involved in segregation may evolve over time in ways that push female relative wages in opposite directions, the exact relationship between segregation and the gender pay gap at any given point of time is to some extent an empirical issue.

Some of the earlier studies (Polacheck 1987; Treimann and Hartman 1987) relied on counterfactual distribution of occupations in order to evaluate

the impact of segregation on the gender pay gap. In this section I follow this tradition for two reasons. First, I am interested in the following basic question: is segregation still accompanied by lower pay for women in Europe, and to what extent? In view of the salience for policy-making of the “glass ceiling” issue, I am also interested in exploring the relative importance of horizontal versus vertical segregation; and for this too I rely on counterfactual distribution. Since I use household survey data for these exercises, “horizontal” actually stands for “between broad occupational groups” while “vertical” stands for “hierarchical, within broad occupational groups.”

Within each country, the strength of the relationship between segregation and the gender wage gap hinges on the characteristics of the wage structure. The last question that I want to address in this section is, in fact, the importance of the wage structure for the gender pay gap in Europe, via its influence on the dispersion of earnings. While this is an extensively researched theme in at least some European countries, as noted in the introduction, the work of Blau and Khan (1992, 2000) and Fortin and Lemieux (1997) has placed it on the global research agenda. Three features of the wage structure have been singled out for their potential relevance in this respect, namely minimum wage, transparency of the wage-setting mechanism, and coordination across firms, regions, and industries (Rubery *et al.* 1998a). By setting an effective floor, minimum wages reduce wage dispersion from below. Transparency of wage machinery discourages individual “deviations,” while coordination across firms and industries reduces inter-industry and inter-firm differentials, an important component of the gender pay gap in Europe as in the United States (for two recent studies on the latter point see Millward and Woodland [1995] for UK and Bayard *et al.* [1999] for US). All three features are typically associated with centralized forms of bargaining, although the latter does not by itself guarantee low earnings dispersion (Bettio 1988, ch.5).

In order to address these questions I used the microdata on net earnings from the European Community Household Panel, and the data on gross earnings available in cross-tabulation format from the employer-based European Structure of Earnings Survey.⁴ When the work for this paper first started, three ECHP waves had been officially released, those conducted in 1994, 1995, and 1996 respectively, and I made use of the latest two. The latest Structure of Earnings Survey refers to 1995.⁵

The main finding is that hierarchical segregation within occupational groups has a non-negligible, adverse impact on female relative earnings, unlike segregation between large occupational groups. Because indexes of segregation mainly capture the between-groups component, this partly explains the second finding, namely that high (low) segregation European countries do not necessarily display low (high) earnings for women in comparison to men. An additional explanation resides in the third finding, that is, for some high-segregation European countries the final impact on female earnings has probably been cushioned by low overall earnings dispersion, with the opposite occurring in some low-segregation-high-earnings dispersion cases.

Segregation and the Overall Gender Pay Gap

The scatterplot in Figure 3 plots the ID index against two indicators for female relative earnings, where “relative earnings” stands for the percentage ratio of female to male earnings within the same employment category. The first indicator is relative gross hourly earnings of female full-time employees in the private sector (source: ESES). The second is regular net monthly earnings of female full-time employees, economy-wide (source: ECHP), and the reference year is 1995 in both cases. These two indicators for female relative earnings can be considered the most reliable indicators among those obtainable from European data sources in terms of stability and comparability of the findings (see Barry *et al.* 2001), and they will also be used later in the paper.

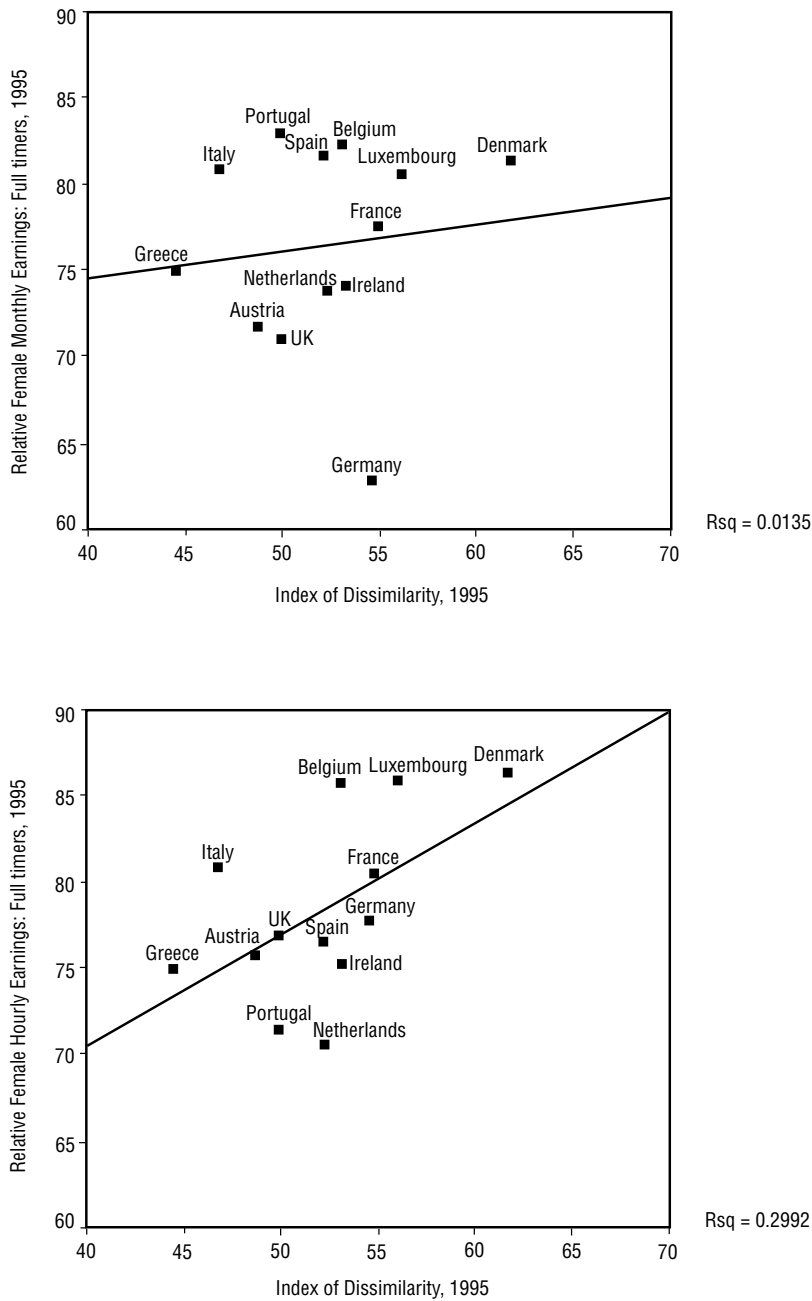
Correlation between the level of segregation (ID Index) and each measure of female relative earnings is not significant, carries a positive sign, and is higher for female relative hourly earnings (Table 1). In order to check whether lack of correlation is a robust finding, I experimented with different groups of employees and measures of earnings, and repeated the analysis for 1996 on ECHP data, but found no change in the results.⁶ Put simply, there is no evidence that higher measures of segregation associate with wider gender earnings disparities across European countries.

I see two main explanations for this lack of correlation. The first is that indexes of segregation mainly capture inter-occupational or inter-industry segregation, while the latter has probably ceased to carry major penalties for female earnings, as Fortin and Huberman document in this issue for Canada. The second reason is that the wage structure specific to each country may reinforce or counteract the impact of segregation on relative earnings. Widely dispersed earnings may magnify the impact of segregation on the gender pay gap in low-segregation countries, or vice-versa, thus blurring the correlation. It is beyond the scope of this paper to provide conclusive evidence for either explanation, but in what follows I shall offer preliminary evidence in support of both.

Inter-Occupational Distribution, Intra-Occupational Hierarchy and the Gender Pay Gap

With reference to the first explanation, I carried out a simple counterfactual exercise. As used to be customary in the earlier literature on segregation, I simulated the impact on female relative earnings of redistributing female employment across occupational categories in such a way as to reproduce the male employment pattern, while assigning women and men their actual wages within each occupational category. The difference between the actual gender gap in earnings and the counterfactual one is an indicator of the “contribution” of inter-occupational segregation to the overall gender disparity in earnings.

FIGURE 3
Segregation and Relative Female Monthly Earnings



Source: Emerek *et al.* (2001) for ID index; ECHP and ESES data (1995) for the figures on earnings.

TABLE 1
Cross Countries Correlation between Segregation and Female Earnings Relative to Men

Year	Pearson Coefficient	Pairing of Variables		No. of European Countries
		First Variable	Second Variable	
1995	+0,547	ID Index	female earnings, male=100: gross hourly earnings of full-timers, private sector [§] *	13
	+0,116	ID Index	female earnings, male=100: regular net monthly earnings of full-timers, economy wide ^{°°} *	13
1996–97	–0.033	ID Index	female earnings, male=100: regular net monthly earnings of full-timers, economy wide ^{°°} *	14

Notes: * Data are not available for Finland and Sweden (1995) or only Sweden (1996).

§ ESES data referring to employees both receiving and not receiving overtime earnings.

°° Individual ECHP records, weighted, for 1995 (2nd wave) and 1996 (3rd wave), respectively.

Source: Emerek *et al.* (2001) for the ID Index 1995 and 1997 ; ECHP 2nd and 3rd wave for monthly earnings; ESES for hourly earnings. Own calculations.

If the pattern of occupational segregation is interpreted as reflecting solely or mainly employers' tastes, it can be argued, following Neumark (1988) that the correct (non-discriminatory) counterfactual distribution is not the male distribution, since employers' tastes may reflect a mix of nepotism and discrimination, and that the pooled (women and men) occupational distribution should be used instead since it allows for both nepotism and discrimination. In order to ascertain the sensitivity of results to change in the counterfactual distribution, I have repeated the exercise using the pooled distribution.

The data used for this exercise — namely individual records from the third ECHP wave (1996) — allow for an interesting variant: within each occupation employees are further divided into three hierarchical positions, supervisory personnel, intermediate personnel, and non-supervisory personnel. It is thus possible to compute two counterfactual figures, respectively for (i) the gender earnings gap that would obtain if employed females were redistributed between large

occupational groups, and (ii) that which would obtain if they were *also redistributed* up the supervisory ladder within each occupation. The difference between these two counterfactual values may be regarded as a rough measure of the incremental contribution of hierarchical segregation to gender disparities in earnings.

Each national survey comprising the European Panel is of limited size. Hence the number of occupational categories available for the exercise is very small indeed: 18 in all, excluding the armed forces (see Appendix 1 for details). This is a severe limitation. However, it is more severe for calculations of the first counterfactual gender earnings gap, the one which simulates the redistribution of female employment solely between occupations. When redistribution is up the hierarchical ladder as well as between occupations, the counterfactual gap is actually based on a 54 (18*3) group breakdown, assuming that supervisory personnel or intermediate personnel can be regarded as sub-clusters of occupations within the same occupational category.

A further limitation is that I restricted the analysis to full-time employees, since the advantage of increasing the size and representativeness of the sample has costs in terms of reliability of the data on earnings. In particular, the ECHP source allows for the standardization of monthly earnings based on "usual weekly hours," but the quality of the data on hours worked from this source is poor, especially for the purposes of comparison across countries

(Barry *et al.* 2001) or for analysis of specific employment categories.

When reading the findings from this simulation exercise, the above limitations should be borne in mind. Table 2 reports the results that obtain when the counterfactual distribution is the one for males. The first three columns of Table 2 list the actual earnings gap and the two counterfactual gaps

TABLE 2

The Impact of Inter-Occupational and Intra-Occupational, Hierarchical Segregation on the Gender Gap in Earnings, 1996 (full-time employees only)

	<i>Actual Gender Gap in Regular Monthly Earnings (%)</i>	<i>Counterfactual Gender Gap in Regular Monthly Earnings (%)</i>		<i>Variation in the Gap Due to Inter- Occupational Redistribution</i>	<i>Variation in the Gap Due to Inter- Occupational + Hierarchical Redistribution</i>	<i>Percentage Contribution of Hierarchical Redistribution to the Wage Gap</i>
		<i>Inter- Occupational Redistribution of Women*</i>	<i>Inter- Occupational Redistribution of Women + Hierarchical Redistribution*</i>			
	1	2	3	4=2-1	5=3-1	6=(2-3)/1
Germany	40.64	44.12	41.54	3.48	0.90	-6.35
Denmark	21.77	17.53	16.73	-4.25	-5.04	-3.64
Netherlands	37.68	33.80	27.95	-3.88	-9.73	-15.52
Belgium	24.79	27.03	26.53	2.23	1.74	-1.99
Luxembourg	29.55	28.29	26.68	-1.25	-2.86	-5.45
France	27.72	23.42	20.20	-4.30	-7.52	-11.63
United Kingdom	41.27	36.14	38.59	-5.14	-2.68	5.96
Ireland	34.27	36.33	36.63	2.06	2.35	0.86
Italy	27.30	29.00	27.60	1.70	0.30	-5.14
Greece	24.26	24.75	22.63	0.49	-1.62	-8.71
Spain	22.97	31.98	28.36	9.01	5.39	-15.75
Austria	35.28	34.76	31.35	-0.52	-3.94	-9.68
Finland	20.25	18.23	16.47	-2.03	-3.78	-8.68

Note: *In cases of complete segregation of one hierarchical position I used the gender-earnings ratio recorded for the next position as a proxy. Thus in a case of segregation of either top or bottom personnel I used the gender-earnings ratio for intermediate personnel. When complete segregation was found among intermediates the proxy was the gender-earnings ratio for non-supervisory personnel. Since the numbers involved in the cases of complete segregation were usually small, this should not unduly affect the overall results.

Source: Individual, weighted records from the European Household Panel, wave 3. Own calculations.

described above for each of the 13 European countries included in the analysis. Inter-occupational redistribution of women in order to imitate the male pattern appears to increase the gender-earnings gap by more than two percentage points in four countries (Germany, Belgium, Ireland, and Spain), decreasing it by at least the same amount in five countries (Denmark, the Netherlands, France, the UK, and Finland), and exerting marginal impact either way in the remaining four countries (Italy, Greece, Austria, and Luxembourg). The finding that desegregation is beneficial to high-segregation countries lends at least some plausibility to these results; and likewise for evidence that low-segregation countries like Italy or Greece would not stand to gain very much. However, there are cases like Spain and Germany where segregation is relatively high, and yet women would apparently be penalized by “imitating” the male pattern. It is not easy to make sense of these cases without further analysis. At a broad occupational level, however, these results are not implausible, and they make it difficult to discard the hypothesis that the inter-occupational redistribution of female employment toward the male pattern would not always lead to a reduction of the gender gap in earnings.⁷

Redistribution between occupations *and* up the hierarchical ladder within each occupation (column 3) has a more definite, positive effect on female relative earnings, decreasing the gender gap in 8 out of 13 countries while leaving it practically unaffected in two additional ones: Italy and Germany. However, in the vast majority of cases the overall improvement is entirely or mainly attributable to redistribution up the hierarchical ladder. If the effect of within-occupation hierarchical redistribution is isolated (by subtracting column 3 from column 2), hierarchical redistribution alone would contribute to decreasing the gender gap in earnings in practically all countries — 11 out of 13 — with one of the two exceptions being Ireland, which reports many missing values for occupational data. The extent of the decrease attributable to hierarchical redistribution would be modest, 8 to 15 percent of

the actual wage gap in eight countries and less than that in the remaining ones. However, these latter figures may be under-estimates because of the restriction of the sample to full-time employees and the fairly broad occupational breakdown.

Changing the counterfactual distribution from that of males to the pooled one (male and female) dilutes the impact of segregation on the gender pay gap, as might be expected since the pooled distribution is the weighted average of the male and female distribution. However, it does not alter the basic finding that hierarchical segregation has a consistently negative impact, whereas segregation between large occupational groups has a contradictory effect. Specifically, if women are redistributed between occupational groups in accordance to the pooled occupational distribution, the gender pay gap increases in four countries, decreases in five and hardly changes in the remaining four, exactly as in the previous exercise. Redistribution of women between occupations as well as up the hierarchy of each occupation decreases the gender gap in 9 out of 13 countries — one more than in the previous exercise, that is, Belgium. However, the magnitude of this decrease practically halves in this second simulation exercise: while in the previous simulation redistribution between and within occupations led to a 16.1 percent average decrease in gender gap for the eight countries displaying a decrease (column 3 of Table 2), this figure comes down to 8.1 percent in the simulation using the pooled distribution.⁸

To summarize, while there is evidence that inter-occupational and inter-industry segregation does not (any longer?) work consistently against gender pay equality in Europe, vertical segregation still matters, although estimates of its actual impact are bound to vary depending on how occupational categories are defined — number and accuracy — as well as how segregation is measured and interpreted.

Dispersion of Earnings and the Gender Pay Gap

To the extent that vertical segregation between men and women still influences the gender pay gap, the

size of the latter is likely to be influenced by the degree of wage dispersion, as argued earlier. Below I use correlation analysis to verify whether this association holds at the pan-European level in the light of evidence from the ESES and ECHP sources. And the findings summarized by Table 3 warrant a positive answer.

For the purposes of correlation, and for each of the two data sources, I paired one indicator of the gender-earnings ratio with two alternative measures of earnings dispersion among male workers. In the case of ESES data, I considered gross hourly earnings of all employees (part-time and full-time) and paired the gender-earnings ratio with (i) the

TABLE 3
Cross-Countries Correlation between the Gender Earnings Ratio and Earnings Dispersion

<i>Variables</i>	<i>Pearson Coefficient</i>	<i>Domain</i>	<i>No. of European Countries</i>	<i>Data Source</i>
1. GER, gross hourly earnings 2. CV, male gross hourly earnings	-0.633*	private industry and services	13	European Structure of Earnings Survey (1995)§
1. GER, gross hourly earnings 2. D9/D1, male gross hourly earnings	-0.711**			
1. GER, regular net monthly earnings for full-timers 2. D9/D1, regular net male monthly earnings for full-timers	-0.606*	economy – wide	13	European Community Household Panel, 1995 (individual, weighted records)+
1. GER, regular net monthly earnings for full-timers 2. % low remunerated employees°°	-0.249			

KEY:

GER= Gender Earnings Ratio, i.e. Relative Female Earnings (male earnings =100)

CV= Coefficient of variation

D9/D1; Ratio between the 9th and 1st decile

Notes:

* Significant at 5 %, two tail test; **significant at 1%, two tail test.

°°Low remunerated employees are defined as employees receiving regular monthly earnings — standardized for the number of weekly hours — falling below 60 percent of the national median remuneration rate.

§ Data are not available for Finland and Sweden.

+ ESES data on earnings refer to employees both receiving and not receiving overtime earnings; they are not available for Finland, Sweden, and Portugal, while data for Germany are broken down into former East and West Republics.

Source: Own calculations, except for the percentage share of low remunerated employees which is reported in Eurostat, *Statistics in Focus*, Theme 3, 11/2000.

coefficient of variation and (ii) the ratio of the ninth to the first decile among male employees. In the case of ECHP data I considered regular monthly earnings of full-time employees and paired the gender earnings ratio with (i) the ratio of the ninth to the first decile among male full-timers and (ii) the share of low-paid employees. Low-paid employees are defined as employees with regular monthly earnings — standardized for the number of weekly hours — amounting to less than 60 percent of the national median remuneration rate.

All pairs of variables display significant correlation at conventional levels (5 percent or less), with one exception: the correlation between the gender-earnings ratio in monthly earnings among full-timers and the share of low-paid male employees. This simple evidence that the structure of earnings has an independent impact on the level of gender pay disparities at the pan-European level adds to the larger body of evidence that is available on this point. Also, there is no clear relationship between the level of segregation and the size or sign of this impact. In Sweden or Denmark, the two countries with the highest segregation and the least dispersed distribution of earnings, compression of the wage structure might have “sheltered” women from the full impact of segregation. By contrast, in the UK or Ireland high pay dispersion might have reinforced the adverse effect of relatively strong segregation.

A final note is prompted by the above evidence, namely that the recent widening of the wage structure is likely to have countered to some extent the decline in gender earnings disparities. This has been argued for Italy, the UK, and the US (Blau and Khan 2000; Comitato Nazionale di Parità e Pari Opportunità 2001; Fortin and Lemieux 1997; Rubery, Grimshaw and Smith 2000) and further research will be necessary to ascertain whether it holds for other European countries as well.

POLICY OPTIONS AND DILEMMAS IN EUROPE

Despite the fact that all the above findings are so clearly preliminary, it is tempting to come back to

the discussion in the introduction and draw some policy implications. To this end, a brief introduction to the current European policy machinery on equal opportunities is required.

Equal opportunity policy in Europe is part of labour market policy, an area where member states still retain primary responsibility. In order to harmonize and coordinate provisions at the national level a procedure was set up in 1994 whereby member states agreed on a set of common guidelines and each member state was asked to draft an annual plan, currently called National Action Plan (NAP), in accordance with the agreed guidelines. These NAPs are subject to assessment by the European Commission, and since 1999 member states have received recommendations, based on these assessments and endorsed by the Council of Ministers, on how the NAPs could be strengthened in the future to meet the objectives of the European employment strategy. The guidelines are organized around a few basic goals, initially known as “Essen priorities” and later called “pillars.” Since the Luxembourg summit in 1997 “strengthening the policies for equal opportunities” is one of the four pillars, along with “improving employability,” “developing entrepreneurship,” and “encouraging the level of adaptability for people in business and their employees.”

This central role ostensibly given to equal opportunity policies did encourage or force member states to mention in their plan issues that might otherwise have been neglected, including segregation or the gender pay gap. However, it soon became apparent that the equal opportunity policy was taken by most member states to mean a narrow set of policies focused on specific issues of social policy (e.g., childcare), almost invariably small scale, and often consisting of goodwill provisions like promoting studies to further investigate the problem. A specific guideline was therefore issued in 1999 requesting member states to adopt a gender mainstreaming policy throughout the National Action Plan. Moreover, under the equality of opportunity pillar, the closing of the gender pay gap

was introduced as a specific policy objective to be integrated into the overall employment strategy. This two-pronged strategy toward gender equality thus combines two requests, that is, all key labour policies should be evaluated and reformulated from the perspective of gender equality (mainstreaming), and specific equal opportunity policies should be pursued. The attempt here is to avoid the ghettoizing of equal opportunity into a peripheral policy area and the opposite risk that an ambitious, transversal strategy like mainstreaming might be ineffective.

However, because labour policy is largely the responsibility of member states, and because the agreed guidelines yield mere recommendations, the visibility and importance that gender-related employment issues have undoubtedly acquired at the central European level have not always given rise to concrete provisions at the national level. Policy experts maintain nevertheless that this coordination process is having some, if modest, impact (Rubery, Grimshaw and Smith 2000). At the same time the ambition to bring gender policy into the broader employment strategy hinges on the capacity of both experts and politicians to identify and deal with complementary as well as potentially conflicting goals. Increasing employment, reducing segregation and reducing gender pay disparities are cases in point.

Segregation

Polymakers at the central European level are increasingly aware of the positive association between female participation and occupational segregation in employment. This gives rise to inconsistent declarations and *de facto* priority accorded to the growth in female employment. For example, the European Council employment policy recommendations for the year 2000 invited Denmark, Finland, and Sweden to reduce the level of gender segregation, mindful of the evidence that segregation indices are highest in these countries. At the same time, the 1999 Joint Employment Report stated “However, it should be recognised that a segregated labour market with high employment rates for women is preferable to

one with less segregation but low employment rates for women” (European Commission 1999, p. 70).

Ambiguity at the central level toward desegregation is echoed by fragmented action at the national level. A wide variety of measures have been recently introduced by member countries to fight segregation: fiscal incentives for the hiring of women in underrepresented areas (Spain), gender-blind training schemes in Denmark, vocational training for women in areas like information technology as well as local projects facilitating entry for men into female-dominated professions (Sweden’s Break Projects), measures easing access for women to positions of responsibility within unions or professional organizations (France), research to construct indicators on gender segregation or to draw up alternative classifications of occupations (Belgium), as well as other initiatives. Many of them lack breath, however, with some exceptions, for example, Finland, where an integrated package of measures has recently been introduced that specifies targets to reduce segregation for each employment and economic development centre, and at the same time develops a three-year project where employers and schools endeavour to influence the choice of occupations (Bettio, Tiezzi and Bimonte 1998; Rubery, Grimshaw and Smith 2000).

One specific attempt is worth mentioning. During the 1980s Denmark tried unsuccessfully to pilot women’s choice of education and training into male-dominated areas. Places were reduced for women in areas with special appeal to them, whereas special education-recruitment schemes were implemented for women entering male-dominated trades (Holt 1988). The response from women was poor, and yet this was rational, since employment opportunities in several male-dominated craft trades were declining. The policy lesson that can be drawn from this example echoes that which I would derive from the findings in the previous sections, namely that policy should not take on board *indiscriminate* commitment to desegregate, and priority should be given to

identifying occupations with growth potential, as well as countering vertical segregation.

This principle ought to inspire, in particular, training and education policy, an area where the EU has been traditionally active. Like labour policy, training and education are still largely the jurisdiction of member states' own governments. Nevertheless, the EU was, and indeed still is, a major source of funding for supporting vocational education and training within member states. This support is largely administered through the European Social Fund, a part of the Structural Funds which are designed to redress imbalances in economic development among member states. Between 1985 and 1993 a series of Community action programs were launched — the main ones were COMET T, ERASMUS, PETRA, LINGUA, TEMPUS and FORCE — giving new impetus to Community policy in this area.⁹ However, little was known about the impact of these programs on women and men until 1991 when Mme Nicole Fontaine (President of the European Parliament at the time of writing) asked a question in Parliament concerning equality of opportunity within these programs and prompted the launch of a specific project to examine the issue. Quoting one of the experts in this area:

The conclusion to this project ... was that the net effect of the Community action programmes was to reflect, and indeed reinforce, skill polarisation between women and men. The laissez-faire approach to equal opportunities was, in effect, widening the skill gap between women and men. This is the essential limitation to the “equal treatment” approach to equal opportunities ... Men benefited systematically because most of the target groups (such as those for FORCE and COMET T) were likely to be made up of mostly men” (Rees 2001, pp. 7-8).

Some of the above programs, such as the IRIS program, took a positive stand, but they suffered from severe underfunding compared to the others. Other programs especially designed to promote positive

action initiatives in the labour market generated considerable good practice but did not address women's training needs effectively (Rees 1995, 2001). Partly in response to this evidence, in 1996 the Council of Ministers sought to ensure that mainstreaming gender equality was specifically addressed in the Structural Funds (Council of Ministers 1996). Since then, two programs known as “Leonardo da Vinci” and “Socrates” are entrusted with EU training and education policy, and a more proactive attitude to equal opportunity issues is apparently being taken. However, it is still too early to draw up a balance, and the widespread impression among experts is that the mainstreaming strategy still has some way to go.

The Gender Pay Gap

The relevant principles of European equal pay laws are contained in article 119 of the Treaty of Rome, the founding treaty, and the Equal Pay Directive No. 75/117. The latter states that article 119 must be taken to imply that, for the same work or for work to which equal value is attributed all discrimination based on sex must be eliminated in all aspects and conditions of remuneration.

Until recently, however, a kind of ambiguity similar to that surrounding desegregation hampered clear commitment and action in favour of closing the gender pay gap at the central European level. The consensus view influencing macro and labour policy guidelines was, in fact, that employment growth would favour low-skilled, hence feminized jobs, provided these were (allowed to become) sufficiently cheap to withstand global competition (Dreze and Malinvaud 1994). Evidence on the 1994–99 recovery in Europe qualifies this view, since over the five years of this recovery period most of the net additional jobs created were for managers, professionals, and technicians. These occupational groups grew more than twice as fast as office workers and sales and service staff (European Commission 2000). Such evidence, along with the mounting incidence of low pay and poverty among women have probably contributed to the recent change in

priorities with respect to the gender pay gap. As noted, the reduction of the gender pay gap was explicitly identified as a desirable employment goal in 1999.

Although addressing the gender pay gap has officially become a priority, the actual policy strategy is still undefined. The one clear policy message to emerge from the findings in the previous section is that dispersion of earnings is a key variable for reducing the gap. Whether it can also be turned into a key policy tool depends, amongst other things, on the features of the wage-setting machinery. The kind of coordination that many European wage-setting systems still offer has advantages when it comes to reducing dispersion, especially at the bottom (Rowthorn 1992; Freeman 1996). By contrast, the same systems are often ill-equipped to pursue policies of comparable worth because knowledge and expertise for job evaluation are often lacking at the decentralized level, and because greater coordination at the central level magnifies the risk of a ratchet effect for any given increase in the pay rate for a specific occupation. However, reducing pay dispersion cannot be a blanket recommendation for Europe merely in the belief that it may be of immediate benefit to women's pay. Nor should it be intended as a generalized compression of the wage scale. In Italy, for example, the compression of earnings had gone so far by the early 1980s that it provoked opposition from the majority of workers who were faced with a flatter lifetime earnings profile and excessively distorted work incentives. By contrast, the reintroduction of the minimum wage in England has been welcomed as a salutary "correction" to increased earnings dispersion as well as a policy move in favour of women's pay (Rubery, Grimshaw and Smith 2000). In short, the recipe for tackling the dispersion of earnings must be tailored to the specific features of each country.

A second way to accelerate the closing of the gender pay gap would be to increase its visibility within firms and in the population at large. One of

the key recent findings of both an Italian and a UK report on gender disparities in earnings is that most people, including women, are unaware of the size of the gender pay gap and doubt the presence of discrimination, but that many are disturbed when they are informed about the situation (EOC 2000; Comitato Nazionale di Parità e Pari Opportunità 2001). It is therefore hardly surprising to find that that so-called "indirect" action favoured in past years by the European Union to address the gender pay gap has had a limited impact. A code of practice on the implementation of equal pay for work of equal value has been published which gives concrete advice to employers and contracting parties at corporate and sectoral levels. However, a recent survey conducted by the UK Equal Opportunity Commission found that only one in five larger organizations had made active use of the Code, which was issued in 1997 (EOC 2001). It is likely that increased visibility of the gender pay gap would improve awareness and control of actual application of the Code in the workplace.

NOTES

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¹For details on this source see Appendix 1.

²The Index of Dissimilarity ranges between 0 and 1

and is defined as $ID = \frac{1}{2} \sum_i \left| \frac{M_i}{M} - \frac{F_i}{F} \right|$

where M, and F are, respectively total male and female employment, M_i and F_i are, respectively, men and women employed in occupation i .

³These sectors correspond to categories L,M,N,O and Q of the NACE REV 1 classification used in the Labour Force Sample Survey.

⁴As is well-known, data on net earnings are more difficult to interpret in the light of discrimination or segregation theories because of the distortion due to differential fiscal treatment of workers with similar supply characteristics. This is one reason why it is important to cross-check the findings from the ECHP source with those from the ESES source, a rule that I follow throughout this paper.

⁵The fourth and fifth wave were made available around September 2001 and March 2002. See Appendix 1 for details on these sources.

⁶I extended the analysis to a third, more general but less reliable indicator of female relative earnings, namely relative standardized monthly earnings for both full-time and part-time employees. Standardized monthly earnings are regular monthly earnings standardized for usual working hours (the survey collects the usual hours worked per week). Also I considered economy-wide, hourly earnings for full-timers based on ECHP data. All correlation coefficients thus obtained lack significance.

⁷I conducted the same counterfactual calculations on ESES data, redistributing women across industries rather than occupations according to the male pattern. Although the industrial classification used for this exercise is also broad (NACE, two digits), the data are on hourly earnings and are fairly reliable. The findings in this case are even more in favour of a mixed effect of inter-industry desegregation on the gender gap. I do not report these findings in the text because they are less general and salient than those based on the ECHP. Recall that ESES data cover the private sector only (Appendix 1).

⁸The detailed results are available from the author.

⁹COMET T sought to increase cooperation between universities and industry regarding training in the field of technology; ERASMUS was the European Community action scheme for the mobility of university students; PETRA aimed at further developing the vocational training of young people; IRIS was the European Network of Vocational Training projects for Women; LINGUA aimed at promoting foreign-language competence in the European Community; TEMPUS stands for Trans-European Mobility Scheme for University; FORCE sought to de-

velop continuing vocational training in the European Community.

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APPENDIX 1: THE DATA SOURCES

The European Community Household Panel (ECHP) is an annual longitudinal survey of a representative panel of households launched in 1994. The survey is based on a standardized questionnaire covering a wide range of topics: income, including the various social benefits, health, education, housing, socio-demographic characteristics including employment, etc.

ECHP data are collected by “National Data Collection Units” — either National Statistical Institutes or research centres, depending on the country. In the first wave (1994) a sample of some 60,500 nationally representative households, that is, approximately 130,000 adults aged 16 years and over, were interviewed in the then 12 member states (Belgium, France, Denmark, Luxembourg, Germany, Great Britain, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain). Austria (in 1995) and Finland (in 1996) joined the project with Sweden remaining the only exception. In wave 2, EU-13 samples totalled some 60,000 households and 129,000 adults.

The information collected is checked by the National Data Collection Units and by Eurostat. Missing information on income is imputed and weights to be applied in the analysis of the data are added to the basic data.

For income variables, the problem of a within-household non-response is generally not significant at the national level (around 3 percent overall). Despite the attempt at imputation for missing components where possible, no information on total household income or its components can be provided for a small proportion (of the order of 1 percent overall) of interviewed households. For these, all income variables have been coded as missing (–9).

Most income components in the ECHP questionnaire are presumed reported net of tax and other deductions. With the important exception of France, all gross amounts in the constructed variables have been converted to net values on the basis of a net-gross ratio estimated using a simple statistical procedure on the basis of reported ratios for income from current and previous year’s employment, for both of which net as well as gross amounts are solicited. The procedure appears robust insofar as the estimated conversion factors are found to have rather small variance *within countries*.

Given the limited size of each country’s sample, the finest occupational breakdown only lists 18 occupational groups: (1) legislators, senior officials, and corporate managers; (2) managers of small enterprises; (3) physical, mathematical engineering science, and health professionals; (4) teaching professionals; (5) other professionals; (6) physical, mathematical engineering science and health associated professionals; (7) teaching and other associate professionals; (8) office clerks and customer services clerks; (9) personal and protective services workers; (10) models, salespersons and demonstrators; (11) skilled agricultural and fishery workers; (12) extracting and building workers and other related trade workers; (13) metal, machine, precision, handicraft, print and related trades workers; (14) stationary-plant and drivers and mobile-plant operators; (15) machine operators and assemblers; (16) sales and services elementary occupations; (17) agricultural, fishery and related labourers; (18) labourers in mining, construction, manufacturing, and transport.

Data from three waves were available when the data analysis for this paper was carried out, respectively 1994, 1995, and 1996. The fourth and fifth waves (1997 and 1998) were made available around September 2001 and March 2002, respectively. Most income variables refer to the year preceding the survey. One exception is “regular monthly earnings,” which refers to the year of the interview.

For a detailed description of the ECHP methodology and questionnaires, see *The European Community Household Panel (ECHP): Volume 1 – Survey Methodology and Implementation*, and *The European Community Household Panel (ECHP): Volume 1 – Survey Questionnaires: Waves 1-3, Theme 3, Series E*. Luxembourg: Eurostat, 1996. Technical information on this survey is reported regularly in the series Doc.Pan.xxx (where xxx stands for the document number) issued by the Directorate E/Unit E2 of Eurostat.

The European Structure of Earnings Survey (ESES) collects data directly from employers at the sampled firms. The data collected are on gross earnings, the composition of the pay packet, hours of work, skill level, and other characteristics of the workers, sector of activity, unionization and other characteristics of the firm. They are only accessible in cross-tabulation format or computing made by EUROSTAT, but under very restrictive conditions of confidentiality. At the time of writing ESES was available for 1972, 1974, 1978, and 1995, with changes in sampling design and questionnaire impairing comparability across the years. Starting with 2002 the ESES will be carried out every four years.

Variables are not always available for all countries. In particular, data on hourly earnings are not available for part-timers in the Netherlands, Portugal, and Finland.

Data for 1995 were collected in 1996 by the National Statistical Institutes on behalf of Eurostat and on the basis of a common sample design and questionnaire. Fifteen countries took part in the survey: Austria, Belgium, Denmark, France, Finland, Germany (former East and West), Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. The sample size for this release is high; for example, the number of workers in the survey for Italy alone (about 97,000) corresponds to 75 percent of all adults interviewed for the second wave of the ECHP in the 13 countries included in this wave. Collection at the source, specification of gross rather than net values and large sample size make the data on income and wages from this source particularly reliable. The main disadvantages are: coverage, since only private firms with more than ten employees are included; lack of accessibility to individual records; and, so far, highly irregular periodicity. Limited coverage is especially serious for European countries with a large number of small firms and a sizeable segment of “informal” labour.

The European Community Labour Force Survey (LFS) is the EU’s harmonized survey on labour market developments. The survey has been carried out since 1983 in the EU member states. These currently include Austria, Belgium, Denmark, France, Finland, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

The content is determined by the Statistical Office of the European Union (Eurostat), together with the national experts of the member states. The national statistical offices are responsible for selecting the sample, conducting the interviews and forwarding the results to Eurostat. Although the survey is intended to cover the whole of the resident population, for technical reasons the results are compiled on the basis of the population of private households.

One of the series used here, that is, employment by ISCO three-digits occupational classification, is available from 1995. However, data for this year are not available for Finland and Sweden.

For further details please refer to: *Labour Force Survey. Methods and Definitions*, Population and Social Conditions, Methods and Nomenclatures. Luxembourg: Eurostat, 1998.