The Distribution of Gender Wage Discrimination in Italy and Spain: A Comparison Using the ECHP

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1 Introduction

The existence of significant gender wage gaps is a recurrent feature of labour markets in a very large number of countries, with female employees consistently getting lower remuneration for their work than their male colleagues. The extent to which this gap can be attributed to discriminative practices among employers is a relevant question that can be addressed from different perspectives. One of the most usual is that linked to the Oaxaca-Blinder decomposition. This procedure decomposes the observed wage gap between two different components. The first component is attributed to differences in observable characteristics of the workforce. The rest is an unexplained residual that can be interpreted as an approximation to wage discrimination. The Oaxaca decomposition has been applied to obtain aggregate measures of gender wage discrimination on a large number of occasions, from different data sources and for a large number of countries. What it is not so usual is to find direct comparisons of the measurements thus obtained, due to the difficulty of finding comparable data sources among different countries.

The European Community Household Panel (ECHP) provides, for several countries in the European Union (EU) and for a extended time period (annual data for 1994-2001), a dataset including the information about wages and employees' individual characteristics that is necessary to apply the Oaxaca decomposition. In consequence, it is a source that can be used for gender wage discrimination comparisons within the EU. Most of the comparisons based in this source however, have focused in aggregate measures of discrimination[1]. While this is undoubtedly useful, aggregate measures may hide important features that can be revealed by looking at the distribution (among individuals or among intermediate-level groups) of the discrimination measures.

Other studies, like Barth et al. (2002) -who used the Oaxaca-Blinder decomposition on ECHP data- or Blau and Kahn (1996) and Rice (1999) -who used the Juhn-Murphy-Pierce (JMP) decomposition on International Social Survey Programme (ISSP) and ECHP data, respectively- did obtain aggregate discrimination levels for each country in different sub-groups of EU members. We follow, instead, a distributive approach and estimate the degree of individual discrimination for each woman and then we proceed to aggregate them according to different groupings based on socio-economic characteristics, in order to compare the distribution of gender wage discrimination in two particular EU countries, Italy and Spain. We modify the

[1] One exception is Arulampalam et al. (2005) where the variation of the gender wage gap across the wages distribution is investigated using ECHP data and the quantile regression framework.

basic Oaxaca-Blinder procedure in order to obtain the individual measures of gender wage discrimination proposed by Del Rio et al. (2006), using ECHP data for Italy and Spain. Then we proceed to compare some features of the resultant distributions of these measures. Italy and Spain are selected for this comparison because they are two Southern European countries whose aggregate measures of discrimination, according to ECHP, are fairly similar. But when the distribution of individual measures is taken into account, we find clear differences in the results. In general, gender wage discrimination in Spain is more concentrated in particular groups, while in Italy is much more evenly distributed. These results point to entirely different mechanisms that generate discrimination in both national labour markets. This would be hard to suspect from aggregate results only[2].

The paper is organized as follows. Section 2 gives some information about the features of ECHP, the variables we use, and their definitions. In Section 3 we apply the standard Oaxaca-Blinder decomposition to obtain aggregate measures of the degree of gender wage discrimination for Italy and Spain. We then use these results to compute individual measures of discrimination and give a broad view of their distribution using the graphical device of Discrimination Curves. The analysis of the distribution of gender wage discrimination is more thoroughly developed in Section 4, where a family of discrimination indices is computed for several groupings of female employees (by educational level, occupation, activity, etc) in order to show the relative degrees of discrimination and of evenness of discrimination between Italy and Spain in each of the groupings. Finally, in Section 5 we draw some brief conclusions.

2 Data Source and Variables

The data source used in this paper is the ECHP elaborated by Eurostat. This is a harmonized, large-scale, cross-national longitudinal survey conducted annually from 1994 to 2001. In the first wave (1994) a sample of some 60,500 households, i.e. approximately 130,000 adults aged 16 years and over were interviewed across 12 member states, namely Belgium, Denmark, Germany, Greece, Spain, France, Italy, Ireland, Luxembourg, The Netherlands, Por-

[2]Favaro and Magrini (2003) did a distributional analysis of gender wage differentials in Italy, but with different data source and methodology than those here employed. Del Rio et al. (2006) used a quantile regression framework and Spanish data for 1995. de la Rica et al. (2007) analysed the gender wage gap throughout the wage distribution in Spain using ECHP data for 1999, stratifying their sample by education group and using quantile regression and panel data techniques.

tugal and the United Kingdom (UK). In the second wave (1995), Austria joined the ECHP, and so did Finland in the third wave (1996).

ECHP is a survey based on a standardized questionnaire that involves annual interviewing of a representative panel of households and individuals in each country, covering a wide range of topics: income, health, education, housing, demographic and employment characteristics, etc. The richness of this information allows us to include in the wage regression characteristics directly related to employment conditions, like tenure, occupation, type of contract, working time status, firm size and activity sector, plus education levels and demographic characteristics like marital status and age. Furthermore, the scope of the survey is very broad. It includes information about employees working for the public and the private sector, involving all firm sizes and all economic activities.

Our analysis will be carried for the period 1997 to 2001. Even if there are data available for Italy and Spain corresponding to the period 1994-1996, these do not include information about the type of contract for the year 1994. Waves 2 and 3, corresponding to years 1995 and 1996, present a large number of missing answers about the size of the firm where the individual was employed at the time of the survey. We consider that both type of contract and firm size are likely to be relevant for the analysis of gender wage discrimination and so we chose to start our analysis for the shorter period[3].

The variables included in ECHP can be used for comparisons across countries due to a standardized design and common technical and implementation procedures carried on with centralized support and coordination of the national surveys by Eurostat. Hence, compared with other European social surveys, ECHP presents a much broader and integrative character. It aims to provide comparable and inter-related information on (among others) earnings and social protection benefits, employment and working conditions, housing, family structures, and social relations and attitudes. Information on some of these topics may be less detailed or less precise than in other sources dedicated to single subjects, but this is compensated by the ability to integrate a wide range of variables in a single micro-data source.

The main weakness of ECHP for our purposes is the lack of detailed information on the structure of wage earnings, like basic rates of pay, overtime remuneration, bonuses, etc[4]. Besides, it has to be noted that ECHP

[3]Table A1 in the Appendix shows some descriptive statistics of the sample we used.

[4]The European Structure of Earnings Survey (ESES) contains detailed information about wages. Its reliability is relatively high because it is an employer's survey, and its sample size is larger. However, it excludes the public sector and it is carried out infrequently. For a comparison between ECHP and ESES related to gender wage gaps see

is a household survey, thereby lacking in matched employer-employee information. This may result in measurement errors due to interviewed persons overstating or understating their wages. A third weakness is the lack of information about actual work experience. We have computed a measure of potential experience as the difference between the current age of the individual minus the age at which he/she started his/her first job.

3 Gender Wage Discrimination in Italy and Spain

As a first step we estimated aggregate measures of the degree of wage discrimination following the Oaxaca-Blinder procedure. Thus, we started by estimating Mincerian wage equations, one for male employees and another for female employees, in each country for a pool comprising waves 4 to 8 (both inclusive) of the ECHP[5].

$$\log w_i = Z_i' \hat{\beta} + u_i \tag{1}$$

where i stands for each individual employee, w_i for his/her (real) hourly wage[6], Z_i' represents a vector of individual characteristics considered to be linked to productivity (including a dummy variable for each year in the sample, intended to catch fixed effects)[7], $\hat{\beta}$ the vector of estimated coefficients, and u_i the error terms.

The measure of the degree of wage discrimination was computed taking as a benchmark (for a non-discriminatory ideal situation) the wage structure of male employees[8]. The wage gap (in logs) can be decomposed as:

Barry et al. (2001).

[5]The results of the estimation are listed in Table A2 of the Appendix.

[6]Hourly wage was calculated as gross average monthly earnings from main job (including bonuses and overtime) divided by weekly hours in main job (including overtime) times (12/52). As indicated above, ECHP does not provide detailed information about overtime hours or premia. We set an upper bound of 60 hours to the hours variable to minimize the bias to overstate self-declared hours worked, as in de la Rica et al. (2007). EU harmonized indices of consumer prices (HICP) were used as deflators.

[7]This decomposition method assumes that the variables in Z are not affected themselves by discrimination and that they measure productivity comprehensibly. Regarding this last point, if there were any variables not included in Z correlated with gender, the residual obtained as a result could be capturing unobserved group differences in productivity, like e.g. those arising from voluntary choices made by women. The variables included in Z are listed in the Appendix, Table A1.

[8]Oaxaca (1973) noted that the choice of a benchmark wage structure is subjected to the well-known "index number problem". Neumark (1988) pointed out that the choice

$$\log \bar{w}_M - \log \bar{w}_F = (\bar{Z}'_M - \bar{Z}'_F)\hat{\beta}_M + (\hat{\beta}_M - \hat{\beta}_F)\bar{Z}'_F \quad (2)$$

where the bar over a variable indicates its average value over the sample and subindices M and F stand for male and female, respectively. The first term of this decomposition shows the part of the wage gap that can be attributed to average differences in individual characteristics between both groups (the "endowment effect"). The second term, instead, shows the part that can be attributed to differences in the valuation of each characteristic between both groups. These differences in valuation are obtained as a residual that cannot be explained appealing to productivity factors, and so they can be identified as the result of gender discrimination.

Table 1 shows the aggregated results for Italy and Spain. While the average wage gap during the period was almost double in Spain than in Italy, the respective degrees of discrimination were much more similar. Both Italy and Spain come out as EU countries with an intermediate degree of gender wage discrimination in the context of the EU[9].

Table 1: Discrimination though Oaxaca's decomposition

	W_f / W_m	% wage gap due to characteristics.	% wage gap due to discrimination	W_f / W_m (in absence of discrimination)	Wage gap due to differences in characteristics.	Discrimination
Italy	93.19%	-57.90%	157.90%	103.94%	-3.94%	10.75%
Spain	86.52%	-6.95%	106.95%	100.94%	-0.94%	14.42%

A remarkable feature of these results is that they show that individual characteristics are not relevant in these two countries to explain the gender wage gap. In fact, the average characteristics of the female employees group would bring about, in non-discriminatory conditions, a favourable wage gap for them against their male colleagues.

Similarity in aggregate measures can hide significant differences at lower levels of analysis. One of the alternatives is to take a look at the distribution of discrimination throughout the wage structure. In order to obtain individual measures of the degree of discrimination, we computed for each female employee the difference between her estimated wage if her individual characteristics were remunerated at average male prices (r_{Fi}) and her

hinges on the type of behaviour under analysis (discrimination or nepotism). To take the male wage structure as a benchmark implies to assume that discriminatory behaviour is exclusively directed against women, not in favour of men.

[9]See, for example, Rice (1999).

estimated wage if her individual characteristics were remunerated at average female prices (y_{Fi})[10]. We define the measure of the individual degree of discrimination, following Del Rio et al. (2006) as:

$$v_{Fi} = (\frac{r_{Fi} - y_{Fi}}{r_{Fi}}) \tag{3}$$

The information thus obtained about the distribution of discrimination can be represented in a simple way (derived from the General Normalized Inverse Lorenz Curve) called the Discrimination Curve. This curve shows the per capita accumulated degree of discrimination for all female employees ordered in decreasing order beginning with those that show the higher measures of individual discrimination. To represent it, we have to compute, for each $p = k/n$ $(0 \leqslant p \leqslant 1)$,

$$D(g; p) = \sum_{i=1}^{k} \frac{g_i}{n} \tag{4}$$

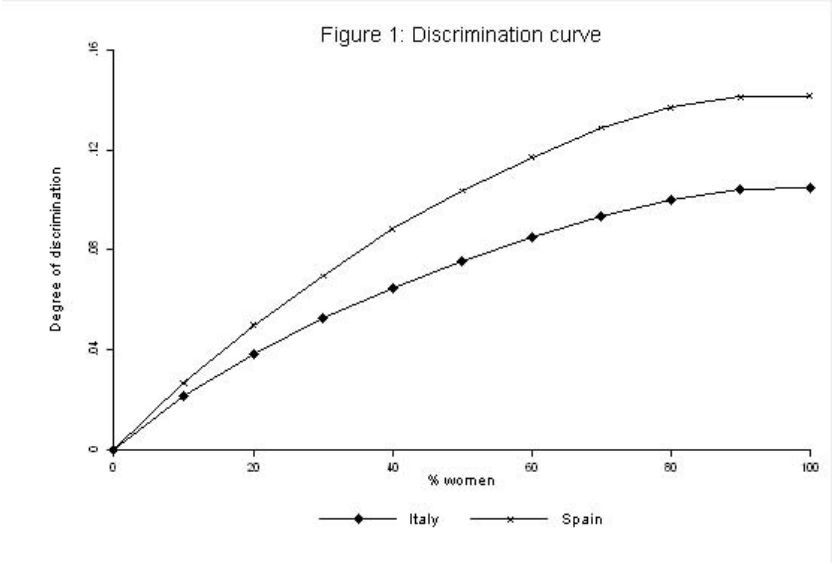
where $g_i(v_F) = \max\{v_{Fi}, 0\}$ represents the vector of individual measures of wage discrimination, n stands for the total number of female employees, and k can be any integer such that $k \leqslant n$[11].

The interpretation of the Discrimination Curve is easy: its degree of concavity is a measure of the unevenness of the distribution of individual measures of wage discrimination. Figure 1 shows the Discrimination Curves obtained for Italy and Spain in the period here considered. It is immediately clear that the distribution of the individual measures of gender wage discrimination is more evenly distributed among Italian female employees than among their Spanish counterparts.

A more even distribution means that, roughly, Italian female employees suffer wage discrimination with a similar "intensity". A completely even distribution, which would be represented by a linear Discrimination Curve, would imply that each and every female employee suffer exactly the same degree of discrimination than any other. In contrast, a less even distribution means that some Spanish female employees suffer a high degree of gender wage discrimination while others come out in a much better situation.

[10]Prices for characteristics are obtained as $r_{Fi} = \exp(Z_{Fi}\hat{\beta_M})$; $y_{Fi} = \exp(Z_{Fi}\hat{\beta_F})$. An alternative approach would be to use quantile regression methods, that allow for the possibility that characteristics may have different returns at different points of the distribution.

[11]This Discrimination Curve only includes discrimination suffered by female employees and it does not take into account positive discrimination. For all positively discriminated female employee we assign a zero value, to avoid that positive discrimination (nepotism) enjoyed by some of them could distort the image of discrimination by compensation.



4 Distribution of the Degree of Discrimination among Groups

In order to get a more precise picture of the distribution of the degree of discrimination we computed the following indices, related to the measures previously presented, that were proposed by Del Rio et al. (2006) and that are based on the family of poverty indices developed by Foster et al. (1984):

$$d_\alpha(v_{Fi}) = (\frac{1}{n}) \sum_{i=1}^{k*} (v_{Fi})^\alpha, \tag{5}$$

where α would represent a coefficient of "aversion to discrimination", greater when a greater weight is put on the most discriminated female employees, and $k*$ stands for the number of discriminated female employees.

We computed the indices corresponding to values of α equal to 0, 1 and 2. The index d_0 simply shows the percentage of female employees that suffer wage discrimination, no matter the extent of it. We take it as an indicator of how widespread is the phenomenon of discrimination among female employees. The index d_1, if applied to the whole group, would give us the same value as the aggregate measure of discrimination obtained through the Oaxaca decomposition if we computed this decomposition eliminating all instances of positive discrimination towards female employees. This we take as an indicator of the "intensity" of the discrimination suffered in average by female employees. The index d_2 assign greater weights to female employees

that suffer higher degrees of discrimination. This we take as an indicator of the "severity" of discrimination, i.e. we consider as more severe or worrying a situation where discrimination measured by d_2 is higher[12]. Note that the index d_2 conflates two different dimensions of discrimination, namely its average level and the unevenness of its distribution. If we compare two groups of female employees with the same average level of discrimination as indicated by their correspondent d_1 indices, that with the most uneven distribution of the individual degrees of discrimination will show a higher value for d_2. Alternatively, if we compare two groups of female employees with a similar distribution of the individual degrees of discrimination but different average levels, that with the higher average level will show a higher value for d_2[13].

Table 2 shows the aggregated values of the indices for both countries. While the percentage of discriminated female employees is slightly higher in Italy than in Spain, the aggregate degree of wage discrimination is higher in Spain, as we showed above. The values of the index d_2 confirm that discrimination is more severe for Spanish female employees.

Table 2: Discrimination indexes

	dr_0	dr_1	dr_2
Italy	95.25%	10.48%	1.40%
Spain	93.32%	14.15%	2.65%

Both the values of d_1 and d_2 are higher in Spain. Thus, in order to compare the relative evenness of the distribution of discrimination for Italy and Spain we compute, for each group, the relative ratio between the d_2 index values in both countries. To disentangle the information about the distribution from the information about the average measures of discrimination, we detract from this ratio the ratio between the correspondent d_1 indices squared:

$$\gamma = \frac{d_2^S}{d_2^I} - (\frac{d_1^S}{d_1^I})^2, \tag{6}$$

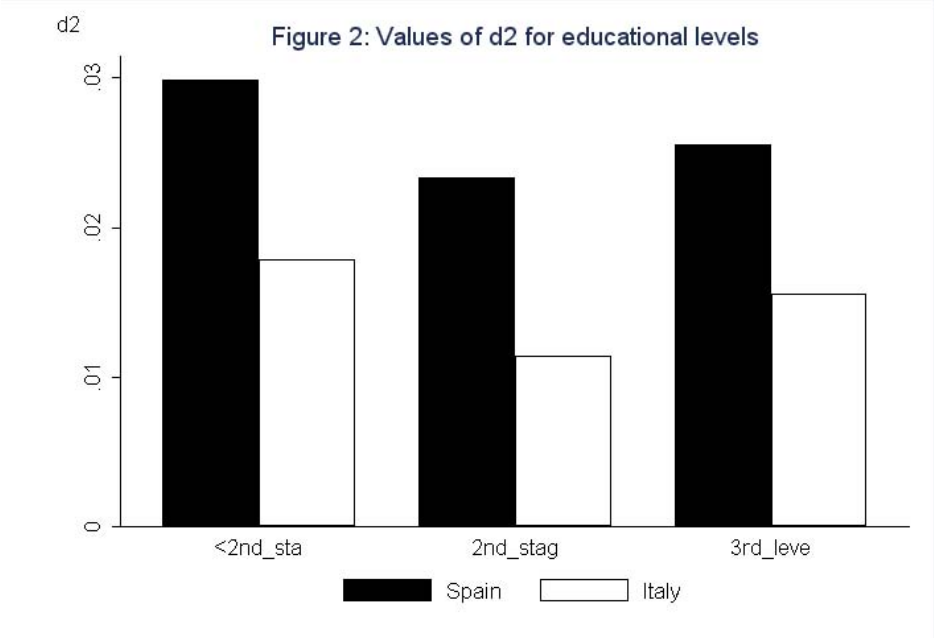
where the superindices S, I stand for Spain and Italy, respectively. The value of γ will be zero when the relative severity of discrimination for Spanish

[12]As was pointed by Del Rio et al. (2006), this introduces a normative dimension to the index, that is not present in the case of d_0 or d_1. The weights the index d_2 use incorporate the value judgment that discrimination is a "bad thing", of which it would be better to have less.

[13]In order to simplify the exposition, we are assuming implicitly that we are comparing groups of female employees with the same percentage of discriminated female employees, i.e. the same value for d_0.

female employees with respect to their Italian colleagues is just the same as the relative depth. Thus, values greater than zero indicate a more uneven distribution of discrimination for Spanish female employees, while values lower than zero indicate a more uneven distribution for the Italians. The higher the absolute value of γ, the larger will be the differences between both distributions. In this case, the value of γ turns out to be positive (0.07), giving additional confirmation that the distribution of the individual measures of the degree of discrimination is clearly more uneven in Spain.

An additional advantage of the family of indices we are using is their decomposability. This property opens the possibility of computing them for particular groups of the individuals involved. In the first place, we compute the values of the indices for educational levels. The detailed results can be found in Table A3 of the Appendix. Focusing on the values of d_2 for the sake of comparison, Figure 2 shows these values for the three educational groups we can distinguish in our sample. We can observe that the severity of discrimination is higher for Spanish female employees in every group. The profile of the severity of discrimination across educational groups is, however, very similar. The severity of discrimination is highest for the less educated female employees, and lowest for the intermediate group, comprising female employees with upper secondary studies.



Consideration of the values of indices d_0 and d_1 adds more detail to our analysis. Thus, we can appreciate that the main differences in the distribu-

tion of gender wage discrimination across educational groups between Spanish and Italian female employees appear for those with higher education. This is the group with a higher percentage of discriminated female employees in Italy (98.5%), but with the lower one in Spain (88.9%), where the average level of discrimination for this group is also slightly lower than that of the intermediate group. In short, while top-educated Italian female employees suffer widespread but relatively mild wage discrimination, their Spanish counterparts face a more severe kind of discrimination in the sense that some groups of them experience it with particular intensity[14].

Let us now take a look at a different kind of grouping, this time according to the industries where the individuals are employed (detailed results are reported in Table A4 in the Appendix). Figure 3 shows the correspondent values of d_2. We observe that, again, the severity of the distribution of discrimination in Spain is higher in most industries. Only in two of them (transport and communication services and education), the severity of discrimination is higher in Italy. What the graph shows clearly is that the relative severity of discrimination between industries cuts a different profile in each country. In Spain, discrimination is most severe for female employees in the household and other services industries, while in Italy this is the case for the primary activities plus energy sector (metal and machinery industries show high relative values of d_2 in both countries). On the other side, discrimination is less severe for Italian female employees in the hotel and restaurants industry and in the public administration. While both industries show low values of d_2 in Spain, the lowest ones correspond in this case to the transport and communication services and education industries.

In Figure 4 we show the results by type of occupation (detailed results are reported in Table A5 of the Appendix). Once again, Spanish female employees are subject to more severe discrimination in general, with the exception of the occupational groups that require most skills (managers and professionals). Differences in the distribution of the severity of discrimination between both economies are significant. In Spain discrimination is more severe in low-skilled occupations than in high-skilled ones. Italian data show no such clear distinction, with relatively high values of d_2 for managers and professionals and relatively low values for clerks, service and shop employees and elementary occupations.

[14]These results are consistent with those obtained in de la Rica et al. (2007), who found the gender wage gap expanding over the wage distribution only for the group with college/tertiary education, while for less educated groups the gap is wider at the bottom. They interpreted this as reflecting the existence of a kind of "glass ceiling" for Spanish women with higher education completed. Similar results were obtained by Del Rio et al. (2006).

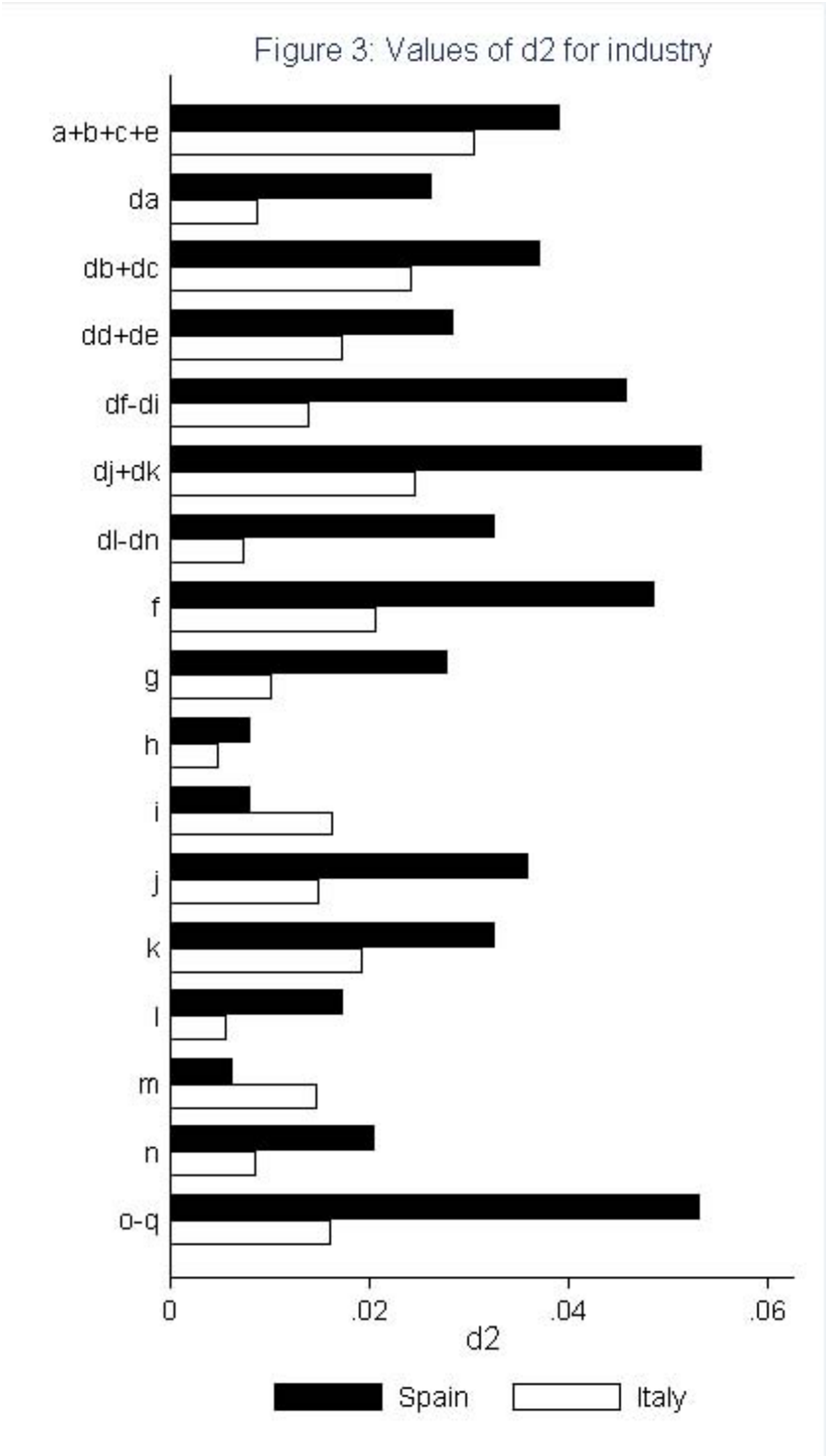
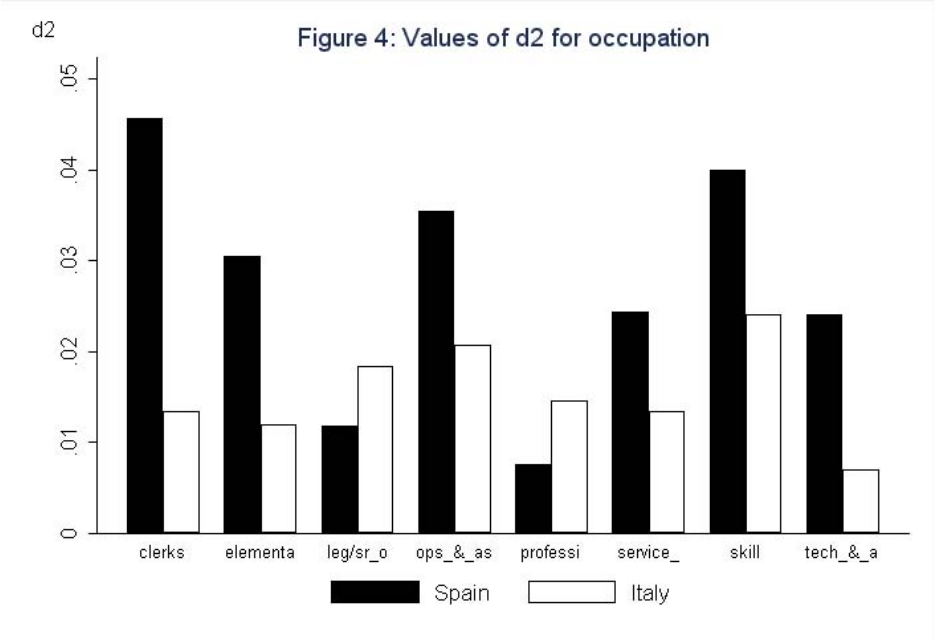


Figure 3: Values of d2 for industry
a+b+c+e
da
db+dc
dd+de
df-di
dj+dk
dl-dn
f
g
h
i
j
k
l
m
n
o-q
0
.02
.04
.06
d2
Spain
Italy



The different shape of the distributions of the individual measures of the degree of gender wage discrimination points to some interesting questions. More even distributions, like that found in the ECHP Italian data, seem consistent with the conception of gender wage discrimination as a manifestation of a general prejudice against women in the labour market[15]. However, we have also found evidence that some female employees are more heavily discriminated than others. When this situation tends to concentrate on particular groups, which is the justification? It may well be that discrimination against women in the labour market it is exerted not only through wages. Access of female individuals to obtain particular characteristics with high valuations may be blocked or inhibited, and this could be reflected in the concentration of female employees in particular subgroups of the labour force that then are found to suffer from particularly strong wage discrimination.

In order to get a first try at this hypothesis we computed the correlation coefficient between the percentage of women employed in each industry and in each occupation for both countries, and the correspondent level of the d_2 index. What we attempt is to do a preliminary check of the possibility that in those industries or occupations where barriers to female employment exist,

[15]We computed the values of the indicator γ defined in equation (6) for each of the groups defined by education, industry and occupation as a measure of intra-group evenness of the distribution of the individual degree of discrimination. The results, reported in Table A6 in the Appendix, show negative values of γ (indicating a more even distribution for Spanish data) for almost every group. The combination of low inter-group variability and high intra-group variability is consistent with discrimination based on "general prejudice".

their existence will be also signalled by more severe wage discrimination. We only found evidence of a significant (at the 10% level) negative correlation in the case of Italian occupational groupings. The results for this case are reported in Table 3.

Table 3: Percentage of female employees and discrimination index (d2) for occupations in Italy

	%	d2
Legislators, senior officials and managers	1.83%	10.83%
Professionals	1.46%	64.00%
Technicians and associate professionals	0.69%	42.02%
Clerks	1.33%	52.58%
Service workers and shop and market sales workers	1.34%	47.10%
Skilled workers	2.41%	19.93%
Plant and machine operators and assemblers	2.07%	20.20%
Elementary occupations	1.19%	39.40%
Coefficient of correlation	-0.63	

Although a deeper analysis of this question (that lies beyond the scope of this paper) would be desirable, the results we obtained point to the possibility that some mechanism inhibiting the access of highly educated women to highly rewarding occupations is working in Italy but not in Spain.

5 Conclusions

What we try to do in this paper is to show that when comparing gender wage discrimination among different countries it is not enough to look at aggregate levels of degrees of discrimination. If information is available, it is worth to search for ways to compare the entire distributions. To this end we have computed individual measures of the degree of gender wage discrimination for each female employee. Then we have tried to organize this information by computing several indices that allowed us to compare the relative unevenness of the distribution of such measures within some groupings that we consider as particularly significant.

The results we have obtained show that beneath a superficial similarity in aggregate levels of gender wage discrimination there are sharp differences between their distribution in Italy and Spain. Italian female employees share more equally the burden of wage discrimination, no matter if we look at them grouped by education levels, industries where they work or type of occupation they fill. On the contrary, Spanish female employees can be heavily discriminated in the wages they earn, or not at all, depending on the particular combination of individual characteristics they own.

A detailed account of the implications of a particular shape of the distribution of individual degrees of gender wage discrimination falls out of the scope of this paper. Nevertheless, we have suggested some of the broader implications and presented some preliminary evidence about the possibility of discrimination against women in the labour market affecting female employees' wages indirectly through barriers to the access to some particular individual characteristics. In particular, we have focused on the degree of feminization of particular industries as a variable correlated to the unevenness of the distribution of discrimination.

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Appendix

Table A1: Descriptive statistics

	Italy				Spain			
	Women		Men		Women		Men	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
MARITAL STATUS								
married	0.63	0.48	0.69	0.46	0.48	0.50	0.63	0.48
non married	0.37	0.48	0.31	0.46	0.99	0.08	1.00	0.05
CITIZENSHIP								
Nationals	1.00	0.06	0.99	0.08	0.52	0.50	0.37	0.48
Non nationals	0.00	0.06	0.01	0.08	0.01	0.08	0.00	0.05
EXPERIENCE								
Less than 5 years	0.15	0.35	0.12	0.33	0.22	0.41	0.12	0.33
5 to 9 years	0.15	0.36	0.11	0.32	0.16	0.37	0.11	0.32
10 to 19 years	0.31	0.46	0.26	0.44	0.29	0.45	0.26	0.44
20 to 29 years	0.26	0.44	0.29	0.46	0.20	0.40	0.25	0.43
30 to 39 years	0.12	0.33	0.17	0.37	0.11	0.31	0.17	0.37
More than 40 years	0.02	0.13	0.04	0.20	0.03	0.16	0.08	0.28
TENURE								
Less than 2 years	0.48	0.50	0.52	0.50	0.56	0.50	0.58	0.49
2 to 4 years	0.16	0.36	0.15	0.36	0.17	0.38	0.17	0.37
5 to 9 years	0.17	0.38	0.15	0.36	0.15	0.35	0.11	0.32
More than 10 years	0.20	0.40	0.18	0.38	0.13	0.33	0.14	0.35
EXPERIENCE SQUARE	397	421	511	493	362	445	574	589
TENURE SQUARE	286146	439547	327125	455488	149902	348850	229820	410167
EDUCATION								
3rd level (ISCED 5-7)	0.13	0.34	0.12	0.32	0.43	0.50	0.29	0.46
2nd stage (ISCED 3)	0.55	0.50	0.42	0.49	0.22	0.42	0.19	0.40
<2nd stage (ISCED 0-2)	0.32	0.47	0.46	0.50	0.34	0.47	0.51	0.50
OCCUPATION								
leg/sr_o	0.01	0.08	0.03	0.18	0.01	0.10	0.04	0.20
professi	0.17	0.38	0.07	0.25	0.22	0.41	0.11	0.32
tech_&_a	0.12	0.33	0.11	0.32	0.13	0.34	0.11	0.31
clerks	0.34	0.47	0.20	0.40	0.18	0.38	0.07	0.26
service_	0.12	0.32	0.09	0.29	0.20	0.40	0.09	0.29
skill	0.10	0.29	0.26	0.44	0.05	0.22	0.29	0.45
ops_&_as	0.05	0.22	0.13	0.34	0.03	0.18	0.14	0.35
elementa	0.10	0.30	0.10	0.30	0.18	0.38	0.14	0.34
TYPE OF CONTRACT								
Indefinite contract	0.88	0.32	0.89	0.31	0.64	0.48	0.68	0.47
Fixed term contract	0.12	0.32	0.11	0.31	0.36	0.48	0.32	0.47
JOB STATUS								
Full time	0.89	0.31	0.99	0.12	0.86	0.34	0.98	0.15
Part time	0.11	0.31	0.01	0.12	0.14	0.34	0.02	0.15
FIRM SIZE								
0 to 4 employees	0.20	0.40	0.18	0.38	0.21	0.41	0.15	0.36
5 to 19 employees	0.28	0.45	0.27	0.44	0.22	0.41	0.28	0.45
20 to 49 employees	0.18	0.39	0.17	0.38	0.17	0.38	0.18	0.38
50 to 99 employees	0.11	0.31	0.10	0.30	0.11	0.31	0.10	0.31
100 to 499 employees	0.14	0.35	0.16	0.36	0.14	0.35	0.15	0.36
More than 500 employees	0.09	0.29	0.13	0.33	0.15	0.35	0.14	0.34

Table A1: Descriptive statistics (continued)

	Italy				Spain			
	Women		Men		Women		Men	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
INDUSTRY								
a+b+c+e	0.03	0.17	0.07	0.25	0.02	0.14	0.07	0.25
da	0.02	0.13	0.02	0.15	0.04	0.19	0.04	0.19
db+dc	0.08	0.28	0.03	0.18	0.04	0.21	0.02	0.14
dd+de	0.01	0.12	0.03	0.17	0.01	0.11	0.03	0.18
df-di	0.03	0.17	0.04	0.21	0.02	0.14	0.04	0.20
dj+dk	0.03	0.17	0.10	0.30	0.02	0.12	0.06	0.24
dl-dn	0.03	0.17	0.07	0.25	0.02	0.14	0.06	0.23
f	0.01	0.08	0.08	0.28	0.01	0.11	0.17	0.38
g	0.10	0.31	0.08	0.27	0.14	0.35	0.11	0.31
h	0.04	0.19	0.02	0.14	0.06	0.24	0.04	0.19
i	0.04	0.18	0.08	0.28	0.03	0.16	0.07	0.26
j	0.03	0.17	0.04	0.20	0.03	0.17	0.04	0.19
k	0.05	0.23	0.04	0.19	0.12	0.32	0.06	0.23
l	0.10	0.30	0.12	0.32	0.07	0.26	0.07	0.26
m	0.19	0.39	0.05	0.22	0.13	0.34	0.05	0.21
n	0.13	0.34	0.06	0.25	0.14	0.35	0.03	0.16
o-q	0.08	0.27	0.06	0.23	0.10	0.30	0.04	0.20
YEAR								
1997	0.22	0.41	0.22	0.41	0.19	0.40	0.21	0.41
1998	0.21	0.41	0.21	0.41	0.20	0.40	0.20	0.40
1999	0.20	0.40	0.20	0.40	0.19	0.40	0.20	0.40
2000	0.19	0.40	0.19	0.39	0.20	0.40	0.20	0.40
2001	0.18	0.39	0.17	0.38	0.21	0.41	0.20	0.40
Number of observations	7500		11473		7205		12512	

Table A2: Estimation results

	Italy		Spain	
	Women	Men	Women	Men
MARITAL STATUS				
married	0.02**	0.08***	0.03*	0.07***
	0.01	0.01	0.01	0.01
non married	*Reference*		*Reference*	
CITIZENSHIP				
Nationals	-0.02	0.12**	0.13*	0.13
	0.05	0.04	0.06	0.09
Non nationals	*Reference*		*Reference*	
EXPERIENCE				
Less than 5 years	-0.13***	-0.20***	-0.20***	-0.23***
	0.02	0.01	0.03	0.02
Between 5 and 9 years	-0.03*	-0.15***	-0.10**	-0.12***
	0.01	0.01	0.03	0.02
Between 10 and 19 years	0.01	-0.04***	-0.08***	-0.06***
	0.01	0.01	0.02	0.01
Between 20 and 29 years	*Reference*		*Reference*	
Between 30 and 39 years	0.02	0.01	-0.02	0.04*
	0.01	0.01	0.03	0.02
More than 40 years	-0.05	-0.03	-0.07	0.02
	0.03	0.02	0.06	0.04
TENURE				
Less than 2 years	-0.02	-0.03*	-0.15***	-0.07***
	0.01	0.01	0.02	0.02
Between 2 and 4 years	-0.02	-0.04***	-0.07***	-0.04*
	0.01	0.01	0.02	0.02
Between 5 and 9 years	*Reference*		*Reference*	
More than 10 years	0.02	0.01	0.07***	0.05**
	0.01	0.01	0.02	0.02
EXPERIENCE SQUARE	0.00	-0.00***	0.00	0.00
	0.00	0.00	0.00	0.00
TENURE SQUARE	0.00***	0.00***	0.00***	0.00***
	0.00	0.00	0.00	0.00
EDUCATION				
3rd level (ISCED 5-7)	0.20***	0.23***	0.05**	0.13***
	0.01	0.01	0.02	0.01
2nd stage (ISCED 3)	*Reference*		*Reference*	
<2nd stage (ISCED 0-2)	-0.08***	-0.08***	-0.10***	-0.09***
	0.01	0.01	0.01	0.01

Table A2: Estimation results (continued)

	Italy		Spain	
	Women	Men	Women	Men
OCCUPATION				
leg/sr_o	0.57***	0.54***	0.79***	0.67***
	0.09	0.03	0.07	0.03
professi	0.35***	0.33***	0.57***	0.42***
	0.02	0.02	0.03	0.03
tech_&_a	0.22***	0.17***	0.28***	0.22***
	0.02	0.01	0.03	0.02
clerks	0.12***	0.10***	0.12***	0.16***
	0.01	0.01	0.03	0.02
service_	0.06**	0.07***	0.05	0.03
	0.02	0.01	0.03	0.02
skill	*Reference*		*Reference*	
ops_&_as	0.02	0.03***	0.02	-0.02
	0.02	0.01	0.04	0.01
elementa	0.00	-0.04***	-0.05	-0.09***
	0.02	0.01	0.03	0.01
TYPE OF CONTRACT				
Indefinite contract	0.10***	0.11***	0.14***	0.14***
	0.02	0.01	0.01	0.01
Fixed term contract	*Reference*		*Reference*	
JOB STATUS				
Full time	*Reference*		*Reference*	
Part time	0.16***	0.13***	0.14***	0.19***
	0.01	0.03	0.02	0.04
FIRM SIZE				
Between 1 and 4 employees	-0.08***	-0.06***	-0.08***	-0.06***
	0.01	0.01	0.02	0.01
Between 5 and 19 employees	*Reference*		*Reference*	
Between 20 and 49 employees	0.05***	0.07***	0.09***	0.08***
	0.01	0.01	0.02	0.01
Between 50 and 99 employees	0.08***	0.09***	0.14***	0.13***
	0.01	0.01	0.02	0.01
Between 100 and 499 employees	0.06***	0.09***	0.17***	0.23***
	0.01	0.01	0.02	0.01
More than 500 employees	0.11***	0.12***	0.17***	0.27***
	0.01	0.01	0.02	0.02

Table A2: Estimation results (continued)

	Italy		Spain	
	Women	Men	Women	Men
INDUSTRY				
a+b+c+e	-0.06	-0.03	-0.09*	-0.09**
	0.03	0.03	0.04	0.03
da	0.05	-0.03	-0.04	-0.09**
	0.03	0.03	0.04	0.03
db+dc	-0.05**	-0.06*	-0.17***	-0.15***
	0.02	0.03	0.04	0.03
dd+de	0.04	0.01	-0.04	-0.04
	0.03	0.03	0.04	0.03
df-di	0.05	-0.01	0.02	0.06*
	0.02	0.03	0.04	0.03
dj+dk	0.00	0.00	0.02	0.06*
	0.02	0.02	0.04	0.03
dl-dn	0.05*	-0.04	-0.01	-0.03
	0.02	0.02	0.04	0.03
f	0.01	0.02	0.02	0.06*
	0.04	0.02	0.06	0.03
g	0.02	-0.04	-0.08**	-0.12***
	0.02	0.02	0.03	0.03
h	0.03	-0.07*	-0.05	-0.17***
	0.02	0.03	0.03	0.04
i	0.09***	0.05*	0.14***	-0.05
	0.03	0.02	0.04	0.03
j	0.23***	0.19***	0.23***	0.21***
	0.03	0.03	0.04	0.04
k	*Reference*		*Reference*	
l	0.09***	-0.02	0.05	-0.05
	0.02	0.02	0.03	0.03
m	0.16***	0.11***	0.10***	0.02
	0.02	0.03	0.03	0.03
n	0.03	-0.03	-0.06*	-0.12***
	0.02	0.02	0.03	0.03
o-q	0.00	-0.02	-0.12***	-0.06
	0.02	0.03	0.03	0.05
YEAR				
1997	-0.13***	-0.11***	-0.12***	-0.13***
	0.01	0.01	0.01	0.01
1998	-0.06***	-0.05***	-0.07***	-0.07***
	0.01	0.01	0.02	0.01
1999	*Reference*		*Reference*	
2000	0.05***	0.05***	0.09***	0.08***
	0.01	0.01	0.02	0.01
2001	0.09***	0.09***	0.14***	0.16***
	0.01	0.01	0.02	0.01
Constant	2.23***	2.29***	6.35***	6.45***
	0.05	0.05	0.08	0.10
Number of observations	7500	11473	7205	12512
Ajusted R-Square	0.56	0.54	0.67	0.62

*p<0.05; ** p<0.01; *** p<0.001

Table A3: Discrimination indexes for educational levels

	Italy			Spain		
	dr_0	dr_1	dr_2	dr_0	dr_1	dr_2
<2nd_sta	96.79%	12.06%	1.79%	98.08%	15.85%	2.99%
2nd_stag	93.45%	9.30%	1.14%	94.63%	13.41%	2.33%
3rd_leve	98.94%	11.54%	1.55%	88.88%	13.19%	2.55%

Table A4: Discrimination indexes for industry

	Italy			Spain		
	dr_0	dr_1	dr_2	dr_0	dr_1	dr_2
a+b+c+e	100.00%	17.08%	3.07%	100.00%	19.09%	3.93%
da	87.42%	7.74%	0.88%	98.26%	15.26%	2.63%
db+dc	100.00%	14.62%	2.44%	100.00%	18.70%	3.73%
dd+de	100.00%	12.27%	1.74%	99.56%	15.34%	2.85%
df-di	93.87%	10.48%	1.39%	100.00%	20.55%	4.60%
dj+dk	99.07%	14.93%	2.48%	100.00%	22.39%	5.35%
dl-dn	93.10%	7.39%	0.75%	100.00%	17.03%	3.27%
f	100.00%	14.03%	2.08%	100.00%	20.96%	4.88%
g	96.04%	8.96%	1.03%	99.41%	15.57%	2.78%
h	80.42%	5.28%	0.49%	86.77%	7.33%	0.80%
i	98.90%	12.12%	1.63%	71.34%	6.56%	0.81%
j	99.31%	11.30%	1.50%	96.72%	17.23%	3.61%
k	99.86%	13.04%	1.93%	100.00%	17.17%	3.27%
l	88.31%	6.31%	0.58%	89.59%	11.21%	1.74%
m	97.52%	11.31%	1.48%	73.80%	5.37%	0.63%
n	91.96%	8.06%	0.87%	95.52%	12.59%	2.06%
o-q	96.66%	11.73%	1.62%	100.00%	22.42%	5.32%

Table A5: Discrimination indexes for occupations

	Italy			Spain		
	dr_0	dr_1	dr_2	dr_0	dr_1	dr_2
leg/sr_o	99.36%	12.59%	1.83%	72.19%	7.80%	1.18%
professi	96.83%	11.16%	1.46%	77.12%	6.40%	0.75%
tech_&_a	90.81%	7.05%	0.69%	95.44%	13.96%	2.40%
clerks	95.86%	10.34%	1.33%	99.92%	20.24%	4.56%
service_	95.07%	10.12%	1.34%	98.09%	14.11%	2.44%
Skill	97.19%	14.33%	2.41%	100.00%	19.28%	4.00%
Ops_&_as	98.48%	13.34%	2.07%	100.00%	18.17%	3.55%
elementa	92.34%	9.22%	1.19%	97.73%	15.93%	3.05%

Table A6: Values of γ

EDUCATION	
<2nd_sta	-0.06
2nd_stag	-0.04
3rd_leve	0.34
INDUSTRY	
a+b+c+e	0.03
da	-0.89
db+dc	-0.11
dd+de	0.07
df-di	-0.55
dj+dk	-0.09
dl-dh	-0.93
f	0.11
g	-0.33
h	-0.30
i	0.20
j	0.08
k	-0.04
l	-0.14
m	0.20
n	-0.07
o-q	-0.36
OCCUPATION	
leg/sr_o	0.26
professi	0.19
tech_&_a	-0.45
clerks	-0.42
service_	-0.13
Skill	-0.15
Ops_&_as	-0.14
elementa	-0.41

Legend

INDUSTRY	
a+b+c+e	Agriculture, hunting and forestry
	Fishing
	Mining and quarrying
da	Electricity, gas and water supply
	Manufacture of food products, beverages and tobacco
db+dc	Manufacture of textiles and textile products
	Manufacture of leather and leather products
dd+de	Manufacture of wood and wood products
	Manufacture of pulp, paper and paper products; publishing and printing
df-di	Manufacture of coke, refined petroleum products and nuclear fuel
	Manufacture of chemicals, chemical products and man-made fibres
	Manufacture of rubber and plastic products
	Manufacture of other non-metallic mineral products
dj+dk	Manufacture of basic metals and fabricated metal products
	Manufacture of machinery and equipment n.e.c.
dl-dn	Manufacture of electrical and optical equipment
	Manufacture of transport equipment
	Manufacturing n.e.c.
f	Construction
g	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
h	Hotels and restaurants
i	Transport, storage and communication
j	Financial intermediation
k	Real estate, renting and business activities
l	Public administration and defence; compulsory social security
m	Education
n	Health and social work
o-q	Other community, social and personal service activities
	Activities of households
	Extra-territorial organizations and bodies
OCCUPATION	
leg/sr_o	Legislators, senior officials and managers
professi	Professionals
tech_&_a	Technicians and associate professionals
clerks	Clerks
service_	Service workers and shop and market sales workers
Skill	Skilled workers
Ops_&_as	Plant and machine operators and assemblers
elementa	Elementary occupations