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# Effects of Decentralised Bargaining on Gender Inequality: Italy

**Summary:** This paper analyses the relation between bargaining regimes and the gender wage gap (GWG), identifying the contribution of individual characteristics. First, a description of the gender disparities in the Italian labour market is presented, using the evidence from the Linked Employer Employees Data from the Structure of Earnings Survey (SES). Then, with a particular focus on the different types of collective agreements, various decomposition techniques are employed in order to describe how gender inequality differs across bargaining regimes. Finally, some suggestions are advanced regarding the mix of policies that could reduce the gender wage gap in the labour market.

**Key words:** Gender wage gap, Segregation, Decomposition.

**JEL:** I26, J16, J24.

This article contributes to the gender wage gap (GWG) literature, describing the level and form of gender discrimination in Italy according to differences in the levels and scopes of collective bargaining.

As noted by Andrea Schäfer and Karin Gottschall (2015) very few studies in the literature have tackled this problem. As far as Italy is concerned, the data on bargaining come from a new official survey, carried out for the first time in 2014. These data have not yet been examined from the point of view of gender inequalities in the labour market. The importance of the topic cannot be overstated, even if collective agreements and industrial relations seem to be suffering an overall decline (Jill Rubery and Gail Hebson 2018). The case of Italy is particularly interesting because three types of bargaining regimes can be compared: general sectorial agreements at the national level, firm-level agreements, and agreements explicitly aimed at gender equality.

In the following sections, the main theoretical threads and research results regarding the determinants of gender opportunities in the labour market are outlined (Section 1), and the data sources are described (Section 2). Data on gender inequality

in Italy are shown in Section 3. The GWG and the distribution of wages in the various bargaining regimes are described in Section 4. The results of the Oaxaca-Blinder and Juhn-Murphy-Pierce decompositions are presented in Section 5. Section 6 will conclude.

## 1. Background and Theoretical Considerations

In this section, the main theoretical settings and empirical results will be briefly surveyed in order to highlight the individual, institutional and structural factors that contribute to both the GWG and gender opportunities in labour markets. The very synthetic approach that has been chosen here is justified on the grounds that our analysis does not derive from, nor tries to verify, the explanatory power of conflicting theories of the GWG. A recent and complete review is that by Francine D. Blau and Lawrence M. Kahn (2017).

It should be noted at the outset that, according to recent comparative studies, Italy has a relatively low wage gap, as do Belgium, Spain and the Scandinavian countries. This was also true for preceding years (see, for example, European Commission 2005). Similar results on the existence of segregation, glass ceilings and sticky floors have been found in the U.S. and, above all, in European research (Louis N. Christofides, Alexandros Polycarpou, and Konstantinos Vrachimis 2013; Blau and Kahn 2017). Moreover, as in some other countries, any type of pay discrimination is explicitly prohibited by the Constitution.

Since inequality is only partially explained by observable characteristics of individuals (such as education and experience) or firms (such as size class), the presence of discrimination, – i.e. unequal pay for equally qualified persons, – is suspected (Gary S. Becker 1971, 1993; Edmund S. Phelps 1972; Kenneth Arrow 1973). However, much of the gender wage gap remains unexplained, under the generic umbrella of discrimination in favour of males.

The most widespread measure of discrimination is the Oaxaca-Blinder decomposition (Alan S. Blinder 1973; Ronald L. Oaxaca 1973). In the Blau and Kahn (2017, p. 799) notation,  $b_m$  and  $b_f$  are estimates of the coefficients in two Mincerian equations explaining, respectively, male and female earnings, with  $Y_m$  and  $Y_f$  being the mean values of male and female earnings, and  $X_m$  and  $X_f$  being the mean values of the explanatory variables. Then:

$$Y_m - Y_f = b_m X_m - b_f X_f = b_m (X_m - X_f) + X_f (b_m - b_f), \quad (1)$$

The first term of the decomposition measures the effect of the differences in endowments between men and women, while the second term is the “unexplained” part – i.e. the residual obtained by subtracting actual female earnings from the ones predicted using the male coefficients. The residual, or the “unexplained” part  $X_f(b_m - b_f)$  of Equation (1), is often used as a measure for discrimination, although it may naturally incorporate the effects of group differences in unobserved predictors. In other words, differences in quantities denote endowment effects on the dependent variable – that is, how differences in human capital (education and experience) and other measurable covariates affect wages – while the differences in prices ( $b_m - b_f$ ) can be a symptom of gender discrimination. Most studies find that the explained part is about

one-third of the total (or “row”) gap (Christian Bayer and Moritz Kuhn 2018). Christofides, Polycarpou, and Vrachimis (2013) also find that the explained part of the decomposition is negative for 11 countries, including Italy. It must also be remembered that discrimination can be understated if some explanatory variables are themselves influenced by discrimination (Blau and Kahn 2017).

Following the categorisation of the above-mentioned review by Blau and Kahn (2017), explanations of the gap point to several variables. Experience and work hours account for a “significant, though shrinking portion of the wage gap” (Blau and Kahn 2017, p. 818), but in some occupations and professions, the influence of experience and work hours seems particularly strong and persistent (Blau and Kahn 2017). Bayer and Kuhn (2018) find that 80% of the cross-sectional variation in wages is explained by the level of hierarchy in a firm’s organisational setting. Other “traditional” factors have a significant but diminishing influence on the gap: labour-force participation and selection; human-capital variables such as education, training and turnover; gender division of labour; motherhood; and related “statistical” discrimination (i.e. decisions based on the mean productivity of a group) on the part of employers.

The strength of other traditional factors, labeled as “locational”, such as occupation and industry, seem to have increased. Returns to many occupations have diminished for women, whereby occupation is the first individual factor explaining the wage gap in US, according to the calculations by Blau and Kahn (2017, p. 829). Firm characteristic seem also to have a paramount importance (Yana Gallen, Rune V. Lesner, and Rune Vejlin 2019).

Besides discrimination, one of the most widespread explanations of gender disparity is occupational segregation (John T. Addison, Orgul D. Ozturk, and Si Wang 2018). If women are limited by various types of barriers to finding a work only in some specific sectors (or in some occupations inside a sector), then an oversupply, and a subsequent tendency of female wages to be lowered, can be generated there (Barbara R. Bergmann 1974). Job segregation can be vertical (males occupy higher-paid and higher-skilled positions within the same occupation) or horizontal (females are employed in different and predominantly low-paid occupations). The “female occupations” are often referred to as the “five c’s”: cleaning, catering, caring, cashiering and clerical work.

The idea of vertical segregation is related with the “glass ceiling” concept, a term used to describe “the unseen, yet unbreakable barrier that keeps minorities and women from rising to the upper rungs of the corporate ladder, regardless of their qualifications or achievements” (Federal Glass Ceiling Commission 1995, p. 23). The “glass ceiling” may be a critical factor that contributes to the rapid increase of the GWG in later working life, and the low number of women in management positions may offer an explanation why the GWG increases steadily with age (Alan Manning and Barbara Petrongolo 2008).

While the preceding explanations relate to demand features, others refer to the characteristics of female supply. One of them is the willingness of women to pay a high “price” (i.e. a wage decrease) in exchange for a greater flexibility in working hours. For this reason, women tend to work in low-wage firms (negative sorting) (David Card, Ana R. Cardoso, and Patrick Kline 2016).

Also pointing to the characteristic of female supply, other recent research based on survey data or on experiments tries to clarify if non-cognitive skills, which are not captured by the usual and measurable human-capital characteristics, determine women's actual productivity, or the one perceived/expected by firms (Marianne Bertrand 2011; Ghazala Azmat and Petrongolo 2014; Christopher J. Flinn, Petra E. Todd, and Weilong Zhang 2018; Leonora Risse, Lisa Farrell, and Tim R. L. Fry 2018). Non-cognitive skills are defined as “psychological attributes, preferences, and personality” (Blau and Kahn 2017, p. 836), and include attitudes in negotiation, competition and risk aversion among the more frequently investigated items. Apart from the fact that these characteristics can themselves influence some human-capital factors, such as schooling, experience, industry and occupation, Blau and Kahn (2017) conclude that “this source of the gender gap does not appear to provide a silver bullet in our understanding of gender differences in labor-market outcomes” (Blau and Kahn 2017, p. 855).

Adherence to gender stereotypes has the same effects as psychological characteristics, and is found both in employers and in women supplying labour. Social norms have long been identified at the roots of discrimination and segregation by research taking a feminist (and class) perspective, and they have been considered as the ultimate causes of GWG (Damian Grimshaw and Rubery 2007). A new strand of literature is theoretically and empirically studying this topic in its various expressions (George A. Akerlof and Rachel E. Kranton 2000; Nicole M. Fortin 2005; Bertrand 2011; Bertrand et al. 2014; Francesca Barigozzi, Helmuth Cremer, and Kerstin Roeder 2018; Henrik J. Kleven, Camille Landais, and Jakob E. Søgaaard 2018; Lesner 2018).

Disparities between part-time and full-time work seem to play an important role in determining the GWG (Claudia Goldin 2014; Eleonora Matteazzi, Ariane Pailhé, and Anne Solaz 2018), contributing both to segregation and discrimination. The Organisation for Economic Co-operation and Development notes that part-time work can be characterised by “poor wages and benefits, a social or excessively flexible hours, low job tenure, absence of training, or few prospects of promotion” (Florence Jaumotte 2003, p. 21).

Finally, the nature of wage-setting institutions appears to have a significant impact on the gender wage gap and other gender disparities. The influence of centralised *versus* decentralised bargaining has been given an important role in explaining international differences (Wiji Arulampalam, Alison L. Booth, and Mark L. Bryan 2007; Dirk Antonczyk, Bernd Fitzenberger, and Katrin Sommerfeld 2010; Christofides, Polycarpou, and Vrachimis 2013; Schäfer and Gottschall 2015), and also changes in GWG in different points in time. Blau and Kahn (1996, 2000, 2017) argue that economies and companies with greater unionisation tend to have lower overall wage dispersion and, because the concentration of women in low-paid jobs, this leads to a lower GWG. For Schäfer and Gottschall (2015), the “labour market structure and regulations tend to provide ‘enabling conditions’ for gender pay equity” (p. 471). Comparing various countries, they find that a minimum wage and centralised agreements reduce the GWG, but in Germany, local wage-setting practices are more advantageous to women than national sectorial agreements.

These explanations are not mutually exclusive, and thus a mixed approach could be optimal in reducing the unexplained part of the gap, and understanding which policies are most appropriate for reducing it.

## 2. Data

The research has been carried out on data of the Structural Earning Survey (SES), and the additional form to the survey on bargaining at the first and second levels (centralised and decentralised agreements) (Sistema Informativo sulla Contrattazione Aziendale - SICA), performed by the Italian Institute of Statistics (ISTAT) in 2014. Every four years, the SES provides harmonised data at the European level on wage structures, with the aim of analysing structural changes in the labour market, and the effects of policies. The survey is conducted among plants (local units) that have at least 10 employees and belong to enterprises, organisations and institutions in industry and services, with the exception of the public administration. The SES allows analysis of aspects related to the human capital of employees (such as age, level of education, training and length of service), those closely related to position in the workplace (such as profession, type and duration of the contract, working time, supervisory tasks) and the characteristics of firms (industry, size, region, type of collective agreement).

In the additional form on first- and second-level bargaining, special attention is given to the state of industrial relations in each firm: union membership, participation in entrepreneurial associations, other types of incentives not included in second-level (decentralised) bargaining, and the content of decentralised bargaining (contractual terms, performance-based pay, etc.). Wage information includes various components and has several time references. The wage concept used in this research is the gross hourly wage, calculated for a representative month (October), divided by the number of hours worked in that month. The calculation includes all payments made by the company, including commissions and bonuses for night and weekend work, as well as overtime.

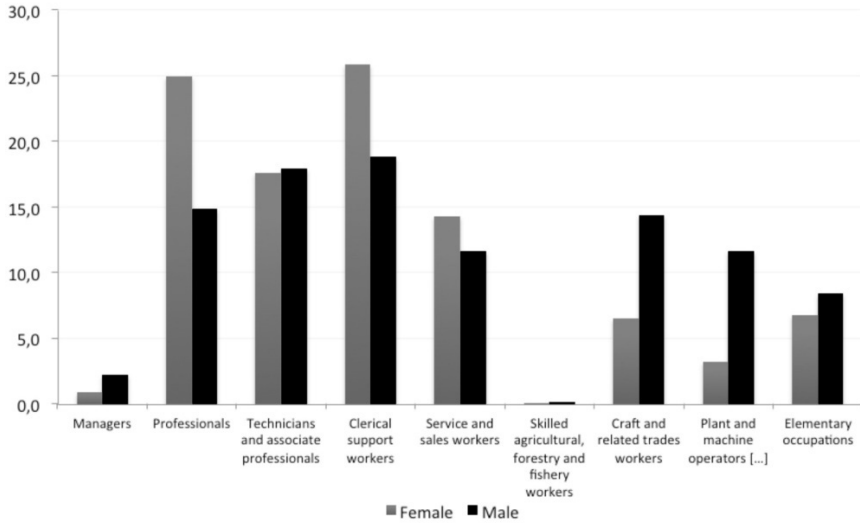
## 3. Overview of Gender Opportunities in the Italian Labour Market

As noted previously, one of the most important aspects of gender disparities in the labour market is sectorial and/or occupational segregation, which can cause an oversupply of women for these jobs, leading to a tendency of wages being depressed.

The SES results presented in Figure 1 confirm women's horizontal segregation in clerical, service, sales and technical functions.

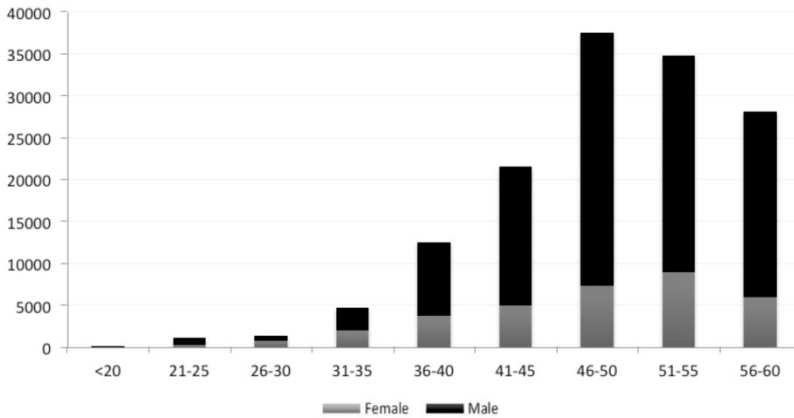
The "glass ceiling" preventing women from gaining leadership positions seems evident in the Italian situation. Despite the absolute number of managers increasing for both genders between 2010 and 2014, only 0.9% of women are managers, compared to 2.2% of men.

Figure 2 shows the levels of employees in managerial occupations throughout the working life cycle, highlighting how the number of male managers rapidly increases with age, while the number of female managers increases at a slower rate, so that the number of women in managerial positions is higher in the age class 51-55, while the number of men in the same positions is higher in the age class 46-50.



Source: Authors' calculations based on data from SES (2014).

Figure 1 Occupation by Gender and ISCO Classification (1 Digit)



Source: Authors' calculations based on data from SES (2014).

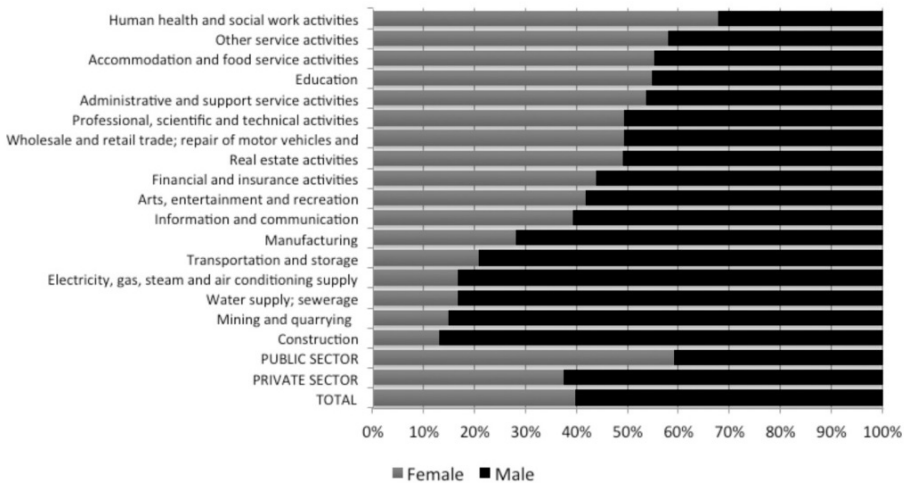
Figure 2 Managers by Gender and Age (%)

There are some significant sectorial differences between men and women in employment. As Figure 3 shows, the percentages for women are higher in health and education, while the percentages for men are higher in construction, mining, public utilities, manufacture, and transport. Similar shares for both genders can be found in professional, scientific and technical activities, real estate, and wholesale and retail trade.

Another SES result should be noted. Since health and social work and education are mostly provided by the public sector, significantly more women are employed in the public sector. About 15% of women work in the public sector, compared to 6.57%

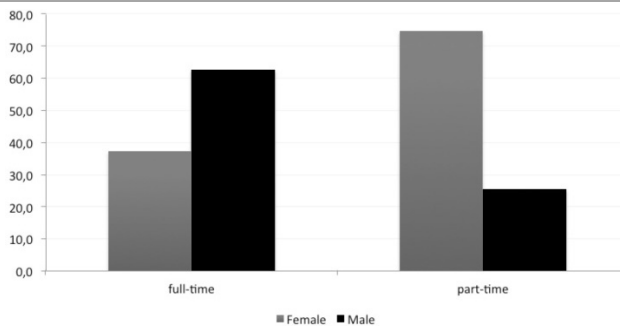
of men. Diversity in gender opportunities is also evident in this sector, where the gap between males and females is explained by the lack of women in top positions. Women represent 56.7% of all employees in the civil service, but occupy only 25% of managerial roles.

According to the SES, approximately 15% of all jobs are part-time, 37% of women work in part-time jobs, and about 74.7% of all part-time jobs are held by women.



Source: Authors' calculations based on data from SES (2014).

**Figure 3** Employees by Gender and NACE Rev. 2 (%)

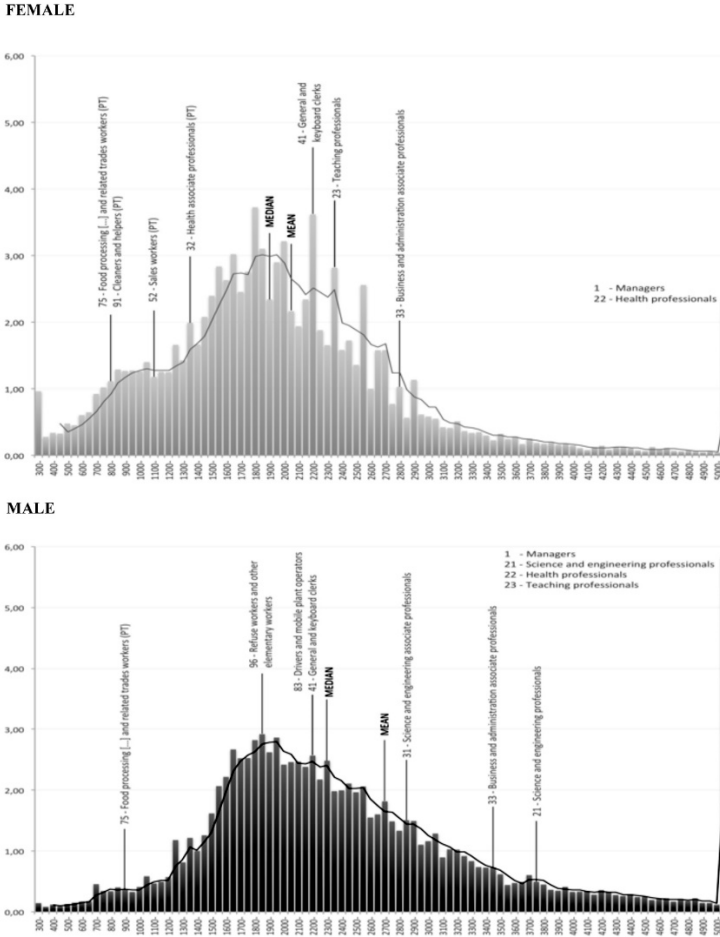


Source: Authors' calculations based on data from SES (2014).

**Figure 4** Employees by Gender and Type of Work (Full-Time/Part-Time) (%)

The distribution of employees by gender and monthly wages and the Kernel densities are presented in Figure 5. The difference in the areas under the functions can be used as an index of dissimilarity of gender opportunities in the labour market.

In 2014, the average monthly hourly wage was €13.04 for men and €11.00 for women. The difference is 17%. This gap increases with wages, keeping constant the structural characteristics of firms.



Source: Authors' calculations based on data from SES (2014).

**Figure 5** Employees by Gender and Monthly Wage Classes: Monthly Earnings (x-axis) and Percentage of Employees (y-axis)

Managers' hourly remuneration is equal to about five times that received by workers in a less qualified occupation, but among managers, men have an average hourly salary of €54.9, compared to the €36.5 received by women. On the other side of the distribution, 16.4% of women receive a monthly wage of less than €1000, compared to 5.7% of men. The two distributions of male and female salaries present a concentration on the right: the mean (more sensitive to outlier observations) is greater than the median. This difference is greater in the distribution of men's wages as a result of the higher share of top earners (monthly wages over €5,000). In addition, women's wages are much more concentrated towards the bottom, because many jobs are part-time, and jobs with wages below the median are mostly part-time. Moreover, the lower wages tend to be in the "female" occupations, some of which fall under the "five c's".



The male wages are more right-skewed than women's, all main male occupations are full-time, and the share of top earners (5.9%) among men is almost twice that of women (2.4%).

#### 4. Bargaining Regimes and the GWG: Measuring the Gap

Wage bargaining models can play an important role in gender disparities. All the studies that we are aware of rely on synthetic indexes (unionisation, centralisation, regulation) for the whole country, while our data contain a unique detail of information on the bargaining level and content. Therefore, it is possible to show how the GWG varies according to different degrees of centralisation within the same country. Moreover, the number of firms without any type of collective agreement is negligible, since the extension system applies in Italy.

The sample has been divided into three subsamples, depending on the different bargaining levels, selecting the individuals employed in firms with:

- 1) only a centralised collective-agreement level;
- 2) a decentralised bargaining level (company level, inter-firm or territorial level);
- 3) a decentralised bargaining level with an explicit target of equal opportunities between genders.

Some basic descriptive statistics on the firms in the sample are presented in the Appendix (Tables A.1 and A.2). It is noteworthy that the percentage of women does not vary across the different type of bargaining, inside the same sector. Instead, the decentralised and equal opportunity bargaining has the greater diffusion among big enterprises.

Some descriptive statistics on the wage distributions are presented in Table 1, while the distributions of employees broken down by gender and classes of monthly hourly wage, with Kernel densities for each distribution, in each of the three bargaining regimes are presented in Figures 6 to 8.

Under every type of bargaining regime, women are more educated and paid less. Women's seniority is slightly lower, but not in firms with equal opportunity agreements (Table 1). In these firms, wages are higher for both women and men.

**Table 1** Monthly Hourly Wage Classes (EUR), Seniority and Years of Education by Type of Bargaining and Gender

	Hourly earnings		Tenure		Education	
	Female	Male	Female	Male	Female	Male
Collective contract level	€ 11.04	€ 13.30	6.79	7.24	11.85	10.95
Decentralized bargaining level	€ 12.42	€ 16.20	9.05	10.82	12.1	11.55
Decentralized bargaining level (equal opportunities)	€ 16.19	€ 19.96	13.76	13.7	13.03	12.95
TOTAL	€ 11.82	€ 14.69	7.58	8.3	11.9	11.22

Source: Authors' calculations based on data from SES (2014) and SICA (2014).

In the Kernel functions, which synthetise the wage distributions (Figures 5 to 8), women prevail in the left tail – that is, among the “low-paid” workers. Around the

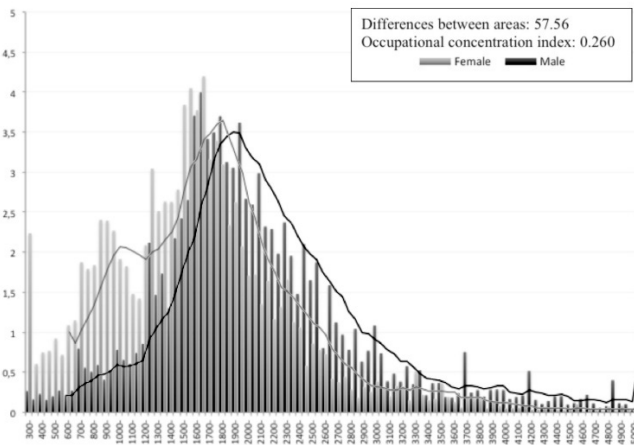
70% of the median wage, males begin to prevail in the right tail – that is, in “top-earners” positions.

There are great differences between the bargaining regimes. The total difference in the areas is 30.8% in the case of only centralised bargaining. This difference is greater in the case of decentralised bargaining, reaching 33.4%. Two opposite effects combine, related with the firms’ characteristics: since the firms with decentralised bargaining are bigger than the ones with only collective contracts, on one hand, the low-paid tail decreases as a result of a lower use of part-time work, while on the other hand, the high-paid tail increases because more resources are available to the bigger firms. In firms with equal opportunity agreements, the difference is lowered to 28.5%.

Also, an occupational concentration index (*occidx*) is recorded in Figures 6 to 8, calculated as:

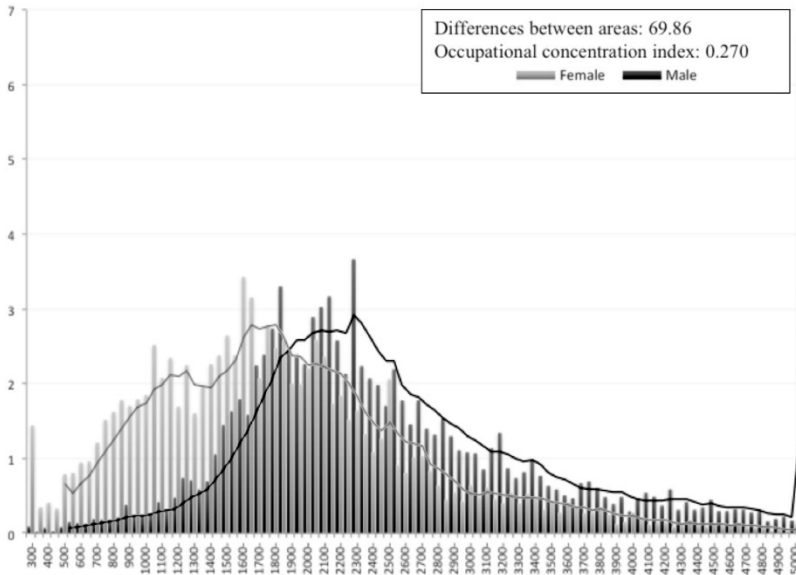
$$occidx = \sum_{isco=1}^9 \frac{abs(f_{fe} - f_{ma})}{200} . \tag{2}$$

This is a relative index, ranging from 0 to 1: it equals 0 if the relative frequencies of females-males ( $f_{fe}$  and  $f_{ma}$ ) in every ISCO profession have the same values (their difference equals zero), and it has its maximum value of 1 in the case of total gender segregation (males and females do not work in the same profession). The significant increase of the index in the firms with decentralised bargaining shows how a greater difference in the distribution of wages between males and females is associated to a greater gender occupational segregation. Women have mean values in education as large as men, but receive a lower average wage both in firms with collective contracts and with decentralised bargaining. Therefore, the decentralised bargaining regime does not seem to mark a change of pace compared to collective agreements: instead, it tends to strengthen the same trends (Stefania Cardinaleschi, Chiara Gnesi, and Paola Naddeo 2018). In contrast, where the problem of gender disparities is addressed as an explicit target, this indicator seems to show a remarkable improvement, since it decreases to 0.217.



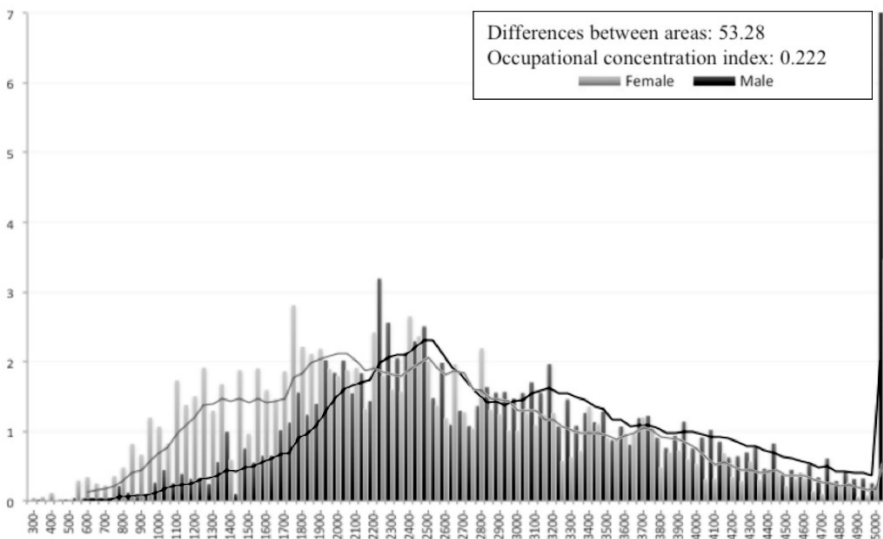
Source: Authors’ calculations based on data from SES (2014) and SICA (2014).

**Figure 6** Employees by Gender and Monthly Wage Classes, Centralised Agreements: Monthly Earnings (x-axis) and Percentage of Employees (y-axis)



Source: Authors' calculations based on data from SES (2014) and SICA (2014).

**Figure 7** Employees by Gender and Monthly Wage Classes, Decentralised Agreements: Monthly Earnings (x-axis) and Percentage of Employment (y-axis)



Source: Authors' calculations based on data from SES (2014) and SICA (2014).

**Figure 8** Employees by Gender and Monthly Wage Classes, Decentralised Agreements with Equal Opportunities Content: Monthly Earnings (x-axis) and Percentage of Employment (y-axis)

## 5. Econometric Strategy: Decomposing the Gap

In order to better understand the nature of wage gaps identified in the various bargaining regimes in the preceding section, the econometric strategy based on the Oaxaca-Blinder and the Juhn-Murphy-Pierce decompositions for linear models has been utilised. The differences in hourly earnings due to quantities (including human capital endowments) and prices (vector of wages) have been identified. Not only have the mean wage differences been decomposed, but the differential effects along the whole distribution of wages have also been evaluated through a quantile regression, in order to examine the “glass ceiling” and “sticky floor” phenomena (Christofides, Polycarpou, and Vrachimis 2013).

In the first step of the research, the approach of the counterfactual decomposition technique by Blinder (1973) and Oaxaca (1973) was followed. Two linear regressions, one for each gender, have been carried out to explain monthly hourly earnings. A large range of observable characteristics related to employees (gender, education, age, tenure and type of contract) and employers (sector of activity, size class, territorial variables, bargaining regime) was used. The estimated regression model for each individual (suppressing the individual subscripts to simplify the expression) is:

$$Hwage = \alpha + Age + Education + Longterm + PT + Tenure + Tenure^2 + ISCO + Task + Nutsc_i + Size_i + Reg_i + Barg_i + \varepsilon \quad (3)$$

The controls for individuals are the highest level of education (primary, secondary or tertiary education, *Education*) and age (below 30 years, between 30 and 45 years, and above 45 years, *Age*). The characteristics of the jobs are: years of tenure in the current job and its quadratic form; type of contract (permanent or fixed-term, *Longterm*); full-time or part-time job (*PT*); occupation (nine categories for major occupational groups, *ISCO*); supervisory tasks (*Task*). Firm attributes (indicated with the subscript *i*) are industry (12 categories, *Nutsc<sub>i</sub>*); size (six classes, *Size<sub>i</sub>*); region (*Reg<sub>i</sub>*) and the type of collective agreement (distinguishing between centralised collective agreements, decentralised agreements and decentralised agreements with a gender equality content, *Barg<sub>i</sub>*);  $\varepsilon$  is the error term.

The wage differential between males and females has been split into a part that is “explained” by differences in observed characteristics (some related to human capital, such as education and work experience, and others related to the job and the firm) and a residual, as described in Section 1:

$$Y_m - Y_f = b_m X_m - b_f X_f = b_m(X_m - X_f) + X_f(b_m - b_f), \quad (4)$$

where  $Y_m$  and  $Y_f$  are the mean values of the log of male and female wages,  $X_m$  and  $X_f$  are the mean values of the vectors of explanatory variables, and  $b_m$  and  $b_f$  are the vectors of the OLS estimates of the coefficients.

Table 2 shows the results of the decomposition. In 2014, the wage gap between males and females expressed in logarithms is equal to 0.17: one-third is explained by the observable differences. Among the observable differences, the personal characteristics of women are not paramount. The average increase in wages that women would have if they had the same characteristics as men is equal to 0.3% – i.e. the difference in the years of education and overall and specific work experience (tenure at the most

recent employer) explain a little more than one-sixth of the total wage gap. Approximately two-thirds of this amount (0.11% of 0.17) remains unexplained.

**Table 2** Oaxaca-Blinder Decomposition

Overall	Coef.	Std. error	t	P > t	[95% conf. interval]	
Male	2.57	0	627.45	0	2.56	2.58
Female	2.40	0	709.94	0	2.39	2.40
Difference	0.17	0.01	32.12	0	0.16	0.18
Explained	0.06	0	13.37	0	0.05	0.07
Unexplained	0.11	0	27.5	0	0.10	0.12

**Notes:** The Blinder-Oaxaca decomposition has been carried out with STATA (Ben Jann 2008).

**Source:** Authors' calculations based on data from SES (2014) and SICA (2014).

Finally, the effects of each predictor on the explained and unexplained overall results have been evaluated. Table 3 shows the fraction of the “row” gap that is explained by the “quantities” – i.e. the differences between females and males multiplied by the male coefficients.

The differences in experience explain about 15.9% of the gap in favour of men, while the greater education of women reduces this gap by 22.8%. The main causes of the wage differences are the concentration of women in part-time occupations (which explains over one half of the differential) and the under-representation of women in management roles. The impact of professional segregation is limited. On the firms' side, the major role (about 16% of the gap) is played by the concentration of women in industries with low productivity/wages.

**Table 3** Oaxaca-Blinder Decomposition: Individual Contributions of the Predictors to the Components of the Decomposition

Variable	% effect
Part-time	58.70%
Management/supervisory position	29.40%
Experience and tenure	15.90%
Occupational segregation (ISCO)	3.60%
Education	-22.80%
Economic activity (NACE)	22.10%

**Source:** Authors' calculations based on data from SES (2014) and SICA (2014).

As far as the “unexplained” part of the gap is concerned, 83% of it is due to one variable: the different economic treatment of experience. This evidence is hardly surprising, since as it was previously shown women's careers seem to come to a halt at a very early stage. Similar results have been found in other studies for Italy (Chiara Mussida and Matteo Picchio 2014a, b) and Germany (Bayer and Kuhn 2018).

In order to highlight differential effects in significant moments of the distribution, – i.e. to detect the differences in wages along the whole distribution, and not only in terms of the average value, – a second technique has been used. Following the Juhn-Murphy-Pierce method (Chinhui Juhn, Kevin M. Murphy, and Brooks Pierce 1993; Blaise Melly 2005), the decomposition has been iterated along the distribution. Again,

total differences increase with wage. The unexplained “wage effect”, which means that women receive lower remuneration with the same characteristics, always represents the most substantial part of the differences, and its increases with respect to wage. In the lower part of the distribution, however, also “endowments” effects are present, which disappear in the median part, and change heavily in sign in the top-earners band.

**Table 4** Juhn-Murphy-Pierce Decomposition (Reference Estimates: Average Coefficients)

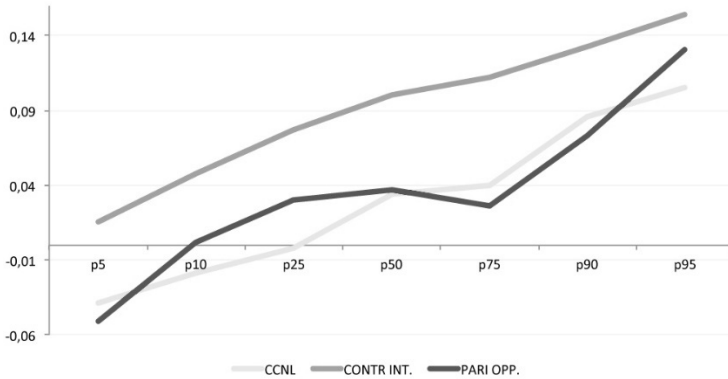
	T	Q	P	U
p5	0,042	-0,039	0,112	-0,031
p10	0,081	-0,007	0,108	-0,021
p25	0,105	0,018	0,106	-0,019
p50	0,169	0,065	0,113	-0,009
p75	0,218	0,088	0,116	0,014
p90	0,257	0,096	0,118	0,042
p95	0,298	0,12	0,13	0,047

**Notes:** The Juhn-Murphy-Pierce decomposition has been implemented in the do file jmpierce.

**Source:** Authors' calculations based on data from SES (2014) and SICA (2014).

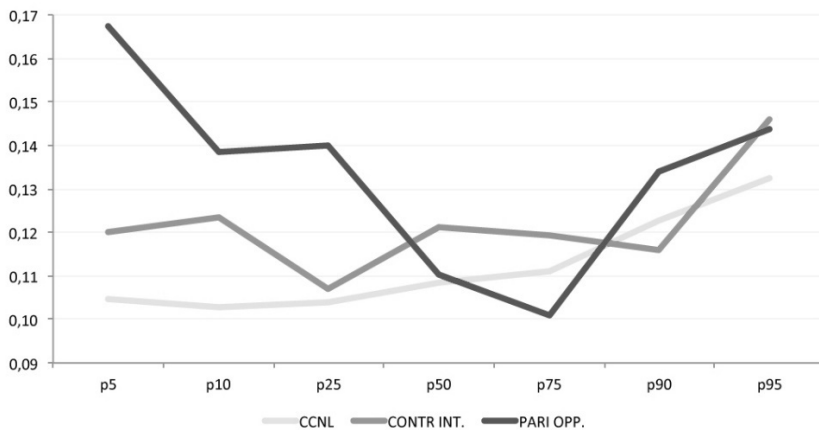
Quantile regressions by bargaining regime show a different picture in comparison with the one seen before: the better results of the decentralised contracts with equal opportunities content are limited only to the median classes; a U shape appears in the distribution of the unexplained gap. This part of the gap is smaller in firms with only a collective contract.

A “glass ceiling” is, in effect, in every bargaining regime, while the “floors” seem to be “stickier” in firms with an equal opportunities bargaining regime. One reason could be that unions are less sensitive for the lower end of the wage distribution, as already noted by Arulampalam, Booth, and Bryan (2007), and more explicitly by Schäfer and Gottschall (2015), who allude to a “male bias in collective bargaining” (p. 483). However, according to our results, it is not completely true that there is “more female disadvantage in better jobs” (Schäfer and Gottschall 2015, p. 472), since the highest wages are in the firms with agreements with equal opportunities content, where the row gender gap is the lowest. However, since in almost all income classes the unexplained part of the gap is lower in firms where there is only national-level bargaining, men seem to have been more able to profit from the change in the wage structure derived from the introduction of local (second-level) bargaining, including when there is equal opportunities content. It is also doubtful if performance-related pay methods augment transparency in the determination of wages, and therefore reduce discrimination (Hui-Yu Chiang and Fumio Ohtake 2014). Other insights beyond the reach of cross-sectional analysis will be the objective of the next step of the research, which will take advantage of the possibility of obtaining longitudinal data, thus, *inter alia*, reducing the bias produced by the omitted variables.



Source: Authors' calculations based on data from SES (2014) and SICA (2014).

**Figure 9** Explained Gender Gap by Type of Bargaining (%)



Source: Authors' calculations based on data from SES (2014) and SICA (2014).

**Figure 10** Unexplained Gender Gap by Type of Bargaining (%)

## 6. Conclusions

Our results suggest that the gender wage gap still exists in Italy and is not related to women's educational lag. Especially in firms with decentralised collective bargaining, women are better educated than men, and have similar work experience. The Italian labour market is mostly characterised by a strong horizontal and vertical segregation, so that women are concentrated in "female" industries, and face barriers that prevent them from gaining managerial positions. Negotiation practices that address the problem directly seem to reduce the gender gap, but only in the median part of the distribution of wages. A mix of policies that also consider the human-capital aspects could

successfully complement bargaining directed at eliminating the GWG. For instance, active labour-market policies could contribute to reducing the gap in the first percentile, by increasing women's training (Tindara Addabbo and Donata Favaro 2011) or improving attachment to the labour market. For the last percentiles, where the seniority differences and experience are more relevant, the introduction of quota systems for women could represent "a qualitative jump into a policy of exact goals and means" (International Institute for Democracy and Electoral Assistance 2009, p. 15; Istituto Nazionale di Statistica 2013). Other policies should help women to find the right balance between family responsibilities and work, without being penalised at home and in the workplace. However, as we have noted before, since many different factors can explain the gender wage gap, a multifaceted approach is also to be recommended in choosing the appropriate mix of policies to eliminate it. Remembering that "women-friendly policies" – such as parental leave, part-time work, and minimum-wage policies – have given rather "controversial" results (Schäfer and Gottschall 2015, p. 468), as well as have board quotas (Bertrand et al. 2014), a cautious attitude suggests that side effects must be anticipated and prevented.

The availability of new data for 2016 and 2018 will allow study of the dynamics of the GWG across different types of bargaining on the basis of longitudinal data. Moreover, it will be possible to appreciate in greater detail how reforms and fiscal measures after 2014 have impacted the GWG, and to assess how the growing tendency to expand and integrate existing corporate welfare measures in the agreements has had an influence (Cardinaleschi, Gnesi, and Naddeo 2018).



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## Appendix

**Table A.1** Firms by Sector, Size and Type of Bargaining

	Total (abs. value)	% on total	Centralised collective agreement level (% on total)	Decentralised bargaining level (DG)	
				% on total	With equal opportunities between genders % on DG
Section					
Industry	61.814	36.8	97.6	27.6	6.0
Construction	15.659	9.3	99.8	36.9	4.3
Market-oriented services	78.355	46.7	98.2	17.4	7.9
Social and personal services	11.996	7.1	98.2	21.9	9.4
Total	167.824	100.0	98.1	23.3	6.6
Size					
10-49	144.055	85.8	98.1	19.2	4.8
50-499	22.253	13.3	98.0	46.1	9.8
500 and above	1.516	0.9	98.8	80.4	21.3
Total	167.824	100.0	98.1	23.3	6.6

Source: Authors' calculations based on data from SES (2014) and SICA (2014).

**Table A.2** Feminisation (% Female Employees) and Type of Bargaining by Sector

Section	Total	Only centralised collective agreements	Decentralised bargaining level	Decentralized bargain level with equal opportunities between genders
Industry	26.8	28.3	25.3	28.8
Construction	10.7	10.2	10.5	6.5
Market-oriented services	44.2	43.3	44.4	45.6
Social and personal services	69.6	67.2	72.9	71.8
Total	38.2	38.9	37.4	40.7

Source: Authors' calculations based on data from SES (2014) and SICA (2014).

**Table A.3** Wage Regressions Results

### MALE

Number of obs = 56.256

$F(3056225) = 539,61$

Prob > F = 0

R-squared = 0,6019

Root MSE = 0,3049

Lw	Coef.	Robust std. error	T	P > t	[95% conf. interval]	
Highest successfully completed level of education (in years)	0,02	0,00	18,97	0,00	0,02	0,02
Age	0,02	0,00	7,61	0,00	0,01	0,02
Age (square)	0,00	0,00	-4,84	0,00	0,00	0,00
Tenure	0,01	0,00	6,63	0,00	0,01	0,01
Tenure (square)	0,00	0,00	-3,38	0,00	0,00	0,00
NACE (B-E)						
NACE (F)	0,06	0,01	5,69	0,00	0,04	0,09
NACE (G-M)	-0,03	0,01	-4,69	0,00	-0,05	-0,02
NACE (N-S)	-0,17	0,01	-17,27	0,00	-0,18	-0,15
SIZE CLASS (> 1000)						
SIZE CLASS (10-49)	-0,07	0,01	-6,98	0,00	-0,09	-0,05
SIZE CLASS (250-499)	-0,02	0,01	-2,31	0,02	-0,03	0,00
SIZE CLASS (500-999)	-0,01	0,01	-1,25	0,21	-0,03	0,01
SIZE CLASS (50-249)	-0,02	0,01	-1,84	0,07	-0,04	0,00
NUTS1						
NUTS2	-0,10	0,01	-13,31	0,00	-0,12	-0,09

NUTS3	-0,08	0,01	-7,98	0,00	-0,10	-0,06
NUTS4	0,00	0,01	-0,14	0,89	-0,02	0,01
Bargaining (general sectorial agreements)						
Bargaining (firm level agreements aimed at gender equality)	0,05	0,01	6,15	0,00	0,04	0,07
Bargaining (firm level agreements)	0,11	0,01	9,97	0,00	0,09	0,14
Citizenship and residence (resident with national citizenship)						
Citizenship and residence (resident with foreign citizenship)	-0,08	0,01	-5,25	0,00	-0,11	-0,05
Type of employment (indefinite duration)						
Type of employment temporary/fix duration)	-0,01	0,01	-0,53	0,59	-0,03	0,02
Type of employment (apprentices)	-0,13	0,02	-7,35	0,00	-0,16	-0,09
Management position (no)						
Management position (yes)	0,26	0,01	23,40	0,00	0,24	0,28
Part-time (no)						
Part-time (yes)	-0,65	0,01	-45,59	0,00	-0,68	-0,62
ISCO1						
ISCO2	-0,52	0,02	-23,37	0,00	-0,57	-0,48
ISCO3	-0,59	0,02	-26,51	0,00	-0,63	-0,54
ISCO4	-0,72	0,02	-32,65	0,00	-0,76	-0,68
ISCO5	-0,74	0,02	-31,00	0,00	-0,79	-0,70
ISCO6	-0,91	0,08	-11,39	0,00	-1,06	-0,75
ISCO7	-0,73	0,02	-29,92	0,00	-0,77	-0,68
ISCO8	-0,75	0,02	-31,24	0,00	-0,79	-0,70
ISCO9	-0,79	0,03	-31,67	0,00	-0,84	-0,74
_cons	7,63	0,06	129,54	0,00	7,51	7,74

**FEMALE**

Number of obs = 43.319

 $F(3043288) = 490,94$ 

Prob &gt; F = 0

R-squared = 0.6351

Root MSE = 0.35802

Lw	Coef.	Robust std. error	T	P >  t	[95% conf. interval]	
Highest successfully completed level of education (in years)	0,02	0,00	14,44	0,00	0,02	0,02
Age	0,02	0,00	4,89	0,00	0,01	0,03
Age (square)	0,00	0,00	-4,18	0,00	0,00	0,00
Tenure	0,01	0,00	10,25	0,00	0,01	0,02
Tenure (square)	0,00	0,00	-4,08	0,00	0,00	0,00
NACE (B-E)						
NACE (F)	-0,04	0,02	-2,45	0,01	-0,08	-0,01
NACE (G-M)	-0,04	0,01	-4,40	0,00	-0,06	-0,02
NACE (N-S)	-0,21	0,01	-18,43	0,00	-0,23	-0,19
SIZE CLASS (> 1000)						
SIZE CLASS (10-49)	-0,01	0,01	-0,83	0,41	-0,04	0,01
SIZE CLASS (250-499)	0,03	0,01	2,14	0,03	0,00	0,05
SIZE CLASS (500-999)	-0,01	0,01	-0,57	0,57	-0,03	0,02
SIZE CLASS (50-249)	0,00	0,01	-0,25	0,80	-0,03	0,02
NUTS1						
NUTS2	-0,09	0,01	-7,72	0,00	-0,12	-0,07
NUTS3	-0,11	0,02	-6,61	0,00	-0,15	-0,08
NUTS4	-0,01	0,01	-0,86	0,39	-0,02	0,01
Bargaining (general sectorial agreements)						
Bargaining (firm level agreements aimed at gender equality)	0,05	0,01	4,89	0,00	0,03	0,07
Bargaining (firm level agreements)	0,17	0,01	12,69	0,00	0,14	0,19
Citizenship and residence (resident with national citizenship)						
Citizenship and residence (resident with foreign citizenship)	0,01	0,02	0,58	0,56	-0,03	0,06
Type of employment (indefinite duration)						
Type of employment temporary/fix duration)	-0,03	0,02	-1,56	0,12	-0,06	0,01
Type of employment (apprentices)	-0,07	0,02	-3,87	0,00	-0,11	-0,04
Management position (no)						
Management position (yes)	0,27	0,01	20,48	0,00	0,24	0,30
Part-time (no)						
Part-time (yes)	-0,57	0,01	-77,75	0,00	-0,58	-0,56
ISCO1						
ISCO2	-0,12	0,05	-2,61	0,01	-0,22	-0,03
ISCO3	-0,20	0,05	-4,09	0,00	-0,29	-0,10
ISCO4	-0,28	0,05	-5,92	0,00	-0,38	-0,19

ISCO5	-0,37	0,05	-7,54	0,00	-0,46	-0,27
ISCO6	-0,50	0,07	-7,20	0,00	-0,63	-0,36
ISCO7	-0,57	0,05	-10,82	0,00	-0,68	-0,47
ISCO8	-0,40	0,05	-7,71	0,00	-0,50	-0,30
ISCO9	-0,58	0,05	-10,86	0,00	-0,69	-0,48
_cons	7,16	0,09	75,59	0,00	6,98	7,35

Source: Authors' calculations based on data from SES (2014) and SICA (2014).

**Table A.4** Blinder-Oxaca Decomposition

Number of strata	=	1			Number of obs.	=	99.575
Number of PSUs	=	99.575			Population size	=	5967168,6
Design df	=	99.574					
Model	=	linear					
Group	1	Gender	=	F	Number of obs.	=	43.319
Group	2	Gender	=	M	Number of obs.	=	56.256
	Lw	Coef.	Std. error	t	P >  t	[95% conf. interval]	
Total							
	Group_1	2,40	0,00	701,91	0,00	2,39	2,40
	Group_2	2,57	0,00	634,76	0,00	2,56	2,58
	Difference	-0,17	0,01	-32,19	0,00	-0,18	-0,16
	Explained	0,00	0,00	-1,29	0,20	-0,01	0,00
	Unexplained	-0,17	0,00	-40,78	0,00	-0,17	-0,16
Explained							
	Education	0,02	0,00	11,71	0,00	0,01	0,02
	Year	-0,01	0,00	-4,91	0,00	-0,01	0,00
	Tenure	-0,01	0,00	-5,86	0,00	-0,01	-0,01
	ISCO2	0,00	0,00	2,31	0,02	0,00	0,01
	ISCO3	0,01	0,00	3,05	0,00	0,00	0,02
	ISCO4	-0,09	0,00	-18,89	0,00	-0,10	-0,08
	ISCO5	-0,12	0,01	-21,62	0,00	-0,13	-0,11
	ISCO6	0,00	0,00	3,29	0,00	0,00	0,00
	ISCO7	0,08	0,01	12,05	0,00	0,07	0,09
	ISCO8	0,09	0,01	14,43	0,00	0,07	0,10
	ISCO9	0,02	0,00	4,55	0,00	0,01	0,03
Unexplained							
	Education	-0,02	0,02	-1,34	0,18	-0,05	0,01
	Age	-0,13	0,02	-6,72	0,00	-0,17	-0,09
	Tenure	0,02	0,00	3,62	0,00	0,01	0,03
	ISCO2	0,02	0,00	7,03	0,00	0,02	0,03
	ISCO3	0,06	0,01	7,05	0,00	0,05	0,08
	ISCO4	0,09	0,01	8,82	0,00	0,07	0,12
	ISCO5	0,08	0,01	8,95	0,00	0,07	0,10
	ISCO6	0,00	0,00	4,07	0,00	0,00	0,00
	ISCO7	0,03	0,01	4,95	0,00	0,02	0,05
	ISCO8	0,03	0,00	6,82	0,00	0,02	0,04
	ISCO9	0,03	0,00	7,06	0,00	0,02	0,03
	_cons	-0,38	0,06	-6,71	0,00	-0,49	-0,27

Source: Authors' calculations based on data from SES (2014) and SICA (2014).