

Is the State a Good Employer? An Analysis for Seven European Countries*

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Abstract

In this paper, we ask whether the state is a good employer, as far as adoption of equal opportunity policies (not only from a gender perspective) is concerned. We rely upon Eurostat data from the 2010 *Structure of Earnings Survey* for seven representative European economies (France, Germany, Hungary, Italy, Spain, Sweden, UK), emphasising issues of comparability in several ways. We poise public sector workers against their appropriate counterpart: employees from large private firms, complement the customary Oaxaca-Blinder decomposition with that obtained from Ñopo's matching approach, and consider workers characterised by similar levels of education and type of occupation (managers, professionals and other professional figures). We complement the analysis of the public or private wage premium with an analysis of discrimination by gender within the public and private sector. We find a public wage premium in the UK and Spain, and, to a smaller extent, also in Italy (only when we consider hourly earnings). The premium is generally larger for female public sector workers. Indeed gender pay discrimination exists (against females) both in the public and the private sector, but female civil servants are less discriminated than their private counterparts, especially in Italy, Germany and Spain. A simple econometric exercise confirms the finding that women are better off in the public sector, and highlights the role of wage-bargaining institutions in determining both public premium and gender discrimination.

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1. Introduction

Although the importance of the public sector for the total employment: in 2013, in Europe 15.0% of men and 37.0% for women were employed in the public sector, the economic literature has dedicated relatively little room to analyse its functioning. Labour market in the public sector presents many peculiar characteristics differentiating it from that in the private sector: criteria adopted to select, recruit and promote workers, to determine wage levels, as well as wage profiles, career advancement and industrial relations. Nevertheless the economic literature has dedicated relatively little room to analyse its functioning. This is surprising considering the importance of the public sector for the total employment: in 2013, in Europe 15.0% of men and 37.0% for women were employed in the public sector. In Norway, Denmark and Sweden more than 50% of female workers are public sector workers. In this paper, using a database not widely used, Eurostat's *Structure of Earnings Survey*, we investigate wage differences across public and private sector in seven European countries. Given the obvious relevance of gender issues in this field, we are interested from the outset of the analysis in the interaction between public vs. private and female vs. male earning gaps. We do not only inquire about the existence of a public wage premium, but we also ask whether the state is a good employer, as far as adoption of gender-equal opportunity policies is concerned. Hence we complement the analysis of the public wage premium with an analysis of gender discrimination within the public and private sector. A key feature of our analysis is that we stress issues of heterogeneity and comparability in a wider sense. Furthermore, we explore the role of various labour-market institutions in the determination of the public wage premium and gender discrimination.

A first important point concerning comparability is that we complement the customary Oaxaca-Blinder decomposition with that obtained from Ñopo's matching approach. There are however other issues of comparability. We believe that a correct comparison between the public and the private sector should focus mainly on the comparison between public employers and large private enterprises (hereafter LPE's; firms with more than 250 employees). Generally speaking, public employees have the same rights and wages independently of working in small or large establishments; this is not true in the private sector. Yet, trade-unions strength and human resource management tend to be more similar in the public sector and in LPE's. After all, the public sector could be deemed as a country's largest employer. Hence the comparison between public sector and LPE's seems to be the most correct one in principle. A further (and separate) issue is that some jobs exist only in the public sector; for these jobs (in public administration and defence; compulsory social security) there is no sense in comparing their earnings with the private sector. Only jobs and professional figures within similar sectors should be, at least in principle, considered. Finally we deal with another important source of heterogeneity, by providing estimates for workers characterised by similar levels of education and occupation. A less crucial feature of our analysis is that, unlike in most of the existing literature, we do not restrict our attention to hourly earnings, but we also take monthly earnings into account.

The structure of the paper is the following: section 2 provides a survey of the literature, section 3 describes in some detail our empirical approach and data, the SES (Structure of Earnings Survey). Sections 4 and 5 describe the main empirical results. The last section, as usually, contains some concluding remarks.

2. A brief survey of the empirical literature on public-private wage premium and some possible explanations

2.a) *The methodological issues*

The seminal analyses of Smith (1976a, 1976b) for the US involve estimation of a Mincerian wage equation: the significance of a dummy variable for public sector workers indicates the existence of a public sector wage premium. About this type of approach Gregory and Borland (1999) observe: “*One problem with the dummy variable approach to estimating the effect of a worker’s sector of employment on earnings is that it models the effect of sector as an “intercept” effect, return to other productivity-related characteristics and job attributes are restricted to be equal across sectors.*” Despite its limitations, this methodology has been applied in many studies, which almost invariably find a wage premium for public sector workers, comparatively higher for female workers (Giordano et al., 2011; Depalo et al., 2013).

An alternative approach, following the methodology proposed by Oaxaca, 1973, and Blinder, 1973, involves estimating separate Mincerian equations for workers from public and private sector, and using the parameter estimates to decompose the average public-private wage gap into effects (a) attributable to differences in characteristics and (b) to the returns to these characteristics (the latter component reflecting the wage premium paid by the public sector to workers with the same characteristics as those of workers in the private sector).

Applications of this approach usually yield that differences in characteristics account for most of the public-private wage gap, but also confirm the presence of a public sector wage premium, which is greater for women. Difficulties with this approach (a selection bias) arise when wages across sectors depend on unobserved productivity-related characteristics, and sorting of employees between sectors on the basis of those characteristics occurs. The results of studies correcting for this bias, however, do not always coincide. While for most countries the wage premium widens in some cases the contrary happens. Furthermore, the magnitude of the selection effect differs greatly between studies. To overcome the difficulty of accessing variables that give rise to credible exclusion restrictions, some studies present evidence from longitudinal databases that use fixed effects to control for workers’ time invariant characteristics and which, at the same time, allow the researcher to work with the subsample of workers that switch sectors. The usual finding of these studies is that the size of the public sector wage premium falls considerably in relation to those obtained using cross-sectional data, to the point that the premium even disappears in some cases.

The existence, in general, of lower wage dispersion in the public sector implies, in turn, that the analysis of the average wage differential provides an incomplete view of the different processes of wage determination in the public and private sectors. This has led several authors to examine inter-sector wage differentials across the wage distribution using decomposition techniques of differences in wage distributions. Their results largely coincide, confirming that, in general, the role of the characteristics varies at specific points in the wage distribution, so that the public sector wage premium is greater in the lower part of the distribution and becomes smaller in the higher quantiles, so as to at a given point the premium usually becomes negative. Finally, recent studies highlight the need to analyse wage differentials solely in the case of workers that are strictly comparable (that is, in the case of those whose observable characteristics are present in both the public and private sectors). Indeed, as noticed by Disney (2007) and Ramos et al. (2014), some jobs can exist only in the public sector; for these jobs there is no sense in a comparison with the private sector. These studies undertake their analyses employing the matching methodology proposed by Nopo (2008), which allows the common support of the distributions and its impact on the decomposition of wage differentials to be established between sectors, and in some cases they find that the number of fully comparable individuals between the two sectors is very small. Other solutions to the problem of heterogeneity include the Fortin et al. (2010) decomposition. Ramos et al. (2014) provide a recent application of this technique.

2.b) *The main results*

We now turn to a survey of the results obtained for the public wage premium in our countries of interest.

The evidence for France (INSEE, 1996; Fournier, 2001; Fougere and Pouget, 2004; Bargain and Melly, 2007; Lucifora and Meurs, 2006; Ghinetti and Lucifora, 2013; Dickson *et al.*, 2010; Brindusa *et al.*, 2011; Giordano *et al.*, 2011; Tepe *et al.*, 2012) suggests that in the public sector there is a positive (negative) premium for low (high) skilled workers, and that being a female also grants a positive premium.

On the other hand, the weight of the German evidence (Dickson *et al.*, 2010; Tepe and Kroos, 2010; Brindusa *et al.*, 2011; Giordano *et al.*, 2011) indicates that this public sector is characterised by a significant wage premium for women, not for men. Like in France, quantile regression analyses demonstrate that the size of premium is largest for the lowest paid in the German public sector, although Giordano *et al.*'s (2011) results suggest the premium at the bottom decile is two to three times greater than the comparable situation in France, resulting in a steeper diminishing of the premium as workers' earnings increase. Disaggregating workers by level of education suggests it is high skilled men rather than low skilled men that experience the public sector pay penalty (Tepe and Kroos 2010), while among women all levels of education benefit from a premium (Giordano *et al.* 2011), possibly tapering out at the top among highly educated women (Tepe and Kroos, 2010).¹

Evidence for Italy (Cannari *et al.*, 1989; Bardasi, 1996; Brunello and Dustmann, 1997; Lucifora, 1999; Comi *et al.*, 2002), Lucifora and Meurs, 2006; Ghinetti and Lucifora, 2013) suggests a relatively large raw (positive) differential between the public and the private sector. After conditioning on a set of variables, the public sector premia are moderate for males (10 percent) and higher for females (18–20 percent).

The Spanish evidence (Lassibille, 1998; Albert *et al.*, 1999; García-Pérez and Jimeno, 2005, 2007; Depalo *et al.*, 2013; Hospido and Moral, 2013) points to a high public premium. This premium is higher for females. Depalo *et al.* (2013) and Hospido and Moral (2013) also estimate quantile regressions, obtaining similar results to those obtained for other countries, namely a lower wage premium in the upper part of the wage distribution. When differentiating the sample by skill level, Hospido and Moral (2013) obtain a negative wage premium for high-skilled public sector workers located in the upper part of the wage distribution.

Sweden registers lower average pay in the public sector compared to the private sector. Decomposition of the pay gap finds a small public wage penalty over the 1995-2004 period (Tepe *et al.* 2012). Adjusted at the various quantile points of the wage distribution, Tepe *et al.* find no evidence of a diminishing public sector pay difference, unlike in France and Germany.

The general finding in the UK (Rees and Shah, 1995; Disney and Gosling, 1998, 2003; Blackaby *et al.*, 1999; Bender and Elliott, 1999; Lucifora and Meurs, 2006; Ghinetti and Lucifora, 2013; Brindusa *et al.*, 2011; Bozio and Disney, 2011) is that, on average, civil servants earn more than comparable workers in the private sector. The average premium is close to 5 percent, although it is much higher for females (15–18 percent) as compared to men (2–5 percent); approximately half of the raw gap is explained by differences in observed characteristics.

Most of the numerous empirical contributions about the private-public wage gap have investigated its size and quantitative characteristics, with fairly little attempt to provide support for various explanations of the premium associated with working in the public sector. In our study, the different sets of institutional rules that govern public sector pay determination (wage regulation, pay comparability standards, ...) in the seven countries under scrutiny provide an interesting source of variation for assessing whether these factors have an impact on this premium.

2.c) *Some possible explanations*

¹ Over a worker's life course, Dickson *et al.*'s (2010) analysis suggests the opposite to France with an inverted U-shape pay premium in Germany such that workers with tenure of 16-34 years' experience a small positive premium.

The paper of Krueger and Summers (1986) is widely considered as the starting point of the recent renewed interest of the literature on inter-industry wage differentials. This paper shows that observed wage differentials across sectors do not appear to conform to the neoclassical theory of wage determination. Along similar lines, a wide empirical literature has sought to analyse the wage gap between workers in the public vs. the private sector. The most commonly found explanations for the existence of pay premia or penalties associated with working in the public sector relate to market power (the strong unionisation of the public sector being the main issue in this respect). Disney (2007) also quotes the often forgotten role of the monopsonistic power of public employers, and stresses the need to control in empirical analysis for compositional effects, the role of deferred pay (seniority being of paramount importance in the public sector) and of worker selection.

Several studies suggest that in many countries the pay structure is more compressed in the public sector (Katz and Krueger, 1991; Bazen *et al.* 1998; Bender and Elliott, 1999; Lucifora, 1999), due to a wider union presence and a more effective use of union power by the least skilled in the public sector, which leads to a reduction of wage dispersion in among low-wage public employees. Conversely, public opposition to high earnings for public servants is often responsible for substantially lower pay rates of senior public employees than those of comparable individuals in the private sector (Katz and Krueger, 1991; Lucifora, 1999). All over Europe, there is in the public sector a tradition of strong employment protection and a high level of trade union representation. While some of these protections may have been weakened during the crisis, employment resilience in predominantly publicly funded jobs in most countries during 2008–2013 support the case that, in relative terms, public sector employment levels have been less affected by the crisis than private sector employment (Eurofound, 2014).

A distinction of national systems of pay regulation in the public services across three dimensions has emerged in the literature: first, the extent to which collective bargaining is subject to unilateral employer regulation (see Marsden 1994), second, in light of current trends towards decentralisation,¹ the degree of local wage negotiation either as part of national pay settlements or as a substitute to them (see OECD 1993); and thirdly, the degree of integration of the system of pay determination across all employees in public services (see Rubery and Fagan 1994, 1995). The polar opposite to free collective bargaining is unilateral employer regulation, in which the state freely imposes its own decision regarding the appropriate pay settlement reflecting its requirements for the planned fiscal, labour market, and managerial objectives. This situation is exemplified by the position of *Beamte* in Germany, who represent around 40% of the public sector workforce. *Beamte* are excluded from national collective bargaining agreements, and have their pay determined unilaterally by state regulation.

Not much work exists on the effects on public-private pay gaps of combined differences in bargaining procedures and wage setting policies in the public and the private sector. A notable exception is the study of Dell'Aringa and Lanfranchi (1999b). They suggest that in this context three possible main outcomes can be identified.

The first is a centralised pay system, where wages are set at a central level both in the private and in the public sector. One example is France, where the main difference is that private sector bargaining establishes industry minima for wages and employment conditions, whilst, in the public sector, unions also take part in national wage negotiations but the outcome is not legally binding for the government (Gauvin *et al.* 1993; Guillotin and Meurs, 1999).

The second is a two-regime system, where pay policies are decentralised in one sector (typically the private sector) and centralised in the other one. This is the situation of Italy, where private wages are set at the industry level by collective bargaining, and public ones at the central level – with only small reforms in the recent past towards a higher decentralisation in the public sector (Bettio and Villa 1993; Dell'Aringa and Della Rocca, 1999a).

Finally, there exists a decentralised pay system, both in the public and private sectors. This is the case of the UK, where unions are weaker and single public agencies can decide about recruitment and pay scales. In Great Britain, civil servants are covered by a variety of different

arrangements, which include review bodies, index linking, and decentralised as well as centralised collective bargaining. Also contracting-out and competitive tendering have contributed to a progressive “privatisation” of pay setting *procedures* (Bender and Elliott, 1999). Thus, whilst in Great Britain private sector pay is used as a reference point for pay determination in the public service (at least in some part of it), France and Italy lack any application of this comparability principle and the reference is, in general, given by cost of living and public budget conditions (minimum wage legislation also has different applications in these countries, being relevant in Great Britain and France, but absent in Italy).

Also differences across countries in the rules governing public and private sector employment are likely to affect the structure and magnitude of the public sector pay gap within each country. In the private sector, as opposed to the public, the degree of regulation is generally much lower in all countries. France and Italy, however, are still characterised by quite strict job protection measures, extensive coverage of collective agreements and a rather centralised system of pay determination. In France, Italy and Spain public servants are still generally recruited through open, competitive examinations and, once hired, enjoy lifetime contracts in which seniority plays a major role. A proper focus on non-competitive mechanisms of wage determination also requires that greater attention should be paid to theories of labour market segmentation (Reich *et al.*, 1973; Doeringer and Piore, 1985), and to the strengthening role of the so-called atypical labour contracts in recent years. Despite being an endogenous variable, the share of temporary contracts can yield insight on the link between dual labour markets and the bargaining power of permanent workers.

3. The empirical framework

3.a) *The basic approach*

The Oaxaca-Blinder specification is arguably still today the workhorse in the empirical literature about wage differentials². This approach separates the part of the observed gap that can be explained by observable differences between workers (group differences in endowments and other characteristics), and a residual, unexplained, part that has been variously labelled as the “premium”, the residual advantage to be employed in a certain job, the discriminatory gap, and so on. Clearly, this unexplained part could depend on unobservable characteristics of workers and jobs. In fact, taking stock of our short survey of the literature, we maintain that the most important problem to be faced in an empirical analysis of this kind is heterogeneity³. Workers and employers are different between public and private sector but also within sectors, although the differences are higher in the private sector. Workers differ for factors such as their innate capabilities, their acquired skills and their preferences. One obvious way to deal with heterogeneity is to divide the sample in many (more homogenous) subsamples to take into account the differences between workers. The problem is that each subsample may be too small to grant statistical representativeness to the results. To deal with the problems of heterogeneity, the literature has suggested various alternatives. An attractive solution is the Ñopo matching procedure (Ñopo, 2008) that considers the differences in the supports of the distributions of observable characteristics, i.e. the fact that some jobs exist only in the public sector and public sector workers generally do not perform jobs performed in the private sector. The

² A very large survey of the alternative decomposition methods can be found in Fortin *et al.* (2010).

³ There is in fact another very serious problem (widely analysed in the study of gender pay gap): the selection bias linked to the decisions to work, and to work in a given sector. This problem is usually dealt through the Heckman correction. In order to avoid an identification problem this correction needs some variables that influence the choice of sector by workers but not wage determination *per se*. In general, these variables are represented by socio-demographic characteristics distinguishing employed workers from the rest of population. Unfortunately, as already observed by Ramos *et al.* (2014), the database we use (the SES), only including matched employer-employee data, does not contain such variables.

Ñopo nonparametric approach does not require the estimation of earnings equations and divides the gap into four additive elements: two of these are analogous to the elements of the Oaxaca-Blinder decomposition (but computed only over the common support), while the other two account for differences in the supports. The Ñopo approach, however, can easily incur in a curse of dimensionality.

In this paper, we deal with the problem of heterogeneity in a manner explicitly connected with the main public sector workers' characteristics highlighted in the literature. We systematically allow for gender-based differences. We present the results of a Oaxaca-Blinder decomposition comparing public sector workers with private employees from LPE's. Then we replicate these exercises adopting the Ñopo approach.

Unlike in most of the existing literature, we shall not restrict our attention to hourly earnings. The reason for being interested also in monthly earnings comes from considering that people, especially women, who want to work into the public sector may choose this sector because it permits to better conciliate work and family life. In other words they may prefer lower earnings in exchange for shorter and more flexible working schedules. Dealing with hourly earnings could bias the analysis, and wrongly lead to the conclusion that a wage premium (actually based on shorter work hours) exists, if people are in fact interested in the purchasing power of their total earnings. Besides, as shall become clearer below, hourly earning may in some cases be affected by potentially serious measurement errors⁴.

We consider seven countries for the analysis: the four largest Euro-area countries (Italy, France, Germany and Spain) plus the United Kingdom, the largest country outside Euro-area, Sweden, a relatively large economy well-known for the peculiar characteristics of its welfare state and the high incidence of public sector on female employment, and Hungary, a country from Central-Eastern Europe for which there exists a number of important structural indicators (including those about pay determination in the public sector from Grimshaw *et al.*, 2012). We will exclude from the analysis part-timers, young workers (below 20 years of age) and workers for which there is ambiguity about the size or the proprietary form (public or private) of their establishments.

3.b) The data

The dataset employed in the paper is the *Structure of Earning Survey* (SES). We mainly rely on the most recent wave of this dataset, referring to 2010. These data have already been utilised in order to analyse earning differences between public and private sector by Ramos *et al.* (2014) for a single country (Spain) and by de Castro *et al.* (2013) for a broad analysis of the whole European Union. Here we will compare a limited number of countries with a deeper analytical focus than the one adopted by de Castro *et al.* (2013).

As often happens, the choice of a particular dataset present pros and cons. The most important cons in SES data are the inclusion of information only on employed workers (not on the rest of population) and the absence of any information on work histories. However, there are many important pros in using the SES data for the kind of analysis developed in this paper.

The SES provides, for each country, harmonised information on a much larger number of employees than other sources and this allow a more correct comparison between countries. The data concern the level of remuneration, the individual characteristics of employees (sex, age, occupation, job tenure, etc.) and of their employers (economic activity, size and location), for all sectors of economic activity, except NACE classification A (Agriculture, forestry and fishing), T (Activities of households as employers; undifferentiated goods- and services- producing activities of households for own use) and U (Activities of extra-territorial organisations and bodies). The SES

⁴ In fact, a more correct comparison should be based on annual earnings because only at this level it is possible to include in earnings some components of the remuneration such as annual bonuses and allowances not paid at each pay period. A problem with annual earnings is that a year is a relatively long period and some employees may not work with the same employer throughout all this period.

generally does not cover micro-enterprises. Indeed, as indicated by Eurostat, “*the inclusion of enterprises with fewer than 10 employees ... is optional*”.

For our purpose it is fundamental to note that SES provides direct information on the proprietary form (public or private) of the firm in which the employee works. When dealing with other cross-country databases, such as EU-SILC, proprietary form is not directly provided by the questionnaire and must be obtained making some restrictive hypotheses (often inferring it from the NACE classification).

All the data presented in this paper are weighted for the *grossing-up factor* for employees indicated in the database. Further information about our sample is provided in Table A.2 of the Appendix.

Both the Oaxaca-Blinder decomposition and the Ñopo approach are based upon the estimation of a Mincerian equation like (1):

$$(1) \quad \ln W_i = \beta_i X_i + \varepsilon_i$$

The list of explanatory variables is provided below.

X-Variables
Sector of economic activity
education
health
utilities
others
Gender
Male
Age
20-29 years
20-39 years
40-49 years
50-59 years
60+ years
Type of occupation
Managers
Professionals
Others
Highest successfully completed level of education and training⁵
ISCED 1
ISCED 2
ISCED 3
ISCED 4
ISCED 5
ISCED 6
length of service in enterprise, in years (job tenure)
Type of employment contract⁶
Indefinite duration
temporary/ fixed duration
Apprentice

⁵ Germany provides a reduced classification for the level of education attained, limited to three groups.

⁶ Not all countries present data on apprenticeship. Sweden does not provide data for *Type of employment contract* at all.

Note that relying on the rich information of the SES dataset, we included among the explanatory variables some variables not commonly found there, such as firm size and job tenure.

4. Public premium and gender discrimination: the main results

We now present our results, starting from the Oaxaca-Blinder decomposition and the Ñopo approach for the whole sample and then proceeding to the various sub-sample refinements.

4.a) The public wage premium (whole sample)

In all the tables giving the Oaxaca-Blinder decomposition, the unexplained gap (the variable defined as the premium) is expressed in log-points. Values significant at the 1% significance level are underlined twice, and values significant at the 5% level (but not at the 1% level) are underlined once. Obviously, values that are not underlined are significant at a level higher than 5%.

The results based on monthly earnings (Table 4.1) show the existence of a positive wage premium for public sector workers for Italy (not for males), Spain (again not for males) and UK respect to LPE's. Both positive and negative premia are in line with the values found in de Castro *et al.* (2013). Some differences emerging vis-à-vis the latter study (mainly for Germany and the UK) must be ascribed, in our opinion, to the fact that their raw wage gaps are measured from samples also including part-timers and Sector O.

The highest negative public wage differential (for males and females) is registered in Hungary (-0.178); the penalty becomes particularly high when we consider only the male segment (-0.217). This confirms, even for this country, that women who work in the public sector are relatively less disadvantaged than men.

Table 4.1 - Oaxaca-Blinder decomposition (monthly and hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Monthly earnings							
Males	<u>-0.078</u>	-0.010	<u>-0.101</u>	<u>-0.036</u>	<u>-0.149</u>	<u>-0.048</u>	<u>-0.217</u>
Females	<u>0.057</u>	<u>-0.034</u>	<u>-0.044</u>	<u>0.026</u>	<u>-0.105</u>	<u>0.071</u>	<u>-0.121</u>
Total	<u>-0.035</u>	<u>-0.021</u>	<u>-0.076</u>	-0.007	<u>-0.130</u>	-0.004	<u>-0.178</u>
Hourly earnings							
Males	-0.006	0.018	<u>-0.111</u>	<u>0.022</u>	<u>-0.144</u>	<u>0.013</u>	<u>-0.216</u>
Females	<u>0.133</u>	<u>-0.024</u>	<u>-0.054</u>	<u>0.064</u>	<u>-0.096</u>	<u>0.128</u>	<u>-0.124</u>
Total	<u>0.046</u>	-0.002	<u>-0.088</u>	<u>0.042</u>	<u>-0.123</u>	<u>0.055</u>	<u>-0.179</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

If we consider hourly earnings we obtain a similar picture. However a (tiny) wage premium shows up for males in Italy and generally public sector workers are better off vis-à-vis the monthly earnings case (Germany is an exception to this rule). Summing up, the results of Oaxaca-Blinder decomposition show the existence of a public sector wage premium in Italy, Spain and UK, and of a negative premium in France, Germany, Sweden and particularly in Hungary.

One of the main limits of Oaxaca-Blinder decomposition model is that its results represent only mean values that may not represent adequately all the employees. There are several ways to deal with heterogeneity. We first present results obtained with the Ñopo approach for the whole sample and then proceed to disaggregation by subgroups. In all the tables presenting the Ñopo approach, the unexplained part of the gap (the premium) is expressed as a percentage of the mean

wage for the LPE's group. Confidence intervals are available for this gap, to whose values apply the same underlining conventions described for the Oaxaca-Blinder decomposition.

Applying the Ñopo approach the results based on monthly earnings (Table 4.2) now show the existence of a negative wage premium also for public sector workers for Italy (not for females) and Spain. The UK remains the only country with a pervasive positive premium.

Conversely Hungary continues to be the country in which the public sector workers suffer the most heavy wage penalty (for both males and females).

Table 4.2 - Ñopo approach (monthly and hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Monthly earnings							
Males	<u>-0.042</u>	<u>-0.042</u>	<u>-0.139</u>	<u>-0.053</u>	<u>-0.127</u>	-0.011	<u>-0.239</u>
Females	<u>0.040</u>	<u>-0.033</u>	<u>-0.084</u>	<u>-0.012</u>	<u>-0.096</u>	<u>0.065</u>	<u>-0.155</u>
Total	<u>-0.019</u>	<u>-0.040</u>	<u>-0.126</u>	<u>-0.039</u>	<u>-0.118</u>	<u>0.007</u>	<u>-0.206</u>
Hourly earnings							
Males	<u>-0.014</u>	<u>-0.025</u>	<u>-0.152</u>	-0.004	<u>-0.124</u>	<u>0.049</u>	<u>-0.239</u>
Females	<u>0.083</u>	<u>-0.021</u>	<u>-0.096</u>	<u>0.031</u>	<u>-0.091</u>	<u>0.111</u>	<u>-0.157</u>
Total	<u>0.013</u>	<u>-0.024</u>	<u>-0.139</u>	<u>0.008</u>	<u>-0.115</u>	<u>0.065</u>	<u>-0.207</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

Considering hourly earnings (Table 4.2) we obtain a partially different picture: a positive wage premium in the public sector reappears in the aggregate results for Italy, Spain and the UK. Summing up, the results from the Ñopo approach are less favourable for public sector workers. They are (slightly) worse off than in the Oaxaca-Blinder case.

4.b) The public wage premium (educational-attainment and occupation samples)

We now proceed to the results obtained separating the sample in three levels of educational attainment. We consider three distinct groups of educational attainment, in order to simplify our analysis and to make international comparisons more reliable. In fact, Germany provides data for educational attainment considering only three groups (instead of the traditional six ISCED levels) and we reproduce the same classification for all countries⁷. So we define: Low (level of education-attained) the aggregation of level 1 and 2; Medium the aggregation of level 3 and 4; High the aggregation of level 5 and 6.

The results from Table 4.3 (a e b) basically show that the level of educational attainment has a systematic impact on the wage premium. Generally, in line with most of the available evidence, less educated employees are relatively better off in the public sector than in LPE's.⁸

Table 4.3a - Oaxaca-Blinder decomposition by level of education (monthly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Low level of education							
Males	-0.015	<u>0.157</u>	<u>-0.048</u>	<u>-0.030</u>	<u>-0.135</u>	<u>-0.054</u>	<u>-0.040</u>

⁷ ISCED 97 classification divides education in six groups or levels: level 1 - Pre-primary education and primary education; level 2 - Lower secondary education; level 3 - Upper secondary; level 4 - Post-secondary non-tertiary education; level 5 -Tertiary education– first stage; level 6 - Tertiary education - second stage. We consider level A of education the first two levels of ISCED 97, level B the third and the fourth levels of ISCED 97, level C the fifth and the sixth levels of ISCED 97

⁸ A similar result emerges from the work of Naddeo (2016) for all the countries considered in this paper with the exclusion of Hungary (country not considered by the author).

Females	<u>0.087</u>	<u>0.111</u>	0.000	<u>0.059</u>	<u>-0.093</u>	<u>0.085</u>	0.015
Total	0.016	<u>0.136</u>	<u>-0.024</u>	0.003	<u>-0.119</u>	0.001	<u>-0.019</u>
Medium level of education							
Males	<u>-0.091</u>	-0.001	<u>-0.079</u>	<u>-0.039</u>	<u>-0.123</u>	<u>-0.063</u>	<u>-0.186</u>
Females	<u>0.062</u>	<u>-0.047</u>	<u>-0.028</u>	0.006	<u>-0.070</u>	<u>0.083</u>	<u>-0.084</u>
Total	<u>-0.043</u>	<u>-0.023</u>	<u>-0.057</u>	-0.018	<u>-0.101</u>	-0.009	<u>-0.146</u>
High level of education							
Males	<u>-0.071</u>	<u>-0.112</u>	<u>-0.195</u>	<u>-0.026</u>	<u>-0.169</u>	-0.017	<u>-0.404</u>
Females	0.028	<u>-0.056</u>	<u>-0.148</u>	0.020	<u>-0.117</u>	<u>0.058</u>	<u>-0.346</u>
Total	-0.033	<u>-0.086</u>	<u>-0.184</u>	-0.004	<u>-0.140</u>	0.010	<u>-0.377</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

Table 4.3b - Oaxaca-Blinder decomposition by level of education (hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Low level of education							
Males	<u>0.027</u>	<u>0.163</u>	<u>-0.055</u>	<u>0.045</u>	<u>-0.135</u>	0.005	<u>-0.041</u>
Females	<u>0.128</u>	<u>0.119</u>	-0.013	<u>0.122</u>	<u>-0.091</u>	<u>0.134</u>	0.017
Total	<u>0.060</u>	<u>0.144</u>	<u>-0.034</u>	<u>0.073</u>	<u>-0.118</u>	<u>0.055</u>	<u>-0.018</u>
Medium level of education							
Males	-0.019	0.020	<u>-0.087</u>	<u>0.031</u>	<u>-0.116</u>	0.002	<u>-0.178</u>
Females	<u>0.144</u>	<u>-0.045</u>	<u>-0.036</u>	<u>0.069</u>	<u>-0.057</u>	<u>0.139</u>	<u>-0.085</u>
Total	<u>0.041</u>	-0.010	<u>-0.066</u>	<u>0.050</u>	<u>-0.091</u>	<u>0.052</u>	<u>-0.142</u>
High level of education							
Males	0.005	<u>-0.068</u>	<u>-0.208</u>	-0.001	<u>-0.164</u>	<u>0.039</u>	<u>-0.418</u>
Females	<u>0.119</u>	-0.031	<u>-0.162</u>	0.026	<u>-0.111</u>	<u>0.117</u>	<u>-0.360</u>
Total	<u>0.053</u>	<u>-0.050</u>	<u>-0.197</u>	0.012	<u>-0.134</u>	<u>0.067</u>	<u>-0.391</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

For employees with Low level of education there are wage premia in four of the countries considered (except in Germany, Sweden and Hungary) with monthly earnings (the premium is very week in in Spain and UK). When we consider hourly earnings, these premia for Italy, France, Spain and UK invariably increase.

For employees with a medium level of education the public wage premium is always negative when considering monthly earnings, whereas it becomes positive for Italy, Spain and the UK when considering hourly earnings.

However, size and significance of the premium for these four countries are smaller for employees with the medium level of education than for employees with the low level of education, when we consider hourly earnings.

Finally, when we consider the employees with High level of education, we observe that, with monthly earnings, a public sector wage penalty appears in any situations. This is not true, however, for female workers, especially in Italy and UK. When we consider hourly earnings the situation changes very little.

On the whole, the public sector wage premium is more sizeable for low-educated employees than high-educated employees. This is consistent with a stronger role played in wage determination by trade unions in the public sector.

In Table 4.4 we consider the main results from \tilde{N} opo approach by level of education.

Table 4.4a - Ñopo approach by level of education (monthly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Low level of education							
Males	<u>0.006</u>	<u>0.052</u>	<u>-0.084</u>	<u>-0.048</u>	<u>-0.111</u>	-0.011	<u>-0.062</u>
Females	<u>0.020</u>	<u>0.081</u>	<u>-0.038</u>	<u>0.024</u>	<u>-0.095</u>	<u>0.137</u>	-0.003
Total	<u>0.009</u>	<u>0.060</u>	<u>-0.071</u>	<u>-0.026</u>	<u>-0.108</u>	<u>0.021</u>	<u>-0.033</u>
Medium level of education							
Males	<u>-0.051</u>	<u>-0.008</u>	<u>-0.133</u>	<u>-0.050</u>	<u>-0.100</u>	-0.018	<u>-0.192</u>
Females	<u>0.051</u>	<u>-0.016</u>	<u>-0.070</u>	<u>0.002</u>	<u>-0.072</u>	<u>0.072</u>	<u>-0.078</u>
Total	<u>-0.022</u>	<u>-0.011</u>	<u>-0.116</u>	<u>-0.034</u>	<u>-0.093</u>	<u>0.004</u>	<u>-0.145</u>
High level of education							
Males	<u>-0.098</u>	<u>-0.122</u>	<u>-0.165</u>	<u>-0.061</u>	<u>-0.179</u>	-0.004	<u>-0.328</u>
Females	<u>0.025</u>	<u>-0.097</u>	<u>-0.156</u>	<u>-0.045</u>	<u>-0.123</u>	<u>0.046</u>	<u>-0.319</u>
Total	<u>-0.058</u>	<u>-0.115</u>	<u>-0.164</u>	<u>-0.054</u>	<u>-0.160</u>	<u>0.008</u>	<u>-0.324</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

Table 4.4b - Ñopo approach by level of education (hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Low level of education							
Males	<u>0.036</u>	<u>0.042</u>	<u>-0.098</u>	<u>0.015</u>	<u>-0.108</u>	<u>0.041</u>	<u>-0.069</u>
Females	<u>0.054</u>	<u>0.066</u>	<u>-0.062</u>	<u>0.087</u>	<u>-0.098</u>	<u>0.170</u>	-0.006
Total	<u>0.041</u>	<u>0.049</u>	<u>-0.088</u>	<u>0.038</u>	<u>-0.107</u>	<u>0.070</u>	<u>-0.037</u>
Medium level of education							
Males	<u>-0.023</u>	<u>0.002</u>	<u>-0.148</u>	<u>0.005</u>	<u>-0.097</u>	<u>0.054</u>	<u>-0.185</u>
Females	<u>0.099</u>	<u>-0.009</u>	<u>-0.081</u>	<u>0.049</u>	<u>-0.068</u>	<u>0.119</u>	<u>-0.078</u>
Total	<u>0.012</u>	<u>-0.002</u>	<u>-0.131</u>	<u>0.019</u>	<u>-0.090</u>	<u>0.070</u>	<u>-0.141</u>
High level of education							
Males	<u>-0.074</u>	<u>-0.090</u>	<u>-0.173</u>	<u>-0.030</u>	<u>-0.176</u>	<u>0.044</u>	<u>-0.334</u>
Females	<u>0.065</u>	<u>-0.071</u>	<u>-0.168</u>	<u>-0.020</u>	<u>-0.117</u>	<u>0.091</u>	<u>-0.323</u>
Total	<u>-0.029</u>	<u>-0.085</u>	<u>-0.172</u>	<u>-0.026</u>	<u>-0.156</u>	<u>0.056</u>	<u>-0.330</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

For employees with the low level of education there are wage premia in three of the countries considered (Italy, France and the UK) with monthly earnings. When we consider hourly earnings, in Sweden, Germany and Hungary there is a penalty for employees in the public sector.

For employees with a medium level of education the public wage premium is always negative when considering monthly earnings (with the partial exception of the UK), when considering hourly earnings it becomes positive in Spain and the UK.

When we consider the employees with high level of education, we observe a public sector wage penalty appears in any situations (both for monthly and hourly earnings). This is not true, however, for female workers, especially in Italy and UK.

Once again, the public sector wage premium is more sizeable for low-educated employees than high-educated employees. However, like before, public sector workers are slightly worse off with the Ñopo approach than with the Oaxaca-Blinder decomposition.

We now proceed to the results disaggregated by type of occupation⁹ (Table 4.5).

⁹ This classification is based on the “Codes for occupation (ISCO-08)”. In the group, defined as Managers, there are workers which occupation belongs to the Major Group 1 (Managers) of ISCO-08; in the second

In general we observe wage penalty in working in the public sector for Managers and Professionals both for monthly and hourly earnings with some exception especially for Spain and the UK (and partially for Italy). The situation is different when we consider the residual group of Others type of occupation: in this case we register in general a premium working in the public sector with some notable exception (Hungary, Germany and Sweden). The picture we have described is valid applying both the Oaxaca-Blinder and the Ñopo approach.

Table 4.5.a Oaxaca-Blinder decomposition by type of occupation (monthly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Managers							
Males	-0.086	<u>-0.105</u>	<u>-0.301</u>	-0.013	<u>-0.160</u>	<u>0.073</u>	<u>-0.342</u>
Females	-0.004	-0.051	<u>-0.128</u>	0.041	<u>-0.119</u>	<u>0.156</u>	<u>-0.227</u>
Total	-0.069	<u>-0.080</u>	<u>-0.252</u>	0.011	<u>-0.147</u>	<u>0.104</u>	<u>-0.306</u>
Professionals							
Males	<u>-0.036</u>	<u>-0.072</u>	<u>-0.117</u>	<u>-0.044</u>	<u>-0.188</u>	-0.027	<u>-0.326</u>
Females	<u>0.109</u>	<u>-0.055</u>	<u>-0.056</u>	0.018	<u>-0.143</u>	<u>0.049</u>	<u>-0.175</u>
Total	<u>0.021</u>	<u>-0.061</u>	<u>-0.090</u>	-0.015	<u>-0.164</u>	0.003	<u>-0.243</u>
Others							
Males	<u>-0.083</u>	<u>0.080</u>	<u>-0.055</u>	<u>-0.026</u>	<u>-0.105</u>	<u>-0.084</u>	<u>-0.134</u>
Females	<u>0.033</u>	0.008	<u>-0.025</u>	<u>0.024</u>	<u>-0.079</u>	<u>0.082</u>	<u>-0.066</u>
Total	<u>-0.048</u>	<u>0.044</u>	<u>-0.043</u>	-0.005	<u>-0.097</u>	<u>-0.024</u>	<u>-0.112</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

Table 4.5.b - Oaxaca-Blinder decomposition by type of occupation (hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Managers							
Males	-0.058	-0.043	<u>-0.316</u>	0.006	<u>-0.159</u>	<u>0.132</u>	<u>-0.344</u>
Females	0.032	-0.014	<u>-0.143</u>	0.059	<u>-0.118</u>	<u>0.214</u>	<u>-0.229</u>
Total	-0.039	-0.028	<u>-0.267</u>	0.029	<u>-0.146</u>	<u>0.163</u>	<u>-0.308</u>
Professionals							
Males	<u>0.040</u>	<u>-0.049</u>	<u>-0.129</u>	-0.004	<u>-0.187</u>	0.016	<u>-0.335</u>
Females	<u>0.227</u>	<u>-0.042</u>	<u>-0.062</u>	<u>0.027</u>	<u>-0.141</u>	<u>0.100</u>	<u>-0.184</u>
Total	<u>0.116</u>	<u>-0.044</u>	<u>-0.100</u>	0.010	<u>-0.163</u>	<u>0.048</u>	<u>-0.252</u>
Others							
Males	<u>0.055</u>	<u>0.090</u>	<u>-0.139</u>	<u>0.159</u>	<u>-0.105</u>	<u>0.075</u>	<u>-0.059</u>
Females	<u>0.079</u>	0.009	<u>-0.041</u>	<u>0.092</u>	<u>-0.065</u>	<u>0.144</u>	<u>-0.064</u>
Total	0.003	<u>0.056</u>	<u>-0.054</u>	<u>0.067</u>	<u>-0.086</u>	<u>0.046</u>	<u>-0.107</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

More in detail, if we apply the Oaxaca-Blinder decomposition, we find for Managers a penalization in working in the public sector except for the UK (both for males and females) and Spain (only for females with monthly earnings and both for males and females with hourly earnings)¹⁰. With the Ñopo approach we obtain a positive wage premium in the public sector again in the UK (both for males and females), while the positive values for Spain (both for males and females) with hourly earnings are not significant.

For Professionals if we apply Oaxaca-Blinder decomposition we find a positive public wage premium only for females in the UK and in Italy with monthly earnings (values for females in Spain

group, Professionals, the workers of the Major Group 2 (Professionals) and 3 (Technicians and associate Professionals); in the third group, Others, all other workers.

¹⁰ When we consider hourly earnings we register a positive value for wage premium for females Managers in Italy but it is not statistically significant.

are not significant); we register positive values in Italy (both for males and females), the UK and Spain (only for females) with hourly earnings. The picture is a little bit different when we apply the Ñopo approach: we always find a negative public wage premium with the exception of females in Italy (both with monthly and hourly earnings).

For the workers belonging to the residual group - Others - the picture is not well defined: we obtain with Oaxaca-Blinder decomposition positive values for males and females in the UK, Spain, France (not significant for females) and Italy with hourly earnings, while we have positive values only for females in the UK, Spain and Italy and for males in France (for females are not significant) with monthly earnings. The picture is very similar if we apply the Ñopo approach.

Table 4.6.a - Ñopo decomposition by type of occupation (monthly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Managers							
Males	<u>-0.142</u>	<u>-0.131</u>	<u>-0.205</u>	0.000	<u>-0.137</u>	<u>0.232</u>	<u>-0.321</u>
Females	<u>-0.183</u>	<u>-0.115</u>	<u>-0.207</u>	-0.013	<u>-0.075</u>	<u>0.253</u>	<u>-0.263</u>
Total	<u>-0.150</u>	<u>-0.127</u>	<u>-0.206</u>	-0.004	<u>-0.125</u>	<u>0.238</u>	<u>-0.308</u>
Professionals							
Males	<u>-0.046</u>	<u>-0.073</u>	<u>-0.155</u>	<u>-0.077</u>	<u>-0.174</u>	<u>-0.078</u>	<u>-0.289</u>
Females	<u>0.041</u>	<u>-0.077</u>	<u>-0.092</u>	<u>-0.042</u>	<u>-0.121</u>	<u>-0.022</u>	<u>-0.200</u>
Total	<u>-0.025</u>	<u>-0.074</u>	<u>-0.139</u>	<u>-0.065</u>	<u>-0.158</u>	<u>-0.064</u>	<u>-0.249</u>
Others							
Males	<u>-0.034</u>	<u>0.044</u>	<u>-0.107</u>	<u>-0.042</u>	<u>-0.078</u>	<u>-0.060</u>	<u>-0.155</u>
Females	<u>0.042</u>	<u>0.037</u>	<u>-0.064</u>	<u>0.010</u>	<u>-0.070</u>	<u>0.112</u>	<u>-0.069</u>
Total	<u>-0.011</u>	<u>0.042</u>	<u>-0.096</u>	<u>-0.024</u>	<u>-0.076</u>	<u>-0.017</u>	<u>-0.122</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

Table 4.6.b - Ñopo decomposition by type of occupation (hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Managers							
Males	<u>-0.116</u>	<u>-0.094</u>	<u>-0.212</u>	0.015	<u>-0.136</u>	<u>0.308</u>	<u>-0.323</u>
Females	<u>-0.151</u>	<u>-0.098</u>	<u>-0.220</u>	0.007	<u>-0.073</u>	<u>0.322</u>	<u>-0.262</u>
Total	<u>-0.122</u>	<u>-0.095</u>	<u>-0.214</u>	0.012	<u>-0.124</u>	<u>0.313</u>	<u>-0.309</u>
Professionals							
Males	<u>-0.029</u>	<u>-0.049</u>	<u>-0.164</u>	<u>-0.038</u>	<u>-0.171</u>	<u>-0.030</u>	<u>-0.294</u>
Females	<u>0.096</u>	<u>-0.060</u>	<u>-0.101</u>	<u>-0.019</u>	<u>-0.117</u>	<u>0.012</u>	<u>-0.204</u>
Total	<u>0.002</u>	<u>-0.052</u>	<u>-0.148</u>	<u>-0.032</u>	<u>-0.155</u>	<u>-0.019</u>	<u>-0.254</u>
Others							
Males	<u>0.001</u>	<u>0.044</u>	<u>-0.126</u>	<u>0.021</u>	<u>-0.076</u>	<u>0.012</u>	<u>-0.148</u>
Females	<u>0.081</u>	<u>0.040</u>	<u>-0.080</u>	<u>0.070</u>	<u>-0.065</u>	<u>0.168</u>	<u>-0.068</u>
Total	<u>0.025</u>	<u>0.039</u>	<u>-0.115</u>	<u>0.038</u>	<u>-0.073</u>	<u>0.054</u>	<u>-0.117</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

The results obtained by applying different decomposition methods clearly show that the public sector tends to penalize - with a few partial exceptions - the highest professional profiles than the private sector.

This is generally consistent with what has emerged with respect to the level of education attained by the workers: the public sector allows for greater wage premium for workers with Low level of education attained. We can assume that the employees who reached the top management levels generally have a higher level of education attained.

4.c) Gender and discrimination

Until now all the results have been presented also within a gender perspective, i.e. all the results of our analysis are presented separately for males and females. The evidence collected shows that women are relatively better in public sector than men. In many cases a positive public sector wage premium exists only for females or some segment of females employees. In this section we provide some additional evidence on this very important issue, by addressing the gender issue from a different perspective. We provide estimates of the gender pay gap and of the gender discrimination following the Oaxaca-Blinder decomposition and the Ñopo approach (resorting to the same control variables used for the comparison between public and private sectors) in the whole economy, in the public sector and in LPE's. This is done in order to assess whether working into the public sector is likely to be associated with lower gender discrimination. Following most of the literature, we define gender pay gap the overall unadjusted difference between male and female earnings¹¹ and gender discrimination the unexplained part of this difference. In the following tables (table 7 and table 8) for the sake of simplicity we report only the estimates for gender discrimination respectively obtained with the Oaxaca-Blinder and with the Ñopo approaches both for monthly and hourly earnings.

The countries with the highest value of gender discrimination (measured with monthly earnings) are UK and Spain, followed by Hungary, while the countries with the lowest value are Sweden and France (Table 4.7).

Table 4.7 - Gender discrimination. Oaxaca-Blinder approach (monthly and hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Monthly earnings							
LPEs	<u>0.149</u>	<u>0.120</u>	<u>0.154</u>	<u>0.220</u>	<u>0.120</u>	<u>0.244</u>	<u>0.263</u>
Public sector	<u>0.158</u>	<u>0.129</u>	<u>0.122</u>	<u>0.149</u>	<u>0.124</u>	<u>0.178</u>	<u>0.249</u>
Total economy	<u>0.149</u>	<u>0.130</u>	<u>0.152</u>	<u>0.190</u>	<u>0.124</u>	<u>0.223</u>	<u>0.170</u>
Hourly earnings							
LPEs	<u>0.126</u>	<u>0.106</u>	<u>0.148</u>	<u>0.204</u>	<u>0.114</u>	<u>0.190</u>	<u>0.253</u>
Public sector	<u>0.090</u>	<u>0.121</u>	<u>0.116</u>	<u>0.137</u>	<u>0.113</u>	<u>0.132</u>	<u>0.240</u>
Total economy	<u>0.104</u>	<u>0.114</u>	<u>0.139</u>	<u>0.179</u>	<u>0.113</u>	<u>0.164</u>	<u>0.166</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

In Italy we find a value of 0.149 log points and in Germany of 0.152 log points. Normally for a woman to work in the public sector implies lower gender discrimination; France represents the only exception. The only country in which there were no significant differences between public sector and LPEs is Sweden. In Italy the discrimination coefficient is equal to 0.149 log points in LPE's and of 0.158 in the public sector. In Germany these values are respectively equal to 0.154 and to 0.122 log points, in Spain 0.220 and 0.149 log points. High level for gender discrimination in LPEs are obtained for Hungary and UK, respectively 0.263 and 0.244; however these countries present quite different value for gender discrimination in the public sector: respectively 0.249 and 0.178. Therefore in Italy there is the lowest value for gender discrimination in the public sector.

With hourly earnings gender discrimination (the unexplained part of the gender pay gap) tend to be reduced. This happens especially in the UK and Italy; Italy is once again the country with the lowest discrimination in the public sector (Table 4.7).

¹¹ According to the definition used by Eurostat "the gender pay gap, abbreviated as GPG, refers to the difference in average wages between men and women. The unadjusted gender pay gap is calculated as the difference between the average gross hourly earnings of male and female paid employees as a percentage of average gross hourly earnings of male paid employees." The GPG is defined *unadjusted* because it is measured "without correcting for national differences in individual characteristics of employed men and women - the main reason is that, at this stage, there is neither consensus nor scientific evidence on which adjustment method should be used."

When we measure the gender discrimination using the Ñopo approach we obtain higher values for the whole economy, LPEs and public sector both for monthly and hourly earnings, with the only exception of Spain (Table 4.8).

Table 4.8 – Gender discrimination. Ñopo approach (monthly and hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Monthly earnings							
LPEs	<u>0.155</u>	<u>0.143</u>	<u>0.165</u>	<u>0.236</u>	<u>0.129</u>	<u>0.284</u>	<u>0.288</u>
Public sector	<u>0.223</u>	<u>0.140</u>	<u>0.138</u>	<u>0.136</u>	<u>0.158</u>	<u>0.211</u>	<u>0.306</u>
Total economy	<u>0.184</u>	<u>0.155</u>	<u>0.170</u>	<u>0.196</u>	<u>0.147</u>	<u>0.247</u>	<u>0.228</u>
Hourly earnings							
LPEs	<u>0.130</u>	<u>0.125</u>	<u>0.159</u>	<u>0.216</u>	<u>0.123</u>	<u>0.225</u>	<u>0.273</u>
Public sector	<u>0.111</u>	<u>0.133</u>	<u>0.133</u>	<u>0.124</u>	<u>0.146</u>	<u>0.157</u>	<u>0.294</u>
Total economy	<u>0.113</u>	<u>0.142</u>	<u>0.163</u>	<u>0.179</u>	<u>0.142</u>	<u>0.193</u>	<u>0.219</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

The discrimination by level of education does not give us a clear picture. Generally the gender discrimination is higher for high level of education, with two relevant exception: Spain and Hungary.

For the high level of education the values range from 0.091 for the public sector in Spain to 0.221 for the LPE's in Hungary (monthly earnings). In Sweden and Italy (only when we consider monthly earnings) the gender discrimination is higher in Public sector than in LPE's, the opposite is true for the all other countries.

For the low level of education the gender discrimination is higher in the public sector than in LPE's only in France and Hungary; in the latter the public sector gender discrimination assumes a very high value: 0.279 log points.

Table 4.9a - Gender discrimination by level of education. Oaxaca-Blinder decomposition (monthly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Low level of education							
LPEs	<u>0.146</u>	<u>0.092</u>	<u>0.144</u>	<u>0.238</u>	<u>0.122</u>	<u>0.280</u>	<u>0.230</u>
Public	<u>0.121</u>	<u>0.152</u>	<u>0.057</u>	<u>0.177</u>	<u>0.091</u>	<u>0.174</u>	<u>0.279</u>
Total	<u>0.155</u>	<u>0.126</u>	<u>0.147</u>	<u>0.186</u>	<u>0.114</u>	<u>0.251</u>	<u>0.164</u>
Medium level of education							
LPEs	<u>0.129</u>	<u>0.109</u>	<u>0.147</u>	<u>0.242</u>	<u>0.121</u>	<u>0.252</u>	<u>0.273</u>
Public	<u>0.116</u>	<u>0.112</u>	<u>0.110</u>	<u>0.177</u>	<u>0.101</u>	<u>0.172</u>	<u>0.244</u>
Total	<u>0.118</u>	<u>0.111</u>	<u>0.147</u>	<u>0.218</u>	<u>0.116</u>	<u>0.231</u>	<u>0.151</u>
High level of education							
LPEs	<u>0.173</u>	<u>0.150</u>	<u>0.162</u>	<u>0.148</u>	<u>0.100</u>	<u>0.214</u>	<u>0.221</u>
Public	<u>0.210</u>	<u>0.111</u>	<u>0.139</u>	<u>0.091</u>	<u>0.143</u>	<u>0.181</u>	<u>0.211</u>
Total	<u>0.198</u>	<u>0.143</u>	<u>0.178</u>	<u>0.145</u>	<u>0.135</u>	<u>0.202</u>	<u>0.180</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

Table 4.9b - Gender discrimination by level of education. Oaxaca-Blinder decomposition (hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
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Low level of education							
LPEs	<u>0.116</u>	<u>0.085</u>	<u>0.132</u>	<u>0.219</u>	<u>0.117</u>	<u>0.203</u>	<u>0.220</u>
Public	<u>0.068</u>	<u>0.142</u>	<u>0.051</u>	<u>0.162</u>	<u>0.079</u>	<u>0.118</u>	<u>0.268</u>
Total	<u>0.123</u>	<u>0.114</u>	<u>0.130</u>	<u>0.175</u>	<u>0.103</u>	<u>0.170</u>	<u>0.158</u>
Medium level of education							
LPEs	<u>0.109</u>	<u>0.097</u>	<u>0.142</u>	<u>0.230</u>	<u>0.230</u>	<u>0.190</u>	<u>0.260</u>
Public	<u>0.043</u>	<u>0.104</u>	<u>0.104</u>	<u>0.163</u>	<u>0.163</u>	<u>0.124</u>	<u>0.235</u>
Total	<u>0.071</u>	<u>0.096</u>	<u>0.132</u>	<u>0.208</u>	<u>0.208</u>	<u>0.163</u>	<u>0.146</u>
High level of education							
LPEs	<u>0.162</u>	<u>0.130</u>	<u>0.159</u>	<u>0.134</u>	<u>0.096</u>	<u>0.180</u>	<u>0.217</u>
Public	<u>0.142</u>	<u>0.107</u>	<u>0.134</u>	<u>0.083</u>	<u>0.137</u>	<u>0.139</u>	<u>0.203</u>
Total	<u>0.138</u>	<u>0.129</u>	<u>0.173</u>	<u>0.134</u>	<u>0.129</u>	<u>0.160</u>	<u>0.176</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

We observe similar results when we consider the $\tilde{\text{Nopo}}$ approach.

Table 4.10.a -Gender discrimination by level of education. $\tilde{\text{Nopo}}$ approach (monthly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Low level of education							
LPEs	<u>0.148</u>	<u>0.117</u>	<u>0.175</u>	<u>0.265</u>	<u>0.128</u>	<u>0.335</u>	<u>0.295</u>
Public	<u>0.121</u>	<u>0.160</u>	<u>0.087</u>	<u>0.191</u>	<u>0.088</u>	<u>0.182</u>	<u>0.416</u>
Total	<u>0.159</u>	<u>0.142</u>	<u>0.184</u>	<u>0.209</u>	<u>0.114</u>	<u>0.271</u>	<u>0.262</u>
Medium level of education							
LPEs	<u>0.138</u>	<u>0.132</u>	<u>0.160</u>	<u>0.266</u>	<u>0.131</u>	<u>0.300</u>	<u>0.312</u>
Public	<u>0.167</u>	<u>0.121</u>	<u>0.130</u>	<u>0.176</u>	<u>0.113</u>	<u>0.210</u>	<u>0.284</u>
Total	<u>0.147</u>	<u>0.138</u>	<u>0.161</u>	<u>0.239</u>	<u>0.124</u>	<u>0.261</u>	<u>0.201</u>
High level of education							
LPEs	<u>0.217</u>	<u>0.175</u>	<u>0.180</u>	<u>0.190</u>	<u>0.127</u>	<u>0.254</u>	<u>0.247</u>
Public	<u>0.306</u>	<u>0.154</u>	<u>0.152</u>	<u>0.104</u>	<u>0.183</u>	<u>0.215</u>	<u>0.304</u>
Total	<u>0.273</u>	<u>0.189</u>	<u>0.192</u>	<u>0.161</u>	<u>0.169</u>	<u>0.229</u>	<u>0.252</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

Table 4.10.b -Gender discrimination by level of education. $\tilde{\text{Nopo}}$ approach (hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Low level of education							
LPEs	<u>0.110</u>	<u>0.110</u>	<u>0.155</u>	<u>0.244</u>	<u>0.121</u>	<u>0.246</u>	<u>0.276</u>
Public	<u>0.062</u>	<u>0.148</u>	<u>0.080</u>	<u>0.177</u>	<u>0.072</u>	<u>0.121</u>	<u>0.396</u>
Total	<u>0.116</u>	<u>0.129</u>	<u>0.158</u>	<u>0.194</u>	<u>0.114</u>	<u>0.177</u>	<u>0.250</u>
Medium level of education							
LPEs	<u>0.115</u>	<u>0.116</u>	<u>0.155</u>	<u>0.251</u>	<u>0.124</u>	<u>0.226</u>	<u>0.292</u>
Public	<u>0.051</u>	<u>0.111</u>	<u>0.124</u>	<u>0.159</u>	<u>0.093</u>	<u>0.155</u>	<u>0.269</u>
Total	<u>0.077</u>	<u>0.124</u>	<u>0.152</u>	<u>0.229</u>	<u>0.112</u>	<u>0.212</u>	<u>0.190</u>
High level of education							

LPEs	<u>0.203</u>	<u>0.151</u>	<u>0.176</u>	<u>0.169</u>	<u>0.123</u>	<u>0.218</u>	<u>0.243</u>
Public	<u>0.178</u>	<u>0.152</u>	<u>0.148</u>	<u>0.095</u>	<u>0.176</u>	<u>0.161</u>	<u>0.296</u>
Total	<u>0.171</u>	<u>0.178</u>	<u>0.197</u>	<u>0.139</u>	<u>0.168</u>	<u>0.178</u>	<u>0.246</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

For the gender discrimination by type of occupation (managers, professionals and others) we observe low value for managers in Spain, Italy and Germany for managers in the public sector. In Spain (monthly earnings) and in Italy (hourly earnings) the results are not statically significant. The low values for public sector is not replicated by LPE's, with the partial exception of Spain.

Generally, the gender discrimination is lower in the public sector than LPE's for all type of occupation (the few exceptions are France and Hungary for others and Sweden for professionals, both for monthly and hourly earnings).

Table 4.11.a -Gender discrimination by Type of occupation. Oaxaca-Blinder approach (monthly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Managers							
LPEs	<u>0.188</u>	<u>0.174</u>	<u>0.237</u>	<u>0.074</u>	<u>0.156</u>	<u>0.337</u>	<u>0.363</u>
Public	<u>0.072</u>	<u>0.146</u>	<u>0.084</u>	0.051	<u>0.140</u>	<u>0.170</u>	<u>0.332</u>
Total	<u>0.107</u>	<u>0.189</u>	<u>0.228</u>	<u>0.125</u>	<u>0.159</u>	<u>0.270</u>	<u>0.163</u>
Professionals							
LPEs	<u>0.139</u>	<u>0.140</u>	<u>0.162</u>	<u>0.168</u>	<u>0.117</u>	<u>0.186</u>	<u>0.221</u>
Public	<u>0.177</u>	<u>0.110</u>	<u>0.160</u>	<u>0.093</u>	<u>0.143</u>	<u>0.140</u>	<u>0.165</u>
Total	<u>0.168</u>	<u>0.133</u>	<u>0.179</u>	<u>0.156</u>	<u>0.134</u>	<u>0.171</u>	<u>0.161</u>
Others							
LPEs	<u>0.143</u>	<u>0.082</u>	<u>0.127</u>	<u>0.242</u>	<u>0.104</u>	<u>0.252</u>	<u>0.266</u>
Public	<u>0.104</u>	<u>0.125</u>	<u>0.071</u>	<u>0.190</u>	<u>0.096</u>	<u>0.229</u>	<u>0.289</u>
Total	<u>0.130</u>	<u>0.101</u>	<u>0.119</u>	<u>0.200</u>	<u>0.107</u>	<u>0.251</u>	<u>0.160</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

Table 4.11.b -Gender discrimination by Type of occupation. Oaxaca-Blinder approach (hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Managers							
LPEs	<u>0.193</u>	<u>0.159</u>	<u>0.233</u>	<u>0.065</u>	<u>0.156</u>	<u>0.321</u>	<u>0.358</u>
Public	0.033	<u>0.145</u>	<u>0.075</u>	<u>0.045</u>	<u>0.139</u>	<u>0.143</u>	<u>0.331</u>
Total	<u>0.088</u>	<u>0.175</u>	<u>0.222</u>	<u>0.117</u>	<u>0.158</u>	<u>0.243</u>	<u>0.164</u>
Professionals							
LPEs	<u>0.120</u>	<u>0.117</u>	<u>0.157</u>	<u>0.154</u>	<u>0.111</u>	<u>0.154</u>	<u>0.214</u>
Public	<u>0.096</u>	<u>0.104</u>	<u>0.155</u>	<u>0.088</u>	<u>0.138</u>	<u>0.108</u>	<u>0.155</u>
Total	<u>0.113</u>	<u>0.118</u>	<u>0.172</u>	<u>0.148</u>	<u>0.128</u>	<u>0.134</u>	<u>0.156</u>
Others							
LPEs	<u>0.119</u>	<u>0.075</u>	<u>0.121</u>	<u>0.226</u>	<u>0.098</u>	<u>0.173</u>	<u>0.252</u>
Public	<u>0.061</u>	<u>0.116</u>	<u>0.065</u>	<u>0.171</u>	<u>0.077</u>	<u>0.158</u>	<u>0.278</u>

Total	<u>0.105</u>	<u>0.088</u>	<u>0.104</u>	<u>0.189</u>	<u>0.092</u>	<u>0.163</u>	<u>0.154</u>
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Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

When we consider the Ñopo approach we observe higher values for gender discrimination for managers in Italy and in Germany. Moreover in Hungary the gender discrimination is always higher in the public sector than in LPE's; in France it happens for others and in Sweden for professionals. In all other cases the gender discrimination is higher in the LPE's than in the public sector.

Table 4.12.a - Gender discrimination by type of occupation. Ñopo approach (monthly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Managers							
LPEs	<u>0.255</u>	<u>0.188</u>	<u>0.250</u>	<u>0.133</u>	<u>0.191</u>	<u>0.417</u>	<u>0.362</u>
Public	<u>0.217</u>	<u>0.183</u>	<u>0.124</u>	<u>0.061</u>	<u>0.173</u>	<u>0.207</u>	<u>0.427</u>
Total	<u>0.260</u>	<u>0.266</u>	<u>0.256</u>	<u>0.167</u>	<u>0.197</u>	<u>0.325</u>	<u>0.286</u>
Professionals							
LPEs	<u>0.166</u>	<u>0.159</u>	<u>0.178</u>	<u>0.201</u>	<u>0.141</u>	<u>0.219</u>	<u>0.246</u>
Public	<u>0.256</u>	<u>0.147</u>	<u>0.170</u>	<u>0.102</u>	<u>0.184</u>	<u>0.200</u>	<u>0.259</u>
Total	<u>0.229</u>	<u>0.159</u>	<u>0.194</u>	<u>0.167</u>	<u>0.169</u>	<u>0.211</u>	<u>0.225</u>
Others							
LPEs	<u>0.148</u>	<u>0.105</u>	<u>0.141</u>	<u>0.274</u>	<u>0.101</u>	<u>0.300</u>	<u>0.326</u>
Public	<u>0.117</u>	<u>0.123</u>	<u>0.072</u>	<u>0.215</u>	<u>0.102</u>	<u>0.249</u>	<u>0.370</u>
Total	<u>0.139</u>	<u>0.114</u>	<u>0.130</u>	<u>0.231</u>	<u>0.104</u>	<u>0.282</u>	<u>0.215</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

Table 4.12.b - Gender discrimination by type of occupation. Ñopo approach (hourly earnings)

	Italy	France	Germany	Spain	Sweden	UK	Hungary
Managers							
LPEs	<u>0.296</u>	<u>0.174</u>	<u>0.244</u>	<u>0.123</u>	<u>0.192</u>	<u>0.399</u>	<u>0.359</u>
Public	<u>0.126</u>	<u>0.181</u>	<u>0.118</u>	<u>0.062</u>	<u>0.172</u>	<u>0.188</u>	<u>0.431</u>
Total	<u>0.210</u>	<u>0.251</u>	<u>0.258</u>	<u>0.155</u>	<u>0.200</u>	<u>0.278</u>	<u>0.287</u>
Professionals							
LPEs	<u>0.143</u>	<u>0.132</u>	<u>0.172</u>	<u>0.177</u>	<u>0.136</u>	<u>0.178</u>	<u>0.236</u>
Public	<u>0.120</u>	<u>0.142</u>	<u>0.166</u>	<u>0.094</u>	<u>0.177</u>	<u>0.150</u>	<u>0.247</u>
Total	<u>0.111</u>	<u>0.150</u>	<u>0.192</u>	<u>0.148</u>	<u>0.168</u>	<u>0.185</u>	<u>0.216</u>
Others							
LPEs	<u>0.120</u>	<u>0.096</u>	<u>0.135</u>	<u>0.256</u>	<u>0.093</u>	<u>0.195</u>	<u>0.303</u>
Public	<u>0.068</u>	<u>0.112</u>	<u>0.066</u>	<u>0.193</u>	<u>0.079</u>	<u>0.170</u>	<u>0.350</u>
Total	<u>0.113</u>	<u>0.098</u>	<u>0.116</u>	<u>0.217</u>	<u>0.090</u>	<u>0.173</u>	<u>0.202</u>

Source: Own elaboration on the *Structure of Earning Survey*, EUROSTAT, 2010

5. An attempt at explanation: the main results

Our results show the existence of a public sector wage premium mostly in Spain and UK, both for monthly and hourly earnings, and in Italy mainly for hourly earnings. These results are consistent with the literature on the public-private differentials that has shown higher public wage premia when they are calculated on hourly earnings instead of monthly earnings (see, for example, Giordano *et al.*, 2011; Christofides and Michael, 2013). In the other countries a negative premium always shows up for public sector workers¹². Country-wise, our results are broadly consistent with those, also relying on the SES, of Ramos *et al.* (2014) for Spain, and of de Castro *et al.* (2013) for EU countries, and of some important former studies (Lucifora and Meurs, 2006; Dickson *et al.*, 2010; Brindusa *et al.*, 2011; Tepe *et al.*, 2012; Ghinetti and Lucifora, 2013) for the countries in our sample. Generally speaking, our countries provide a ranking of public wage premia going from UK to Spain, Italy, France, Germany, Sweden and Hungary.

The literature contains some suggestions about the determination of the public-private wage premium. A first obvious field of interest is the system of wage bargaining (or, more, generally of pay determination). The system of collective bargaining, trade union density, and union coverage (broken down by gender and sector) should naturally affect premium and discrimination. The most "covered" components of the workforce should benefit in terms of pay. For a given "coverage", the decentralisation of bargaining should also matter (OECD, 1993; Dell'Aringa and Lanfranchi, 1999; Rubery and Fagan, 2012). It should reduce the wage premium, and in theory also gender discrimination. A related point is that wage bargaining coordination should also matter.

When we consider separately sub-groups with different levels of educational attainment, we see that less-educated public sector workers are always, relatively, better off. The evidence also shows that in many cases a public sector wage premium exists only for some segment of female employees. All this is consistent in principle with a stronger role played by trade unions and collective bargaining in the public sector. Around 45% of public sector employees in Italy are members of a union. In the UK, unionisation is much higher in the public than in the private sector, and the right to strike in the public sector is in practice recognised. Arguably, public sector unionisation matters less when the private sector is also highly unionised. The public sector wage penalties in France are also consistent with the capability of French private unions to rely on *erga omnes* legislation (very high union coverage, not applicable to the public sector: information on these matters can be gathered from <http://www.worker-participation.eu/>).

Considering the strength of trade unions in Germany and Sweden, in order to make full sense of our results we must conclude that their *relative* strength is not so notable. Furthermore it seems clear that the public sectors of these countries were profoundly affected by the pay reforms of the 1990's. The contention that no public wage premium exists in these countries is widely supported by our results.

The literature also suggests that it is useful to distinguish national systems of pay regulation in the public services across three dimensions: the extent to which collective bargaining is subject to unilateral employer regulation, the degree of local wage negotiation either as part of national pay settlements or as a substitute to them, and the degree of integration of the system of pay determination across all employees in public services. Yet, inasmuch as unilateral employer regulation is concerned, countries in our sample do not differ very much. In the majority of countries, for those groups covered by collective bargaining, it is usual for the wage agreement to be subject to parliamentary approval or explicitly constrained by ministerial assessment of the implications for the state budget. The former condition is notable in Sweden and the UK and the latter condition applies in Italy, France and in Spain. Centralisation also apparently holds very little

¹² In all countries there are not very large differences when we compare the public sector to private sector instead of LPEs. However, the evidence is always more favourable to the existence of a public sector wage premium when we consider the whole private sector. This is consistent with a stronger role played in wage determination by trade unions in the public sector and in LPEs. Results are available upon request.

promise as an explanation. Sweden stands out as the country where local pay determination is most strongly developed, and then one can rank UK, Germany, Spain, Italy, France and Hungary (Grimshaw *et al.*, 2012). This ranking has by itself little relation to that of our wage premia. The degree of integration is perhaps more promising. The UK stands out as having a relatively fragmented system and France is located at the pole of relative integration. Hungary, Sweden and Germany would not too far behind France. Italy and Spain are placed in between the two poles.

Turning now to the rules governing public and private sector employment, we note that, in general, public servants in Italy and France cannot be discharged, except for misconduct, and the statutory terms apply regardless of whether the individual is employed at the national, regional or local authority level. Conversely, in Great Britain the process of decentralisation has determined greater variation in both recruitment criteria and pay levels of civil servants across different Departments within the public sector and a number of services have been progressively contracted out. In Italy and Spain, however, recruitment policies in the public sector have changed slightly in recent years. Indeed, because of the need to reduce persistently high levels of public deficit and debt, public sector employment has been subject to the so-called “block of turnover”, i.e. the impossibility to hire new additional workers on a permanent contract regime. This has given rise to a larger diffusion of temporary contracts than in the private sector; see Dell’Aringa *et al.*, 2007).

Also in France, centralised agreements allow for the use of “non-established” personnel (*contractuels*) to cope with shortages of staff at the local level. By the late 1980s, employment of *contractuels* constituted around 18% of the total public sector workforce. In the case of the education sector, where 40% of all *contractuels* were employed in the early 1980s, *contractuels* are generally used to meet the demand for specialised staff. Although such strategies relieve local organisations of the rigidity and time lag involved in filling posts at a centralised level, *contractuels* do not enjoy job security or career opportunities (Meurs 1993: 87-88).

Finally Meurs relates that Performance Related Payment did not make a real impact on the public sector premium, most certainly in France, Germany and Italy. On the other hand, public sector reforms (and, more generally, of the reduction in the financial capability of the public sector) may have been much more relevant. The general pattern entails in principle decentralisation, more merit pay, more competition, and a response to budgetary crises through reduced public employment. In Germany there have been wage constraint and staff reduction since 1992 already with public sector employment going down by nearly a third. There has also been a debt brake in 1999, and various collective agreements have been decentralised since 2005/06. Sweden had an early fiscal consolidation, made sure that there was no specific employment status for civil servants, and exposed previously protected activities to competition. Since the Act on System of Choice in the Public Sector (2009) there is more competition between agencies within the public sector. In both countries no special adjustment programme was needed for the public sector in the crisis, and it is widely believed that no public wage premium exists.

In France the “General Review of Public Policies” (2007-2012) was implemented to increase productivity, with restructuring and cuts in employment and worsening of working conditions. In the UK: there was a continuing trend toward less collective bargaining, more pay review bodies, with the aim of reducing the local public wage premium. Hungary implemented a strong wage cut in 2007 and abolished the thirteen month in 2009. Both Italy and Spain implemented a wage freeze and strong spending cuts, but only after 2010.

At any rate the action of these factors should reduce the wage premium; less clear is their effect on gender discrimination. On the whole, in all countries there is a significant level of gender discrimination. The lowest values are found in Italy for hourly earnings, the highest in UK for monthly earnings. The second thing to note is that gender discrimination is lower in all countries for hourly earnings than for monthly earnings. This may depend on the fact that females in all countries have reduced working hours, but surely does not depend on the highest incidence of part-timers on total employees for females (remember that in this paper the focus is on full-time workers, and part-timers were excluded from the estimation sample). Finally, working in the public sector guarantees

lower gender discrimination in Germany, Italy, and Spain. For UK, France and Sweden this is not so true, with public and private sectors showing a very close degree of gender discrimination.

The fact that female public employees fare less well in the UK than in other countries may be consistent with a recent loss in union membership in the British public sector. It should also be noted that in highly unionised countries such as Sweden and, to a lesser extent, Germany, the skill-wage premium gradient is rather flat.

As far as gender discrimination is concerned, there are some variables that are often referred to in the literature. These "gender" variables include the fertility rate, the gender age gap at the first marriage, the parental leave, measures of vertical segregation (the so-called glass ceiling), measures of horizontal segregation (the so-called five c.'s: cashiering, catering, caring, cleaning, clerical). These are variables that should have an effect solely on gender discrimination (increasing it, except for parental leave, whose effect is ambiguous). The literature has also long recognised the role of the public sector. Finally, other institutions have a potential role on premium and discrimination: employment protection legislation, unemployment benefits, minimum wage, product and labour market deregulation, the degree of wage dispersion and the size of non-standard labour contracts.

It should now be noted that most empirical contributions on the public-private wage premium (or, for that matter, of gender discrimination) have studied its dimensions and quantitative characteristics, but there are not many attempts to provide a quantitative examination of the determinants of this premium. Here we want to provide such an attempt, which may suffer from some limitations of our dataset, but may also have the advantage of considering jointly all the factors that have been mentioned above. Indeed the different regimes that govern the determination of public sector wages in the seven countries under consideration provide an interesting source of information for assessing whether institutional factors have an impact on wage determination in the public sector.

In linking the above-considered institutions with the public premium and gender discrimination we adopt the following empirical strategy we adopted. We exploit the fact that we have data on premium for men and women, monthly and hourly earnings, measured through the Oaxaca-Blinder and Nopo approaches. Equally, we have data on discrimination for LPE's and the public sector, monthly and hourly earnings, measured through the Oaxaca-Blinder and Nopo approaches. On both accounts, this provides us with a sample of 56 observations. If we also consider premium and discrimination by education level and occupation, we reach a sample numerosity of 168.

By means of regression analysis, where premium and discrimination are dependent variables, we examine how these variables are related with different subsets of institutional variables, and binary variables for female gender, monthly earnings, Oaxaca-Blinder approach (plus subsets of education level and occupation). Actually, for purposes of estimation, we relied on a robust regression technique, the *mmregress* estimator proposed by Verardi and Croux (2009). This choice was suggested by the relatively small size of our sample and the presence of various potential outliers. Results are provided in Table A.1.

The evidence for the public premium shows a strong *joint* role of the variables related to wage determination in the public sector (unilateral employer regulation, decentralisation, integration between jobs and sectors). These variables depress the premium. There is also a role for the union-related variables, especially for wage bargaining coordination (which also depresses the premium). In any case, the premium is always higher for women.

As far as gender discrimination is concerned, the results also show a joint role for the variables related to wage determination in the public sector. There is also a role for wage bargaining coordination and (even more) for a measure of female wage dispersion (which sharpens the discrimination). This last fact is perhaps linked to the fact that gender discrimination is lower in the public sector. Total maternity leave and deregulation also matter, but not when taken in conjunction with other variables.

It is also remarkable that, throughout various specifications, the public premium is lower for more educated workers (especially for graduates). It is also lower for professional and managerial workers (almost to the same extent). On the other hand, gender discrimination is only marginally (if at all) stronger for graduate workers. It is indeed stronger for managerial workers (the infamous glass-ceiling effect), while the evidence for professional workers is much more mixed.

6. Concluding remarks

In this paper we have presented some relatively novel evidence on the public-private wage gaps for seven important European countries, using the Structure of Earnings Survey. Our analysis extends to monthly earnings (going beyond the usually considered hourly earnings) and emphasises issues of comparability in several ways. We poise public sector workers against their appropriate counterpart: employees from large private firms, we complement the customary Oaxaca-Blinder decomposition with that obtained from Ñopo's matching approach, and we consider workers characterised by similar levels of education or similar type of occupation. Unlike in most of the existing literature, we do not restrict our attention to hourly earnings. We also complement the analysis of the public wage premium with an analysis of discrimination by gender and type of occupation within the public and private sector.

On the whole, the public sector rewards more females than males and less educated employees than highly educated employees. This is particularly true when we consider hourly earnings instead of monthly earnings. This could be an effect of the fact that the wage curve is flatter in the public sector probably due to a stronger integration of the system of pay determination in the public sector than in the private one. All these results are valid for both Oaxaca-Blinder and Ñopo approaches, although the latter provides lower estimates for public premium and gender discrimination.

As for the role of institutional variables, some typical variables of the public sector literature (unilateral employer regulation, decentralisation, integration between jobs and sectors) have an important role for the public premium, and (less) for gender discrimination. In line with the literature, there is also a role for the wage bargaining coordination, and, more generally, for the factors that influence wage dispersion.

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Table A.1 – An attempt at explanation

Public premium

regressors	0	1	2	3	4
women	0.0375	0.0427***	0.0613***	0.0648***	0.0502
UD_diff		0.0137***			
coord		-0.0903***			-0.0156
unilat			-0.0425***		
decentr			-0.0439***		
integr			-0.0379***		
three				-0.0409***	-0.0328*
oaxaca_b	0.0093	0.0220**	0.0075	0.0091	0.0118
monthly	0.0274	-0.0178*	-0.0227**	-0.0242**	-0.0200*
N	56	56	56	56	56
Pseudo-R2	0.0938	0.8593	0.8795	0.8726	0.8787

* p<.1; ** p<.05; *** p<.01

gender discrimination

regressors	0	1	2	3	4	5
public s.	0.0005	-0.0590***	0.0019	-0.0059	-0.0003	-0.0128*
coord		-0.0223***				
A90_10_F		0.0486***				0.0158**
total_mat			0.0103***			0.0018**
EFW_summ			0.1373***			
unilat				0.0105		
decentr				0.0045		
integr				-0.0144**		
three					-0.0061*	0.0034
oaxaca_b	-0.0026	-0.0012	-0.0124**	-0.0021	-0.0035	-0.0018
monthly	0.0175**	0.0197***	0.0155**	0.0185***	0.0193***	0.0155**
N	56	56	56	56	56	56
Pseudo-R2	0.1557	0.4665	0.5400	0.4189	0.2983	0.5281

* p<.1; ** p<.05; *** p<.01

Public premium

regressors	0	1	2	3	4
women	0.0610***	0.0491***	0.0624***	0.0630***	0.0597***
UD_diff		0.0280***			
UM_pub		0.0062***			
coord		-0.1009***			-0.0068
unilat			-0.0147		
decentr			-0.0274***		
integr			-0.0461***		
three				-0.0411***	-0.0376***
oaxaca_b	0.0163	0.0199***	0.0158**	0.0138*	0.0140*
monthly	-0.0291*	-0.0198**	-0.0277***	-0.0296***	-0.0290***
ed. level B	-0.0410**	-0.0271**	-0.0096	-0.0050	-0.0055
ed. level C	-0.0668***	-0.0754***	-0.0357***	-0.0380***	-0.0427***
N	168	168	168	168	168
Pseudo-R2	0.1662	0.7369	0.8194	0.7967	0.7995

* p<.1; ** p<.05; *** p<.01

regressors	0	1	2	3	4
women	0.0322*	0.0290**	0.0487***	0.0528***	0.0459***
UD_diff		0.0467***			
UM_pub		0.0151***			
coord		-0.1043***			-0.0164*
unilat			-0.0548***		
decentr			-0.0522***		
integr			-0.0249***		
three				-0.0373***	-0.0315***
oaxaca_b	0.0267	0.0248**	0.0190**	0.0200**	0.0188**
monthly	-0.0224	-0.0143	-0.0208***	-0.0221**	-0.0201**
profession.	-0.0420**	-0.0710***	-0.0456***	-0.0393***	-0.0510***
manager.	-0.0840***	-0.0831***	-0.0614***	-0.0396***	-0.0498***
N	168	168	168	168	168
Pseudo-R2	0.1356	0.6850	0.7409	0.6997	0.7172

* p<.1; ** p<.05; *** p<.01

gender discrimination

regressors	0	1	2	3	4	5
public s.	-0.0187**	-0.0436***	-0.0290***	-0.0495***	-0.0303*	-0.0355***
coord		-0.0143***				
A90_10_F		0.0557***				0.0443***
total_mat			0.0015***			-0.0004
EFW_summ			0.0249			
unilat				-0.0374***		
decentr				-0.0368***		
integr				-0.0193***		
three					-0.0201***	-0.0161**
oaxaca_b	-0.0142	-0.0150**	-0.0184***	-0.0214***	-0.0179**	-0.0188**
monthly	0.0188**	0.0256***	0.0215***	0.0193**	0.0180**	0.0192***
ed. level B	0.0011	-0.0033	0.0063	0.0091	0.0045	0.0044
ed. level C	0.0337***	-0.0084	0.0357***	-0.0083	0.0183	0.0173*
N	168	168	168	168	168	168
Pseudo-R2	0.2317	0.6639	0.5245	0.5479	0.4560	0.6757

* p<.1; ** p<.05; *** p<.01

regressors	0	1	2	3	4	5
public s.	-0.0238***	-0.0259	-0.0158	-0.0219**	-0.0229**	-0.0265***
coord		-0.0002				
A90_10_F		0.0523**				0.0535**
total_mat			0.0140***			-0.0005
EFW_summ			0.2087***			
unilat				-0.0144		
decentr				-0.0109		
integr				-0.0099***		
three					-0.0107**	-0.0123**
oaxaca_b	-0.0224***	-0.0234***	-0.0188	-0.0215**	-0.0218***	-0.0189
monthly	0.0154*	0.0199	0.0155**	0.0167**	0.0174**	0.0207**
profession.	0.0419***	0.0034	0.0383***	0.0317**	0.0283*	-0.0015
manager.	0.0496***	0.0485***	0.0690***	0.0529***	0.0496***	0.0785**
N	168	168	168	168	168	168
Pseudo-R2	0.4313	0.5817	0.5931	0.5382	0.4754	0.5893

* p<.1; ** p<.05; *** p<.01

LEGEND OF TABLE A.1

women = dummy for female workers
public s. = dummy for public sector workers
UD_diff = union density of public sector workers - union density of private sector workers
UM_pub = share of unionised workers belonging to the public sectors
coord = wage bargaining coordination
unilat = unilateral employer regulation in the public sector
decentr = wage bargaining decentralisation in the public sector
integr = integration of the system of pay determination in the public sector
three = unilat + decentr + integr
oaxaca_b = dummy for Oaxaca-Blinder measures
monthly = dummy for monthly measures
A90_10_F = 9th decile-1st decile earnings ratio, female workers
total mat = total maternity leave
EFW_summ = summary index of economic freedom
ed. level B = dummy for workers with education level B
ed. level C = dummy for workers with education level C
profession. = dummy for professional workers
manager. = dummy for managerial workers