BANKA SLOVENIJE

WAGE DIFFERENTIAL BETWEEN PUBLIC AND PRIVATE SECTOR IN SLOVENIA

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Abstract

Using EU-SILC individual-level data, we analyse the public-private sector wage premium in Slovenia in the period from 2004 till 2014 taking into account only occupations that have employees in both, public and private sector (comparable occupations). Because of structural changes in the public sector wages due to public sector wage reform in 2008 and fiscal austerity measures put in place from mid 2012 on, we decompose wage premium in three time sub samples. More specifically, between 2004 and 2008, public sector employees in comparable occupations (after taking into account individual characteristics) were generally marginally underpaid relative to their private sector colleagues (except for the low wage earners), while the 2008 public sector wage reform decreased public-private sector wage disparities. The wage austerity measures in public sector, that were put in place from 2012 onwards, negatively affected public sector workers by making their wages less compelling again. However, the impact varied across occupational groups, making this generalization subject to numerous caveats. Our analysis of the reasons for the difference between public and private sector wages uses the Blinder-Oaxaca decomposition and covers the whole 10-year period. The results show that in most of the low-income occupations the reasons for the public-private sector wage difference are mostly originating from the unobserved characteristics of workers. Whereas in higher wage classes the reasons are coming from the observable characteristics. In one third of occupations in our analysis, the origin for the difference cannot be clearly determined.

Moreover, the analysis also highlights the importance of controlling for comparable occupations (i.e. comparing "apples to apples"). Namely, if one fails to exclude incomparable occupational groups from the analysis, the story can give distortional message saying that public sector workers are earning higher wages as compared to their private sector peers and that the pay reform preserved (or even increased) the already positive wage premium of public sector workers and the austerity measures decreased it.

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Povzetek

V članku analiziramo plačno premijo med državnim in zasebnim sektorjem v Sloveniji v obdobju 2004 – 2014 na podlagi individualnih podatkov iz EU-SILC baze, pri čemer upoštevamo le zaposlene v poklicih, ki obstajajo tako v državnem kot v zasebnem sektorju (primerljive poklice). Zaradi strukturnih sprememb politike plač državnega sektorja v tem obdobju, ki se nanašajo na reformo plač državnega sektorja z letom 2008 ter varčevalne ukrepe javnih financ od leta 2012 dalje, je analiza razdeljena na tri pod obdobja. Analiza kaže, da so bili med letoma 2004 in 2008 državni uslužbenci, ob upoštevanju nekaterih osebnih karakteristik, večinoma plačani nekoliko manj v primerjavi z zaposlenimi v primerljivih poklicih v zasebnem sektorju (razen v poklicih z nizkimi plačami). Plačna reforma, ki se je začela izvajati z letom 2008, je te razlike zmanjšala. Javnofinančni varčevalni ukrepi, uvedeni od sredine leta 2012 dalje, pa so neugodne plačne razlike za državne uslužbence ponovno povečali. Vendar so bili ti učinki za različne poklicne skupine različni, kar pomeni, da ugotovitev ni možno posploševati. Analiza vzrokov za razlike v plačah je narejena s pomočjo Blinder-Oaxaca dekompozicije na celotnem obdobju desetih let. Ugotovimo lahko, da v poklicih z nizkimi plačami večine razlik ni bilo možno pojasniti z osebnimi karakteristikami, ki so bile vključene v analizo s plačno enačbo. V poklicih z višjimi plačami pa so opazovane osebne karakteristike večinoma razlike v plačah lahko pojasnile. V tretjini opazovanih poklicev ni bilo možno z dovolj veliko gotovostjo potrditi od kod razlike v plačah izhajajo.

Analiza tudi pokaže, da je pri ugotavljanju plačne premije potrebno upoštevati zaposlene v poklicih, ki so med sabo primerljivi (potrebno je primerjati jabolka z jabolki). V primeru, da to ne storimo lahko dobimo popolnoma drugačen rezultat analize. Ugotovimo namreč, da državni uslužbenci prejemajo višje plače od uslužbencev zasebnega sektorja, da je plačna reforma pozitivno razliko povečala, uvedba varčevalnih ukrepov pa jo je zmanjšala oziroma je privedla do boljšega položaja zaposlenih v zasebnem sektorju .

Non technical summary

It is commonly perceived that public sector employees are over-paid as compared to their private sector colleagues. Another common belief is that the public sector wage reform in force from 2008 improved the position of Slovenian public sector workers even further and that this was then reversed by the fiscal austerity measures put in place in the mid-2012 and in some latter years. The results presented in this study are confirming some of the common believes about the evolution of the wage differential, but not about its level.

Looking at aggregate data at the national level and comparing average wages in public and private sector, we find that the average wage differential for the whole time span was standing at 22%, meaning that in 2004 until 2014, wages in public sector were higher than wages in private sector by 22% on average. The evolution of the wage differential reveals the expected message coming from common believes – wages in public sector were higher throughout the whole period, the wage differential increased after the public sector wage reform and decreased after the implementation of fiscal consolidation measures. However, such comparison is neglecting a number of factors that influence wages besides the sector of employment. Therefore, we run a regression analysis in order to take into account personal and job characteristics of employees obtained from micro data, which also affect wages. The time span investigated on the micro data level captures wages in years from 2004 until 2014.

In the regression analysis on micro data level, we first compare whole sample of individuals and get similar results to aggregate data and common believes. We discover a positive wage premium standing at 6.7% in favour of the public sector, which is considerably smaller than in the case of wage differential calculations from aggregate national level data, which for the same time span is standing at 22%. However, widely different wage distributions by sectors on a micro level reveal that with such comparison, we are not comparing "apples to apples" and therefore the results can be misleading. We solve this problem by only analysing individuals employed in occupations that have employees in both sectors (i.e. taking into account only comparable occupations). The two distributions of wages by sector in such restricted sample of individuals become a lot more similar suggesting that in this case we are comparing "apples to apples". The results with restricted sample of comparable occupations on average show that, in the whole time span, there was a small negative wage premium in the public sector. According to our estimation, wages in comparable occupations were *smaller* (and not bigger as common believes would imply) by 1.2% in the public sector as compared to the private sector. Further analysis of the wage premium by occupational groups (i.e. within comparable occupations) reveals that the average wage premium obtained from comparable occupations sample cannot simply be generalized to all occupations, because wage premiums can differ by occupations by a great margin.

The wage premium estimation by occupational groups show that positive wage premium is present in elementary occupations (low wage classes) while it becomes negative in other (higher wages) occupational groups. Although the public sector wage reform reduced the negative wage premium, making wages in public and private sectors more equal, this was accomplished by a different degree in a different occupational groups. Nevertheless, the need for fiscal consolidation later increased the inequalities between public and private sector wages again in most occupations by putting the public sector workers in a less favourable position which is reflected in making the wage premium more negative again in most cases.

The regression analysis of differences in the average wage between the public and private sector for all occupations reveals that about 70% of the difference in the whole sample is arising from workers' characteristics that were taken into account in the wages estimation. That is gender, marital status, type of contract (working full time or half time), sector of employment (public or private), education, age, and occupation. Unobservable characteristics account for the remaining 30% of the difference. Unobservable characteristics may cover a wide variety of factors such as unionization, bargaining power, productivity, safety of employment, personal skills, work motivation and others. The differences in average wage estimation by occupation come mainly from observable characteristics in high wage occupations of the 10 analysed occupational groups and from unobservable characteristics in most low wage classes. In three occupational groups, the difference between average wage estimation for public and private sector workers was not significant when looking at the whole time span from 2004 till 2014.

Testing the specification of the model on other countries confirmed that it is reasonable to compare only wages in comparable occupations. Besides, the average wage premium – even if calculated only from a sample of comparable occupations – cannot be a simplified representative for public sector wage premium in general, as wage premiums by occupations can be quite different from the average.

To sum up, wages in the public sector seem to be smaller than in the private sector in most of the occupations in our analysis when taking into account some individual characteristics of workers during the time covered with our analysis. The public sector wages reform decreased the inequalities between public and private sector workers, making them more equal. The austerity measures due to fiscal consolidation during the crisis increased inequalities again, except in low wage classes. However, probably process turned again in favour of increasing public – private wages equalization after the gradual removal of austerity measures since late 2015, but this is not covered in our analysis. Also, the low wage earners seem to be better off if they are employed in the public sector as they are earning a positive wage premium, which could be a form of some kind off social corrigendum by the government. In addition, from the policy point of view, the timing of the wages reform was highly unfortunate as it occurred at the time of dropping economic activity and a rising need for fiscal consolidation. Also, lower wages for public sector workers, especially for medium and high wage earners, could be justified by usually higher safety of employment and are observed in other countries as well.

1. Introduction

During the economic crisis, rising debt and persistent government deficits urged governments to examine the various possible channels of fiscal consolidation. Wages in the public sector[3] represent a large part of government expenses, making them a natural means of reducing government deficits. In 2004 until 2014, expenditures on compensation of employees represented 22% of general government expenditures in the EU and close to 25% in Slovenia. Public sector workers were thus ostensibly easy targets for political discontent as despite their higher job security, their average wages are considerably higher than in the private sector. However, to what extent are these differences justified given their different demographic and job profiles?

In the long run, both, public and private sector wages are driven by trends in prices and productivity. In the medium or short run, also other factors, like institutional changes, can be detrimental. If they influence both sectors in different ways, the wage premium changes. Such institutional change occurred also in Slovenia in 2008, when implementation of public sector wage reform began. The primary objective of the reform was to reduce wage disparities within the public sector. The reform was carried out by lifting public sector wages by different degree for different wage classes.

Slovenia instituted the first phase of a comprehensive public sector pay reform in the second half of 2008. The purpose of the reform was to implement a unified, transparent pay grid in the public sector, as a system of allowances and special bonuses had distorted the system and introduced considerable disparities (OECD, 2011). The groundwork for the reform was laid with the suspension of salary adjustments beginning in 2002.[4] By the time the new pay system was agreed upon in 2008, a gradual deterioration of the public sector wages growth had taken place, justifying the pay increases from the perspective of the public sector unions. The timing of the increases was unfortunate, however, from a public finance perspective, because it immediately preceded a sharp, 8% fall in GDP in 2009. It was also widely perceived that public sector reform was not justified from a national point of view since it increased public wages with no connection to public workers performance, thus only putting an extra burden to public finance and also increasing the public sector wage premium versus the private sector. Because of economic and financial crisis and consequently deterioration of public finances, the government introduced austerity measures. In the area of wages, the year of introduction of austerity measures was mid 2012 with Fiscal Balance Act, followed by further measures in 2013 and 2014[5].

In this paper we find that prior to 2008 public wages reform the public workers were earning a small negative wage premium as compared to their private sector peers while it is not possible to determine what happened to the premium after the public sector wages reform in 2008, if only comparable occupations are taken into account. However, in some notation of the wages

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[3] The terms "public" and "government" are used interchangeably and refer to the European System of Accounts (ESA) definition of general government. In cases where public (or government) is measured according to sector of economic activity, sectors O, P, and Q according to NACE Rev. 2 are used as a proxy.

[4] These were also part of a wider disinflationary policy in Slovenia with the ultimate goal of fulfilling the criteria for euro adoption – see Kozamernik and Žumer (2011).

[5] See Fiscal Balance Act (Official Gazette no. 40/12) and Agreement on further measures in the field of salaries and other labour costs in the public sector aiming to balance public finances in the period from 1 June 2013 to 31 December 2014 (Official Gazette no. 46/13).

equation the premium even becomes positive[6]. The consolidation measures put in place after 2012 pushed public sector workers even in a less favourable position than before the public sector wages reform. However, the effect varied across occupations.

The literature suggests that wage premium is usually positive, meaning that, ceteris paribus, public sector wages are higher than private sector ones. This is true when looking at the average wages, but not necessarily along the entire wage distribution. A large negative wage premium for public sector employees can be detrimental to the efficient provision of public goods and services, and is therefore not desirable. As for the movement and determination of wages, the literature[7] finds evidences of pro-cyclical movement and a positive correlation between public and private sector wages. Private sector wages usually influence movements in public sector wages, but the process can go the other way around as well.

The structure of the paper is as follows. The following section gives a brief overview of the literature on wage differentials including findings on Slovenia. The third section describes the micro data used in our analysis and wage developments at a national level using macro data. The fourth section presents stylized facts and institutional background, explains method of analysis, and gives the results. The fifth section concludes.

2. Literature review

In theory, the existence of a public sector wage premium can be accounted for by a variety of factors. The reasons commonly quoted include large size of the government sector in terms of the number of employees (wages in large firms are usually higher than wages in small firms), centralization of public wages (public wages usually do not differ by region), higher unionization, and absence of a profit motive in the public sector. A political motivation is suggesting that the government is a well appreciated employer which gives low skilled workers in the public sector higher wages than they would earn in the private sector. On the other hand, bureaucrats are prone to activities which would increase their budgets (size and wages), and to activities which would attract votes. There are also political motives mentioned that decrease wage premium, such as awareness that the public does not like highly paid officials, which puts some downward pressure to public wages (at least in the upper wage classes). In addition, economic limits, connected to tax collection, and spending limits are also present in the determination of public sector wages, which decrease wage premium (Bender, 2003). Interestingly, a part of the wage differential for women employed in the British public sector can be explained by family-friendly policies that increase public wages (Chatterji et al., 2007). On the other hand, the private sector wages are mostly determined by the profit motive.

A large body of empirical evidence indicates that positive public sector wage premiums are a common feature in many developed countries. In the euro area aggregate, the ratio of public to private wages (i.e. wage differential) fell from 1.3 in the beginning of 1970s to close to 1.1 at the end of 1980s. The trend then reversed after 1989 with the ratio reaching 1.3 again in 2007, although in some central and north European countries the ratio did not change much since 1999 and was close to 1 (Holm-Hadulla et al., 2010). When looking at the wage premium across the EU, which is obtained by evaluating differences in wages considering

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[6] *In this case occupational groups are included as dummies in the wages regression in the comparable occupations sample.*
[7] *See for example Lamo, Perez and Schuknecht (2008).*

also different personal and job characteristics of workers, studies in general find positive wage premiums. For example in Campos and Canteno (2012), this is reported for nine European countries in the period from 1993 to 2000, the only exception being Finland and in the last two years of observation also France. The premium generally decreases with the wage level and through time. De Castro et al. (2013) find a positive wage premium in eleven out of twenty-six EU countries in 2010, eight countries have a negative wage premium while the premium is not statistically different from zero in seven. The differences in premiums among countries are high, ranging from -16% in Hungary to 21% in Cyprus. Giordano et al. (2011) report positive wage premium in ten EU countries and find also other characteristics of wage premium that are commonly found in other studies. Besides falling wage premium with higher wages, these include higher wage premium for women than for men, and higher wage premium in case of comparison of public sector with small private firms than with large private firms. Both studies show that countries with larger financing problems like Greece, Portugal, Ireland, and Spain have larger wage premium. There are numerous other studies[8] covering EU countries, US, Canada or Australia, all reporting positive wage premium, although in some cases only for women.

By contrast, relatively few studies have analysed, mostly indirectly, the wage premium in Slovenia[9]. Bole (2001) investigates wage dispersion in the Slovenian government sector as compared to wage dispersion in the private sector and as compared to wage dispersion in other countries. He focuses on the data at the end of the 1990's and finds that wage dispersion in the public sector in Slovenia is wider than in the public sectors of comparing countries as well as in the private sector in Slovenia. Therefore, he finds no signs of what he calls "double imbalance", where by "double imbalance" he means that public sector employees in high wage classes are paid less and public sector employees in the low wage classes are paid more than in the same wage class in the private sector (Bole, 2001). Double imbalance is not desirable as it causes that high quality workers search for a job in the private sector, causing public sector to end up with less efficient workforce at a managerial level. That can become crucial for worsening overall performance of public services (Bole, 2001, Bargain and Melly, 2008). Bole (2010) is also critical of the public sector wage reform carried out in Slovenia in 2008 as he finds it harmful for the Slovenia's competiveness and public finance balance. He argues that wage increases should be more incremental and executed through longer period of time, for example 10 years. In addition, he does not see much room for lowering public sector employment (except by some degree in education), which would reduce the burden of wage rises in the public sector induced with wage reform, since quality of public services would probably suffer. Vodopivec (2004) investigates the wage premium in relation between private and publicly owned firms. Analysing micro data, he finds that in the period from 1993 until 2001 wages have not differed strongly across firms of different ownership types. Another analysis, made by Kajzer et al. (2006) is stating that when looking at wages at the macro-aggregate levels, public and private sector wages differ in favour of the public sector and the main reason for the difference is higher education of public employees. If public sector activities defined from NACE Rev. 1.1 classification (from L to O) are compared to the

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[8] *See for example Katz and Krueger (1991) for US, Cai et al. (2008) for Australia, Mueller (1998) for Canada, Bender (2003), Chatterji et al. (2007) for United Kingdom, Jurges (2002), Melly (2005) for Germany, Bargain and Melly (2008) for France, Depalo and Giordano (2011) for Italy, Papapetrou (2006) for Greece, Kelly et al. (2009) for Ireland, Campos and Pereira (2009) for Portugal and Rubil (2013) for Croatia.*

[9] *A study which is not directly dealing with wage premium, but is rather a description of public sector salary system and includes recommendations for further public sector salary reform was performed by OECD in 2011. Basic recommendations encourage policy makers to anchor wage formation in line with the country's competitiveness and the stability of its public finances giving more room for managers to adapt salary system within given budget limitation, avoid inflation indexation of wages etc.*

private sector activities J and K, which have similar educational structure as the public sector, then the wage premium is falling with higher education obtained. Selan (2014) also finds that the main reason for higher wages in public sector is higher education and that the wage differential in favour of public employees has decreased during the last crisis. By contrast, focusing primarily on the relationship between wages and productivity for different types of workers, Vodopivec (2014) finds that the wage premium in Slovenia increases with the level of education and age. The study among others concludes that the main factor for wage differentials between younger and older workers is the mandated seniority pay (Vodopivec, 2014).

More recent work on wage premium in the EU countries, capturing also Slovenia, was among others conducted by Giordano et al. (2011), De Castro et al. (2013), Depalo et al. (2013), and Christofides and Michael (2013). In Giordano et al. (2011), the wage premium is estimated from European Union Statistics on Income and Living Conditions (EU-SILC) micro data for ten EU countries. The authors find that in the case of Slovenia, the average wage premium stood between 10.2% and 11.4% in the period from 2004 until 2006, depending on the choice of dependant variable (monthly gross earnings for the lower figure or hourly gross earnings for the higher one). They also report higher public sector wage premium for women than men. In addition, the premium was falling with higher wage class. Amongst three public sub-sectors (education, health, and public administration), it was highest in education, and it was higher as compared to small than as compared to large private firms.

In De Castro et al. (2013) the wage premium is estimated for EU countries using micro data from European Structure of Earnings Survey for the years 2006 and 2010. The wage premium estimation using wage equation with the OLS technique shows that for Slovenia in 2006 it was standing at 4.6% and in 2010 at 5.4%. As compared to Giordano et al. (2011), there are some differences in explanatory variables included in wage equation, among these also job type (grouped by ISCO codes excluding armed forces). Also, the public-private sector distinction is drawn by a direct survey question[10] and not only by the help of NACE classification. The premium is positive for men, but not statistically significant for women, it increases with age, and decreases with the level of education, being negative at the highest level of education. Positive wage premium is observed for workers in the lower professional categories, whereas in higher professional categories, it is not statistically significant except in the case of managers where it is negative. Blinder-Oaxaca decomposition results conducted in the study show that 81% of the wage difference estimated by the OLS wage equation can be explained by endowments captured by the predictors while 19% remains unexplained.

Depalo et al. (2013) investigate Blinder-Oaxaca wage decomposition from EU-SILC micro data in ten EU countries in the period 2004 to 2007 and get similar results for Slovenia, finding that 79% of the wage gap can on average be explained by the regressors used in wage equation (at the mean). Educational endowments are pinpointed as the largest contributor to the explained part of the wage gap. The unexplained part accounts for the remaining 21%[11] of the wage gap. The unexplained part of the wage gap is found to be larger at the lower part of the wage distribution, it is negative when public sector workers are compared to large private firms or when they are compared to financial sector workers. The unexplained part was higher

(and positive) when excluding education sector from the public sector (as a typical public sector job). Switching dependent variable from hourly wage to monthly wage reduced the unexplained part of the wage gap. The study also finds evidence of more compressed wage distribution in the public than in the private sector.

Using the 2008 EU-SILC dataset, Christofides and Michael (2013) analyse the public-private sector wage gap in 27 European countries. Their results indicate Slovenia is in the group of countries with the lowest public-private pay gap. The authors use Oaxaca and Ransom decomposition and for Slovenia, they find that the explained component in the public-private wage gap is much larger than the unexplained, reaching 99.6%. When controlling also for the age of workers, results point to a higher wage gap for workers, aged 45 and over, compared to their younger colleagues. Since most of the gap is again explained, authors argue these results indicate that older workers in the public sector are more qualified than older workers in the private sector. Controlling for gender shows low wage differences between men and women in Slovenia. Authors also check the robustness of their main findings, generally based on hourly rates, by taking into account also monthly wages. The results for Slovenia again confirm that the whole public-private gap is explained. In addition, in the quantile analysis, Christofides and Michael (2013) also control for different income levels. Results for Slovenia are statistically insignificant for all quantiles, except for the lowest one, indicating that the wages are significantly higher in the public sector compared to the private sector at the lowest part of the distribution.

In this study, we follow the Giordano et al. (2011) analysis while introducing two novelties. First, when we examine wage premium at the aggregate level we exclude occupations that only appear in one of the sectors. Therefore, we keep only comparable occupations in the analysis in order to compare "apples to apples". Besides that, we also examine wage premium by occupation and not only at the aggregate level of micro data. Second, with additional years of data, we examine the evolution of wage premium. We distinguish wage premium before and after the 2008 public sector wages reform[12], and after the austerity measures induced on public sector wages in mid-2012. As some other studies, we also estimate the explained and unexplained part of the wage gap by using Blinder-Oaxaca decomposition.

3. Data and definitions

Our analysis is based on employee-level survey and registry data obtained from the EU-SILC, which consists of data on income, poverty, social exclusion, and living conditions of individuals and households included in the nationally representative sample. Data are collected at annual frequency by Statistical Office of the Republic of Slovenia (SORS). In our analysis, we cover surveys from 2005 until 2015, but since the data on income are referring to a year earlier than the interview we are actually analysing time span from 2004 until 2014. There are close to 24,500 individuals captured in EU-SILC database each year, of which around 37% are at work[13].

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[12] *The public sector wages reform implementation began in 2008, was frozen in the period 2010 – 2011 and finally fully completed in the middle of 2012 when at the same time austerity measures were implemented.*

[13] *The population statistics for the period 2008 till 2014 shows the proportion of employed population aged 15 years or over standing at around 45% on average. The EU-SILC survey relies on a question weather the individual considers he/she is working.*

For the purposes of the employee-level analyses, it was necessary to restrict the sample to a relevant subset. In order to adjust sample population captured by the EU-SILC data to the population at the macro level, extreme low or high values of income from EU-SILC database were excluded from the analysis. Therefore, only individuals with gross income between 474 EUR (minimum wage in 2004) and 10,000 EUR per month are included.

One limitation of the data when defining economic sector is that we define the public sector based on NACE classifications, instead of using the general government definition from ESA. Therefore, when using EU-SILC database, the public sector is defined by selecting workers employed in NACE Rev. 2 classification activities O (public administration and defence, compulsory social security), P (education), and Q (human health and social work activities), which is close to the definition of general government sector in ESA terms[14].

In order to distinguish between aggregate, or raw, statistics and regression coefficients, we define *wage differentials* and *wage premium*. In our analysis the term wage differential refers to average wage in the public sector divided by the average wage in the private sector, regardless if the data are obtained from macro level or micro level, whereas wage premium refers to regression coefficient of the public sector dummy in the regression analysis.

When comparing the EU-SILC database to the national statistics aggregates, we find that the average share of the government employees (as OPQ activities) in all employees in the EU-SILC database is relatively close to the one obtained from national accounts. It stands at 24% for the period 2004 to 2014 in the EU-SILC database, whereas the proportion obtained from the national accounts data is 21% (also OPQ activities[15]) for the same time horizon.

Similarly, aggregating individual-level EU-SILC data on wages by public and private sector yields broadly similar trends in public-private wage differentials to those from official statistics when compared with monthly labour market statistics[16]. Also, not weighted EU-SILC data wage differential is more in line with the population macro data (especially from 2008 on) than in the case when EU-SILC systematic weights are used to correct the EU-SILC database. In our analysis, we use the non-weighted EU-SILC data because the use of weights yields very similar results. In all cases, wages in public sector were higher in all years available, so the wage differential ratio was higher than 1, but on a falling trend basis (see

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[14] *Some authors use sum of activities O, P, Q and R (arts, entertainment and recreation) in the case of approximation of government sector for Slovenia, whereas in our analysis R is not included. The reason for this is transition from NACE Rev. 1.1 to NACE Rev. 2 with the year 2009 in EU-SILC database. In the case of activity R a corresponding activity in NACE Rev 1.1 does not exist at an aggregate level. We consider the loss of workers in activity R, which has approximately 6% share of workers in sum of OPQR (in national accounts statistics) to be relatively small, given that many sub-activities captured in activity R actually belong to the private sector (e.g. casinos, fitness centers, etc.).*

[15] *For the ESA definition of general government the proportion of employees employed in the general government sector stands at 20% of all employees for the same period.*

[16] *Wage differential based on monthly statistics on wages is higher as compared to wage differential based on compensation of employees from national accounts. The explanation for higher wage differential when calculated from monthly labor market statistics that can be drawn from the data is that private sector wages in the case of national accounts data are relatively higher, which causes the wage differential to shift to a lower level. A possible reason for higher private sector wages in the case of national accounts could be drawn from OECD (2016) report, where it is explained that the recording of meal and travel expenses connected to work is not captured in the monthly wages statistics. Meal and travel expenses shift private sector labour cost recorded in national accounts higher, as more private sector workers work in low wage classes, where such expenses are typically representing a higher share of their income.*

figure 1). Also, as seen for other countries[17], wages in the public and private sector feature similar growth paths.

Figure 1: Wage differential between public and private sector, Slovenia – from micro and macro data
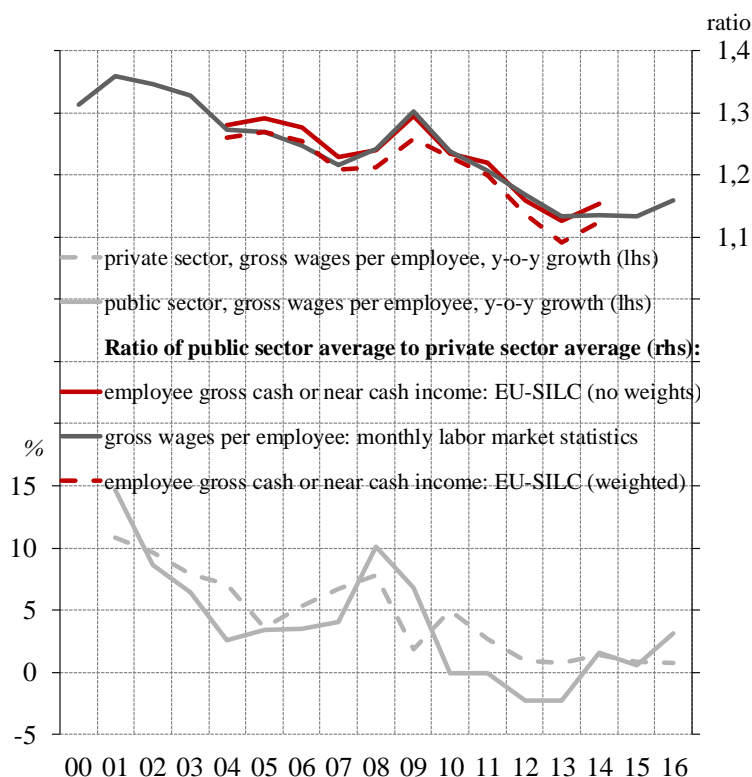
Sources: EU-SILC database from Statistical Office of the Republic of Slovenia (SORS), authors' calculations.

4. Analysis

4.1 Stylized facts and institutional background

The demographic profile of a public sector employee captured in our analysis is consistent with findings from other countries. On average, government employees in Slovenia have higher education[18], are older, more likely married, work less hours per week, and more often work part-time than employees in the private sector. The proportion of women workforce in the public sector is also higher (see table 1). The abovementioned characteristics can partially explain the existence of the wage gap, but there are also other unobserved factors that are affecting it and are not captured in the EU-SILC database. Some of these factors are even very difficult to measure; like larger influence of trade unions or life long job protection in the government sector. Exclusion of possibly relevant variables from our analysis is therefore also a limitation to the explanation of our results for wage premium.

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[17] *See for example Campos and Centeno (2012).*
[18] *As a comparison: The macro data at the national level in Slovenia show that the proportion of public sector employees with college or higher education degree was close to 50%, whereas in the private sector it was close to 20% in 2010.*

Table 1: EU-SILC basic statistics, 2004 – 2014, averages, Slovenia

	private	public
gross monthly wage* (EUR)	1,444	1,765
gross monthly wage* (y-o-y growth, %)	3.5	2.5
gross hourly wage* (EUR)	9.0	11.1
gross hourly wage* (y-o-y growth, %)	3.6	2.4
net monthly wage* (EUR)	999	1,191
net monthly wage* (y-o-y growth, %)	3.8	2.9
net hourly wage* (EUR)	6.2	7.5
net hourly wage* (y-o-y growth, %)	3.9	2.8
Hours worked per week	40.5	40.0
sample size (average no. of employees per year)	6,951	2,220
share of employees in private or public sector (%)		
low education	16	6
medium education	66	43
high education	18	51
female	40	72
age under 30	16	11
age 30 - 39	27	24
age 40 - 49	33	35
age 50 and over	25	30
married	56	63
employees with part time job	2.8	3.7

Note: * Wage refers to employee cash or near cash income.
Source: Authors' calculations based on EU-SILC (SORS) data.

In Slovenia, wage policy has been closely linked to inflation developments. The reason is that from the mid 1980's, when Slovenia was still a part of Yugoslavia, and until several years after independence in 1991, Slovenia experienced hyperinflation. The indexation of wages both in private and in public sector followed quite a complicated formula, which has been simplified over time in line with decreasing inflation rates. In the environment of hyperinflation at the beginning of 1990's, wages were indexed to a certain portion of monthly inflation growth rates and were corrected each month. The frequency of alignment was reduced from every month to every three months in the mid 1990's and to twice a year at the end of 1990's. From 2004 onwards, it only occurred once a year. Monthly inflation growth rates were also replaced by annual (sometimes core) inflation rates. From 2001 onwards, expected inflation was used and the indexation was not complete – that is, only part of the inflation was taken into account in the indexation formula (IMAD, 2007). Indexation of wages to inflation has not disappeared yet. For example, in 2008 and 2009 wages were partially aligned with inflation due to high inflation rates and also minimum wages are still using (predominantly) inflation indexation[19].

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[19] *See Kolektivna pogodba o izredni uskladitvi plač za leto 2007 in načinu usklajevanja plač, povračilu stroškov v zvezi z delom in drugih osebnih prejemkih za leti 2008 in 2009 and Minimum Wage Act.*

Besides being connected to inflation, there was no formal connection to productivity until 2003. In the Social Agreement, concluded in 2003, the policy was oriented towards stimulating investment activity and employment, therefore a difference by 1 percentage point between real average monthly wage growth and real productivity growth was put in place (IMAD, 2007). In practice, since 1995, the growth of real wages exceeded growth of real productivity in 1995, 2001, from 2008 until 2010 and in 2016[20], primarily due to high growth of wages in the public sector. In 2012, both real productivity and real wages growth were negative.

The raw wage differential in Slovenia was in general falling since mid 1990's. One possible reason for the fall is Slovenia's economic convergence to other more developed European countries where wage differential was lower. Looking at the wage differential from 2000 onwards (see Figure 1), we can observe that in the periods 2000-2001 and 2008-2009 the wage differential increased because growth of public wages exceeded growth of private sector wages. As explained below, there were several economic and institutional changes behind higher growth of public than private wages in the abovementioned periods.

In years 2000 and 2001, high pressures from the public sector unions resulted in increases in wage supplements for some occupations in the public sector. After that, efforts to meet Maastricht criteria for the euro adoption began to influence economic policy[21] and the public wage supplements inflation had to be stopped. In order to fulfil the Maastricht inflation criterion, wage indexation clauses were also changed (as explained above). At the same time, withholding growth of public wages was in line with controlling growth of government expenditures in order to ensure meeting of Maastricht government deficit criterion. In addition, the government decided to renew public sector wage policy, which included negotiations on wages between the government and public sector unions. The changes were oriented towards simplification of the public sector wage system and setting new wage scale in the public sector in order to eliminate wage disparities within the public sector. That process stalled unions' pressures for implementing new wage supplements.

In years 2008 and 2009, a new legislation determining public sector wages came into force and elimination of wage disparities began. That was done through public sector wage raises to a different degree for different occupations. Consequently, the growth rate of public sector wages exceeded the growth of private sector wages in those years. The process of eliminating the wage disparities has stalled in 2010 and 2011 due to the need of containing government sector wage growth. The public sector wage reform was completed in the middle of the year 2012. It was estimated that it will cause 5% rise in the public sector wages, but at the same time, public wages were cut by 8% because of austerity measures imposed by Fiscal Balance Act. Further austerity measures influencing wages were agreed for the years 2013 and 2014.

From the economic policy perspective, it is important to keep in mind, as also Bole (2010) argues, that eliminating wage disparities through wage raises in public sector had no connection to productivity in that sector and came at the time of shrinking GDP. In this regard, although lowering inequalities enhances the welfare of the people, wage raises weighed negatively on cost competitiveness of the economy and were therefore contributing negatively to the GDP growth. Also from the public finance point of view, at the time of

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[20] *Partial reversal of fiscal austerity measures imposed on public wages began at end 2015 and was continued in 2016.*
[21] *As documented in Alessina, Ardagna and Galasso (2008) also some other European countries experienced public sector wage moderation in the period prior to euro adoption.*

shrinking GDP the government revenue growth was slowing down or even became negative, so wage growth on the government expenditure side was imposing additional pressure on the deficit (besides automatic growth of some other expenditure due to crisis, like unemployment benefits). In the case of Slovenia, data show that between 2007 and 2011, capturing the economic crisis and public sector wage reform, compensation of employees in the government sector grew by 28%, whereas general government revenues grew by 8% and nominal GDP by 5%. At the same time also other expenditures, excluding compensation of employees, grew fast, with the increase standing at 23% (or 24% if compensation of employees is included in the expenditures).

4.2 Wage distributions

Looking at whole sample of employees in the EU-SILC database the aggregate wage distributions vary considerably by sector (see figure 2). The distribution of private sector wages is more concentrated at the left hand-side (skewed to the right) and much higher number of employees is earning the modus wage (higher kurtosis), which is placed at a lower level, than in the public sector. The distribution of wages in the public sector is even bimodal and at a latter stage three-modal. Through time the distributions in both sectors became more dispersed, although this is more evident in the case of the public sector.

Figure 2: Public and private sector wage distributions, entire sample, 2007, 2009, 2014, Slovenia
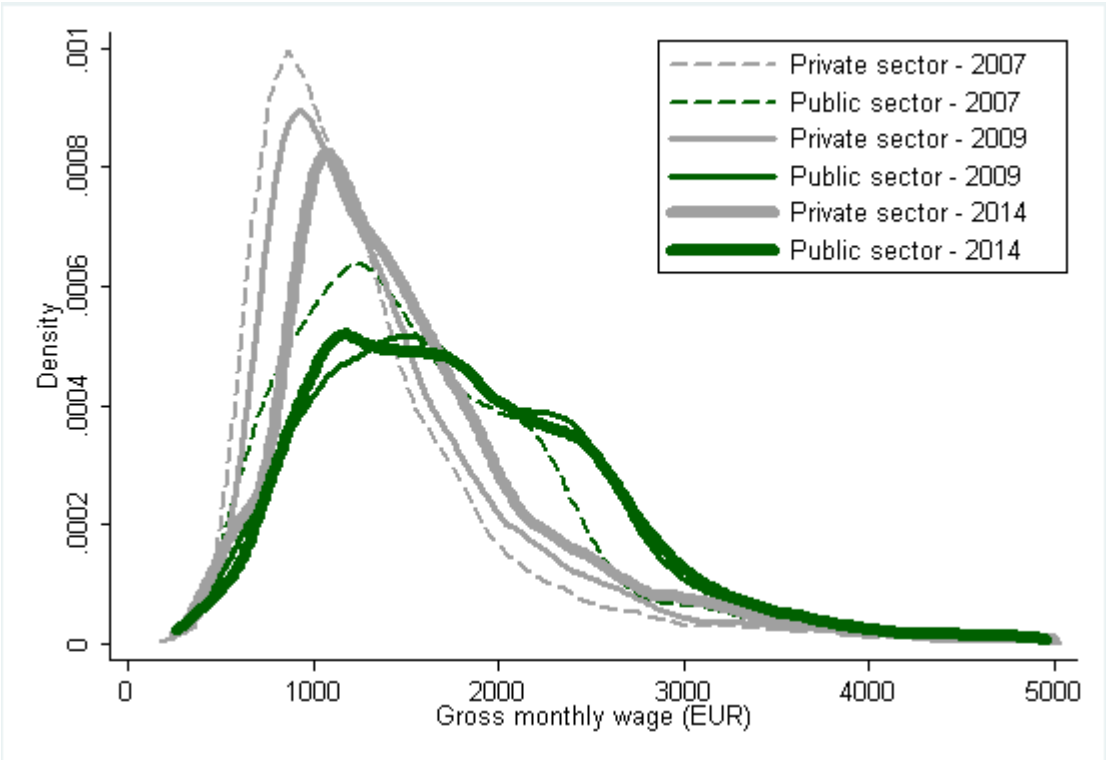
Source: Authors' calculations based on EU-SILC (SORS) data.

How can we explain the contrasting wage distributions in the public and private sector? The distributions for the private and public sector reveal that the majority of the private sector workers work in relatively low-wage occupations, which is consistent with lower levels of education attained in that sector. On the other hand, public sector workers on average earn

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higher wages and are more dispersed through a wider range of (higher) wage classes, which is consistent with higher levels of education. The right-hand mode probably refers to workers in education, because it almost disappears when only comparable occupations for the private and public sector are taken into account (figure 3).

Because the distributions of wages in the two sectors are considerably different, besides analysing the whole sample of individuals, we also restrict the analysis only to comparable occupations. Comparable occupations are those that are present in both sectors. For the classification of occupations, international standard classification of occupations (ISCO-88) at the two-digit level was used in the EU-SILC database. The criterion for selecting an occupation to the group of "comparable occupations" was that there were at least 200 workers employed in both sectors in a particular occupation in ten years. Under such criterion, 10 occupations were selected for further analysis, which are highlighted in grey in the table 2.

**Table 2: Occupations by ISCO-88 codes and workers employed by sector, Slovenia**

ISCO code	Occupational group	Number of persons		Share of observations in public sector (%)
		Private sector	Public sector	
11	Chief executives, senior officials and legislators	120	259	68
12	Corporate managers	2864	317	10
13	Managers of small enterprises	425	10	2
21	Pysical, mathematical, engineering professionals	3462	444	11
22	Health professionals	403	1351	77
23	Teaching professionals	81	5977	99
24	Other professionals (business, legal, social,…)	2734	2248	45
31	Physical and engineering technicians	5695	406	7
32	Health technicians	286	2797	91
33	Teaching technicians	44	768	95
34	Other technicians (finance, police, social work,…)	7731	1742	18
41	Office clerks	6638	1808	21
42	Customer services clerks	1664	123	7
51	Personal and protective service workers	3982	2663	40
52	Sales workers	6279	17	0
61	Skilled agricultural workers	568	64	10
71	Building and related trades workers, excluding electricians	2723	52	2
72	Metal, machinery and related trades workers	7356	171	2
73	Handicraft and printing workers	533	12	2
74	Electrical and electronic trades workers	2498	67	3
81	Stationary plant and machine operators	2400	56	2
82	Assemblers	5740	83	1
83	Drivers and mobile plant operators	4074	97	2
91	Sales and services elementary occupations	2921	1905	39
92	Agricultural, forestry and fishery labourers	114	< 5	< 4
93	Labourers in mining, construction, manufacturing and transport	4886	20	0
01	Armed forces	0	903	100

Source: Authors' calculations based on EU-SILC (SORS) data.

Restricting the sample of public and private employees to only comparable occupations yields wage distributions in both sectors that are remarkably similar (see figure 3). In the distribution of public sector wages the mode positioned far right in the figure 2 almost disappears. Instead, distributions in both sectors become bi-modal, with the mode positioned to the left (i.e. at smaller wage levels) becoming more pronounced (i.e. higher) after the economic crisis, suggesting that the number of people earning lower wages after the crisis increased. This is probably connected to the 2010 minimum wage increase, which increased the obligatory

minimum wages earned in the economy (regardless of the sector of employment)[22]. Previous studies also indicate a large increase in the number of minimum wage recipients during the crisis in both, private and public sector (OECD, 2016). This squeezed the distribution of wages in the low wage classes. When only looking at the right hand modes (i.e. at higher wage levels), one can see that prior to the public sector wage reform from 2008 the modes were positioned at approximately the same wage. After the public wage reform the mode of the public sector moved to the right more than the mode in the private sector. This indicates that wages in the public sector improved more. After the austerity measures in the public sector both wage distributions became almost aligned, which may indicate that wages in public sector became aligned with wages in the private sector.

Figure 3: Public and private sector wage distributions, comparable occupations sample, 2007, 2009, and 2014, Slovenia
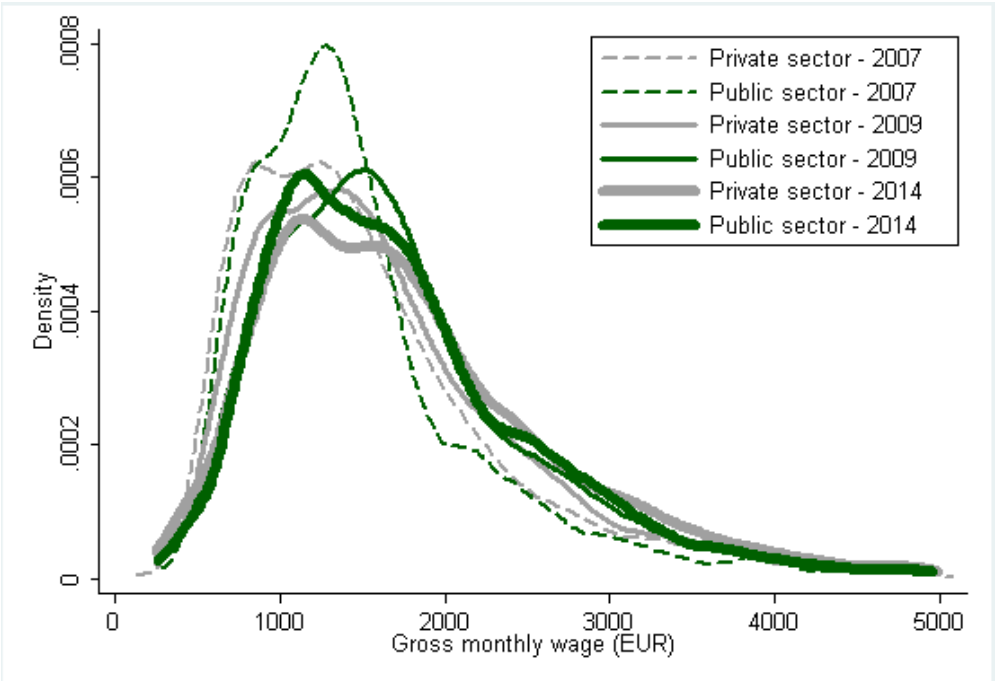
Source: EU-SILC (SORS) database, authors' calculations.

The 10 occupations, that were selected in comparable occupations group are represented in figure 4 where we show wage differential defined as average public sector wage divided by average private sector wage by occupation. The analysis was done on a full sample of years, before and after public sector wage reform, and after the implementation of fiscal austerity measures on public wages.

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[22] *Selan (2014) describes the effects of 2010 rise in minimal wages.*

Figure 4: EU-SILC raw wage differential, by occupation, 2004 – 2014, Slovenia
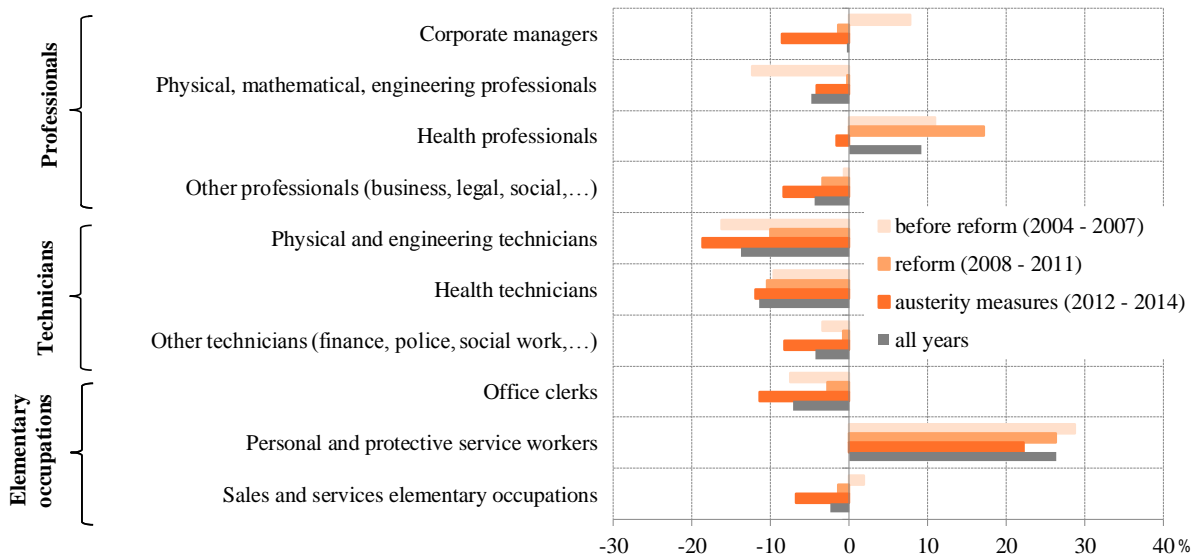
Source: EU-SILC (SORS), author's calculations.

When investigating raw average wage differentials in figure 4, we find that positive wage differential was present only in one out of ten occupational groups in all time sub- samples. The level of wage differential is showing worst position of public sector employees versus private sector employees in mid-wage classes. The public sector wage reform increased equality between public and private sector in most of the occupations while the austerity measures worsened the position of public workers. However, such comparison is neglecting a number of possible factors that could influence average wages besides occupational groups and the different events, like public wages reform and fiscal austerity measures. Therefore, it is necessary to expand the analysis by running the regressions.

4.3 Regression analysis

In order to identify wage premium between public and private sector, two methods are commonly used in the literature; the public sector dummy approach and Blinder-Oaxaca decomposition approach.

In the public sector dummy approach, a wage regression function is used. The explanatory variables usually used are wage related characteristics of individuals (job and demographic descriptors) and a dummy controlling for the sector of employment (i.e. public or private). The coefficient referring to the public sector dummy is considered a public sector wage premium if positive or a penalty if negative. However, it is necessary to be aware of some shortcomings to this approach when interpreting the results. If in the public sector the distribution of earnings is very different (in our case, it is more compressed) as compared to the private sector, the least squares estimate at the means of the two sector wages gives an incomplete picture of the conditional distribution. To avoid this problem quantile regression should be used as for example in Machado and Mata (2001). Another shortcoming of the dummy approach is that the effect of the sector of employment is captured in a single coefficient (Melly, 2002).

An alternative approach of measuring the wage gap is by using the Blinder-Oaxaca decomposition as explained for example in Oaxaca (1973), Blinder (1973) or Jann (2008).

With the Blinder-Oaxaca decomposition, the wage gap is separated in two components, (i) differences between the public and private sector in terms of measurable attributes of its workers (i.e. explained difference), (ii) and differences in the returns to the same attributes (i.e. unexplained difference). The latter is interpreted as the wage premium if positive or penalty if negative. The differences are evaluated at the means of the two sectors' wage distributions.

We follow both, the public sector dummy and the Blinder-Oaxaca deposition approach. The public sector dummy approach is used in many studies[23] of which Giordano et al. (2011) and De Castro et al. (2013) were also including Slovenia. In comparison to aforementioned work, our analysis is extended to compare public and private wages at the level of occupations that exist in both sectors. Although De Castro et al. (2013) also include analysis by occupational groups, however the comparison is done at the one-digit ISCO level, whereas two-digit level is used in our case. Besides, they do not exclude occupations that are typical for just one of the sectors. As compared to Giordano et al. (2011), we also test if public sector wages reform or the fiscal austerity measures imposed on wages changed the size of wage premium at the aggregate level and at the level of occupations. The results can be partly compared with De Castro et al. (2013) paper since pre- and post-reform years were used there as well, but mostly at the aggregate level[24].

As aforementioned, in order to obtain economically reasonable explanation of regression results, besides running regression on the whole sample, we also restrict the analysis to only comparable occupations. In this way, we are comparing similar wage distributions in public and private sector (see figure 3). In case of comparing all individuals in the sample (all occupations), as seen in the figure 2, the distributions are very different. In case, unobserved factors differ a lot, the estimated wage premium (i.e. regression coefficient of the public sector dummy) can be very different from the exact wage premium. However, we also run the regression analysis on a whole sample in order to test by how much and in what direction the estimation of the wage premium on a whole sample differs from the one estimated on the restricted sample of individuals covering only comparable occupations.

In the regression estimation, we use Mincerian wage equation (Mincer, 1974). The explanatory variables capture demographic and job characteristics of individuals and sector of employment, which are available from the EU-SILC database. The dependent variable is monthly gross cash or near cash income, used as an approximation of wage. The wage equation is written as:

$$y = \alpha + \beta X' + \delta P + u ,$$

where α is the intercept term, X denotes vector of regressors, u represents the residual term, and P a dummy variable that takes the value of one if individual works in the public sector and zero otherwise. The public sector is defined as NACE Rev. 2 activities O, P and Q. The regression coefficient δ is a wage premium for working in the public sector if positive and penalty if negative. In the case of dependent variable y we use natural logarithm of monthly gross cash or near cash income of each employee. The regressors are individual's gender (dummy variable taking value one if female), marital status (dummy variable taking value one if married), part time work (dummy variable taking value one if individual works part-time),

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[23] *See for example Koenker and Bassett (1978), Poterba and Reuben (1995), Campos and Centeno (2012).*
[24] *Wage premium at the level of occupations was analyzed only for 2010 (post reform) and not 2006 (pre reform) data.*

education (categorical variable, included as low education and high education, with medium education as the reference[25]), age, age squared and year of observation.

The regression equation is estimated on: (I) a whole sample of individuals, (II) on the restricted sample consisting of individuals employed in pooled comparable occupations, and (III) on each comparable occupation separately. Under such sample specification, we test:
  (1) If the wage premium δ changes when dummy variables for occupations are included in the set of regressors; in the case of running regression on a whole sample (I) and in the case of running regression on restricted sample of pooled comparable occupations (II).
  (2) If the wage premium δ changed after the public sector wage reform and if it changed again after the implementation of fiscal austerity measures on wages. Therefore, we run regressions on four time spans: (a) for the entire sample, (b) for the years 2004 until 2007, corresponding to pre public wages reform, (c) for the years 2008 until 2011, referring to after reform, and (d) after 2011, which are the years after the implementation of austerity measures.

The results for calculation of wage premium δ on the whole sample and on the pool of comparable occupations are reported in the table 3. The results reveal that:
  - Estimating the wage premium on the whole sample of individuals and at the whole time span suggests that the wage premium is positive and standing at 6.7% (meaning that wages in the public sector are by 6.7% higher than in the private sector, all other job and demographic characteristics of individual worker being equal). The public sector wages were higher than private ones regardless the changes in institutional setting such as public wages reform or austerity measures. However, especially after the austerity measures, the drop of the premium is evident.
  - Wage premium estimation considering only individuals in pooled comparable occupations sample on the whole time span is small and negative, standing at -1.2%. It is not possible to draw any conclusion on the change of wage premium after the public wages reform, as the premium is not statistically significant. However, the position of the public sector workers worsened after the implementation of austerity measures, suggesting an even more negative premium than before 2008 public wages reform.
  - Wage premium estimation for the whole time span becomes statistically insignificant if occupations are included as a dummy variable in the set of regressors, both in the sample of all individuals and in the sample of pooled comparable occupations. In both cases, the premium becomes negative and is estimated at a similar level after the implementation of austerity measures.

The result on the whole sample before the wages reform (8.3%) can be compared with the result in Giordano et al. (2011) standing at 10.2%. The difference originates from a slightly different set of regressors and an additional year of observations in our case. The wage premium standing at 1.7% on a whole sample with dummies for occupations included before the reform (including years 2004 until 2007) and at 2.2% after the reform (including years 2008 until 2011) can be compared to De Castro et al. (2013) results, standing at 4.6% in 2006 (pre reform) and 5.4% in 2010 (after reform). However, there are some differences in both analyses, for example differences in the database, years of comparison, dependant variable (monthly vs. hourly wages), and regressors used. This also reminds us that wage premium cannot be clearly identified as an exact number. In

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[25] *Low education corresponds to completed education up to (and including) lower secondary education, medium education stands for completed secondary education and high education corresponds to at least tertiary or higher education attained.*

addition, as mentioned earlier the distributions of wages in the public and private sector tend to be very different if the analysis is not focusing on the comparable occupations sample, therefore the estimation of wage premium on a whole sample of individuals could be misleading.

Table 3: Wage premium estimation on whole sample and on sample of pooled comparable occupations, Slovenia

	whole sample	comparable occupations
without dummy for occupations:		
all years	0.067***	-0.012**
before wages reform	0.083***	-0.016**
after wages reform	0.081***	0.011
after austerity measures	0.017**	-0.046***
dummy for occupations included:		
all years	0.004	-0.002
before wages reform	0.017**	0.008
after wages reform	0.022***	0.016*
after austerity measures	-0.045***	-0.047***

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Full regression results are presented in appendix I.

Source: EU-SILC (SORS), authors' calculations.

However, the analysis of wage premium by occupational groups reveals that the results of wage premium calculations from the pooled occupations sample cannot be simply generalized to all public sector workers, since the position of workers can be very different in different occupations (see figure 5).

Figure 5: Wage premium by occupation, 2004 - 2014, Slovenia
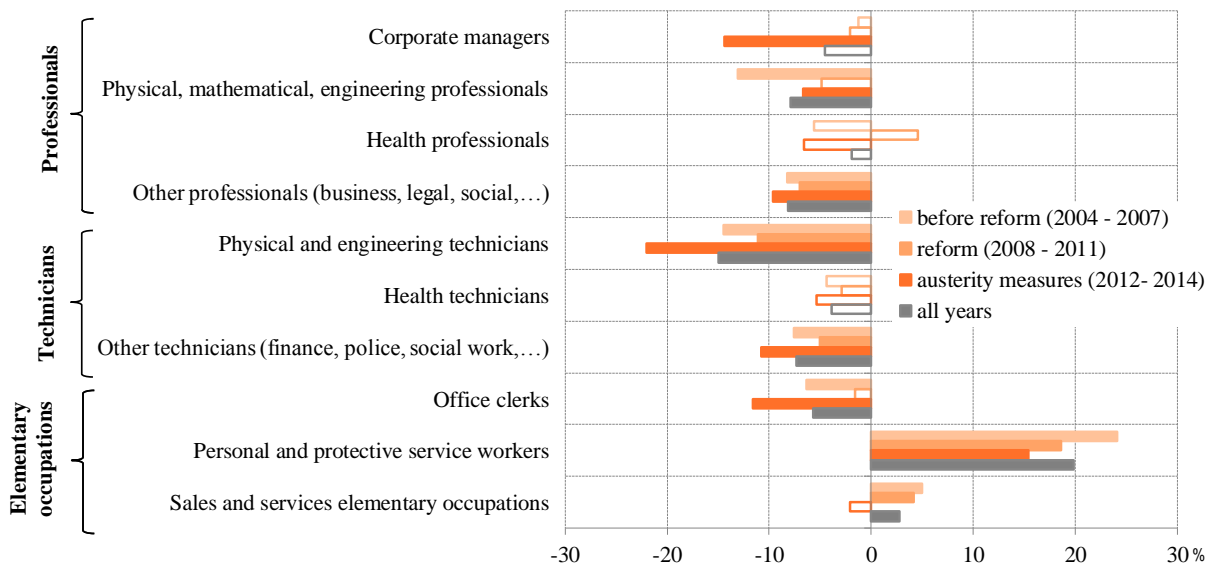
Note: Empty bar means that wage premium is not statistically sig. different from zero (at least p<0.1). The wage distribution graphs by occupation are added in the appendix II.
Source: EU-SILC (SORS), authors' calculations.

We can observe from figure 5 that the positive wage premium was present most of the time in elementary occupations, who usually earn relatively low wages. This is consistent with findings of other studies (see for example De Castro et al, 2013). The wages reform reduced the wage premium in those two occupational groups. In all other occupational groups, wage premium is negative or not statistically different from zero. In addition, in cases where the wage premium is negative, the wage reform pushed the wage premium closer to zero, making the wages in public and private sector more equal. The austerity measures caused wages in public and private sector to diverge again, except in the low wage occupations (i.e. personal and protective services) where the process of equalization between public and private sector wages continued.

However, there are important caveats to keep in mind when interpreting the regression results. First, the definition of public sector as activities O, P, Q from NACE Rev. 2 classification is not entirely consistent with the S.13 general government sector definition from ESA classification, which would be the correct one to use in the sector wage comparison. Second, the occupational groups under analysis are still relatively heterogeneous, comprising a group of different occupations. For example, "personal and protective service workers" include workers employed as security, policemen, hairdressers, and others, whose work is not completely comparable. Third, some strong assumptions are included under such analysis, because not all possibly relevant job or demographic characteristics are included as regressors in the regression equation. Therefore, it is assumed that the unobservable characteristics are the same in both sectors. Such characteristics include productivity of worker, job security, unionization, fringe benefits and other. Consequently, even in the same occupational group, the estimations of wage premium can only be interpreted as rough approximates.

4.4 International comparison

In this section, we investigate whether a similar pattern of the wage premium changes can be observed also in other countries if we control for the relevant occupations in the analysis. We are especially interested if average wage premium is very different from wage premiums by occupational groups[26]. This is purely technical exercise for testing specifications of the model, since we are not investigating any institutional or other background content of wage developments in the chosen countries. We could only obtain a data set from the EU-SILC data source covering years of income from 2004 until 2006 for other countries, so this is comparable only to the years before the wages reform in Slovenia, which also coincide with the years before the economic and fiscal crisis. From the sample of all EU member states, we include only countries with at least 5,000 observations over the three-year period to ensure sufficient sample sizes. The countries kept in the analysis under this restriction are Austria (AT), Czech Republic (CZ), Spain (ES), Hungary (HU), Italy (IT), Poland (PL), United Kingdom (UK), France (FR), Germany (DE), Estonia (EE), Slovakia (SK), and Slovenia (SI).

As in the case of Slovenia also in the case of other countries the regression equation is estimated on a whole sample of individuals (with and without a dummy variable for occupations), on the sample of individuals employed in pooled comparable occupations (with and without dummy variables for occupations), and for each comparable occupation

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[26] *Similar exercise was conducted by De Castro et al. (2013), for the year 2010, however the occupation groups were less detailed.*

separately[27]. The criterion for selecting an occupation as a comparable occupation is set at 90 observations, meaning that at least 30 observations per year must had been present in each sector. The dependent variable is monthly gross cash or near cash income, except in the cases of Italy and Spain where gross monthly earnings of employees were used due to lack of data on cash or near cash income. The regressors are the same as in the analysis for Slovenia (see chapter 4.3).

The results for the pooled type of regression, covering whole sample of individuals (with and without dummy for occupations) and all individuals in comparable occupations (with and without dummies for occupations), are presented in table 4. When regressing restricted sample of individuals, we expect wage premium to change considerably as compared to whole sample and an increase in adjusted R-squared if a dummy for occupation is included. When regressing the restricted sample, we expect wage premium to be similar as in the case of whole sample with dummies for occupations included in regression.

Table 4: Wage premium calculated from whole sample and restricted sample of pooled comparable occupations by countries

| Occupational dummies? | Public sector wage premium (regression coefficients) | | | | Number of observations | | | | Adjusted R^2 | | | |
| | Whole sample | | Comparable occupations sample | | Whole sample | | Comparable occupations sample | | Whole sample | | Comparable occupations sample | |
	No [1]	Yes [2]	No [3]	Yes [4]	No [1]	Yes [2]	No [3]	Yes [4]	No [1]	Yes [2]	No [3]	Yes [4]
AT	0.098***	0.037***	0.053***	0.048***	14,071	14,039	6,946	6,946	0.469	0.519	0.496	0.530
CZ	0.048***	0.018**	0.008	0.033***	16,622	16,622	5,772	5,772	0.352	0.458	0.346	0.447
DE	0.057***	0.006	-0.046***	-0.009	27,057	26,837	18,570	18,570	0.512	0.584	0.555	0.603
EE	0.020**	-0.061***	-0.114***	-0.059***	13,996	13,993	4,041	4,041	0.281	0.389	0.384	0.541
ES	0.134***	0.045***	0.035***	0.046***	27,193	27,134	11,661	11,661	0.460	0.545	0.511	0.572
FR	-0.031***	0.001	-0.063***	-0.003	22,859	22,750	13,344	13,344	0.426	0.570	0.433	0.586
HU	0.077***	0.061***	0.025**	0.076***	15,108	15,017	6,235	6,235	0.359	0.446	0.386	0.459
IT	0.063***	-0.014***	0.003	-0.027***	40,585	40,585	24,136	24,136	0.394	0.473	0.415	0.494
PL	0.088***	0.017**	-0.007	0.048***	27,511	27,502	10,747	10,747	0.295	0.387	0.323	0.443
SI	0.092***	0.019***	-0.010	0.011	28,341	28,145	13,907	13,907	0.416	0.513	0.417	0.488
SK	-0.004	-0.054***	-0.069***	-0.044***	15,362	15,280	7,340	7,340	0.293	0.381	0.292	0.384
UK	-0.044***	-0.077***	-0.156***	-0.087***	20,481	20,308	13,745	13,745	0.458	0.572	0.487	0.576

Note: The results in the table refer to the coefficient on the public sector dummy in regressions where other control variables are as specified in Appendix I. Statistical significance is calculated at *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
Source: EU-SILC (SORS), authors' calculations.

The results in table 4 confirm change of wage premium when dummies for occupations are included in the whole sample analysis. The premium drops in all cases and is in general closer to the premium obtained from the sample of individuals in comparable occupations. In addition, when dummies for occupations are included, the adjusted R-squared increases. The same is true for Slovenia in this and in previous chapters, which confirms the specification of equation and serves as an additional robustness check of the results.

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[27] *In addition, we exclude outliers at the extremes of the wage distribution. For Slovenia, we set the lower threshold to equal the minimum full-time wage in 2004 for full-time workers and half the full-time wage for part-time workers. The former falls at the 7th percentile of the wage distribution, so this relative threshold is also applied to other countries in the analysis. In addition, we exclude observations above the 99.9th percentile of the wage distribution.*

Next, we test if average wage premium from the comparable occupations sample can be used as a general approximation of the public sector premium (at least for the occupations included in the analysis). Therefore, we plot wage premiums by comparable occupations for a given country and the average wage premium calculated from the restricted sample, covering individuals in pooled comparable occupations without occupational dummies[28] (figure 6). Wage premiums for less demanding or less qualified occupations are plotted as dots, where a full dot is plotted if statistically significant and empty dot if not. Wage premiums for more demanding or highly qualified occupations are plotted as diamonds. Similarly, a full diamond is plotted if wage premium is statistically significant and empty if not. Comparable occupations are simply divided in half; if the occupation is positioned in the upper half of comparable occupation group, as ordered by ISCO classification, it is set as more demanding or highly qualified. Less demanding or less qualified occupations are positioned in the lower half of the ISCO classification, taking into account only comparable occupations. Average wage premium is shown as a black line, where full line is plotted if statistically significant and empty line if not.

Figure 6: Average wage premium and wage premium by occupation and by country
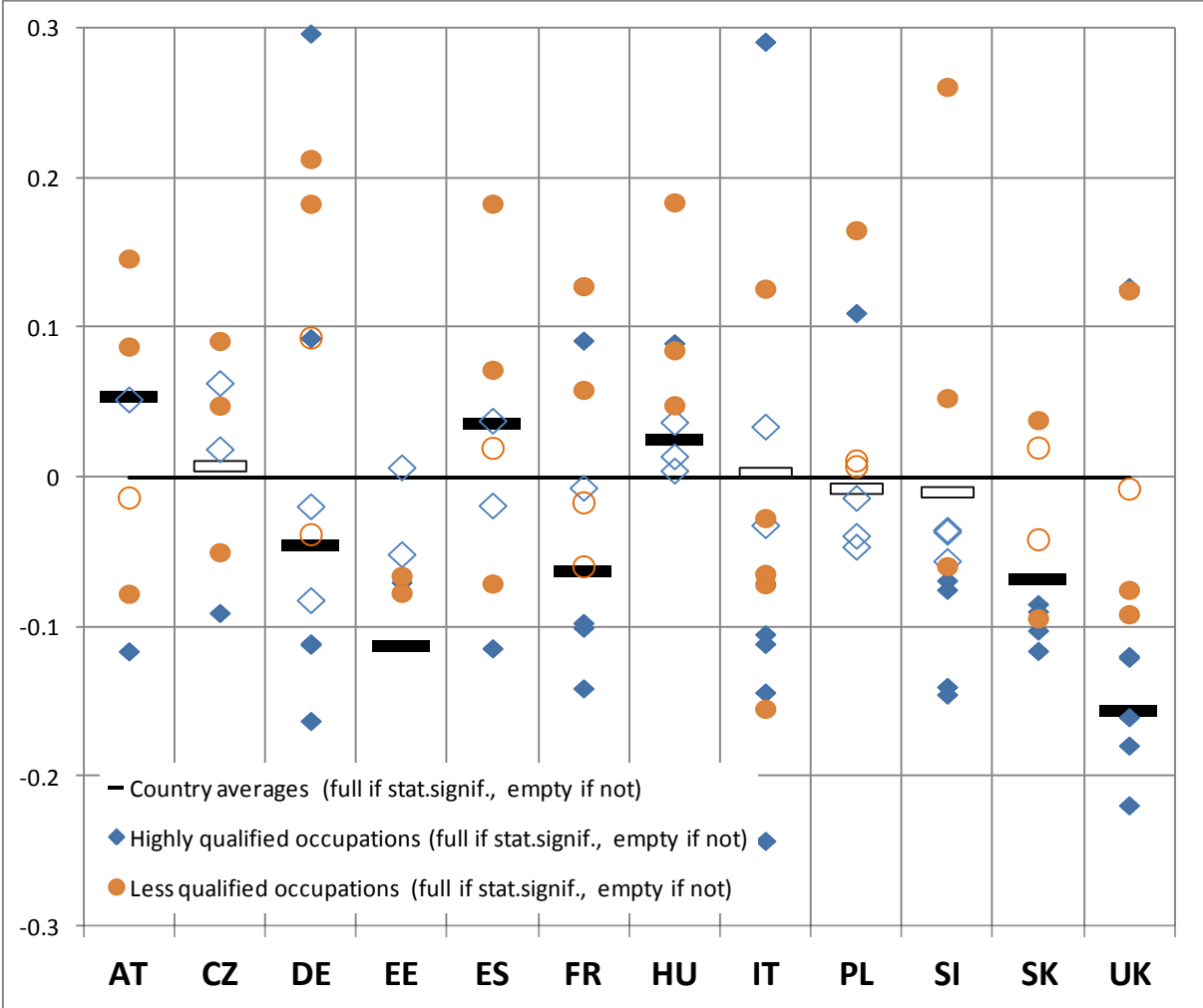
Source: EU-SILC (SORS), authors' calculations.

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[28] *Occupation dummies are not included to make sure that the public sector coefficient captures the average public sector wage premium.*

From the figure 6, we can see a relatively high dispersion of wage premium by occupations around average wage premium, so average wage premium cannot be a good approximation or reference value of some general wage premium in the public sector, even in the restricted comparable occupations sample. In addition, wage premiums in less demanding occupations are usually higher than wage premiums in more demanding occupations (dots are higher than diamonds), the latter even tend to be negative. This is also consistent with previous analysis of the wage premium in Slovenia in this paper and other studies (see for example De Castro et al., 2013).

4.5 Blinder-Oaxaca decomposition

The Blinder-Oaxaca decomposition (Blinder, 1973, and Oaxaca, 1973) is estimating by how much the pay differential between public and private sector depends on differences in endowments, such as typical demographic and job characteristics, and by how much on remuneration of those endowments. Technically, we are testing to what extent the differences in average wages, estimated by regression equation in public and private sector, occur due to explained factors and to what extent due to unexplained factors. The explained factors are covered with regressors used in the wage regression equation while the unexplained factors are representing everything that was left out of explanatory variables. In our case, the unexplained part of the wage gap is the wage premium for working in public sector (if negative) or penalty (if positive).

The Blinder-Oaxaca decomposition is performed on a full time span and for all individuals in the sample, the restricted (i.e. comparable occupations) subsample, and for each of the ten occupational groups that exist in both sectors. The results show that for *all occupations*, the average (regression estimated) wage in the private sector is by 22.3% lower than the average (regression estimated) wage in public sector. The differences in estimated average wages between public and private sector come mostly from the characteristics of the workers which were observed in the wage equation (about 70% of the difference is explained). Unobservable characteristics account for the remaining 30% of the difference. This is also close to the results in other studies. In Depalo et al. (2013) the wage difference in the period 2004 -2007 is estimated at 29.7% in favour of public wages of which 79% is explained by predictors. In de Castro et al. (2013) the wage difference at the average stood at 29.4% in 2010 of which 81% is explained. Furthermore, in the *comparable occupations* sample it is not possible to say weather the average wages estimated by regression in the public and private sector are different. In addition, although the explained and unexplained part of the difference are statistically significant, they are similar in size and point to different directions. Therefore, they mostly cancel each other out. Finally, the difference in average wage estimation *by occupation* come mainly from observable characteristics in high wage occupations (corporate managers, health professionals) and from unobservable characteristics in most low wage classes (physical, engineering, health technicians, office clerks and personal and protective service workers) except in the lowest wage class under analysis (sales and elementary occupations). Unobservable characteristics may cover a wide variety of factors not captured in regressors such as unionization, productivity, safety of employment, personal skills, work motivation and others. In three occupational groups, the difference between average wage estimation for public and private sector workers was not found to be significant and the explained and unexplained part of the difference more or less cancel out (table 5).

Table 5: The Blinder-Oaxaca decomposition of public-private wage gap, 2004-2014 for Slovenia

Difference between estimated private wages as compared to estimated public wages, at average (%)

	overall	explained	unexplained
All sample	-22.3 ***	-15.7 ***	-6.5 ***
Comparable occupations sample	0.3	-0.8 **	1.1 ***
By occupation:			
Corporate managers	-9.4 ***	-13.2 ***	3.8 ***
Pysical, mathematical, engineering professionals	2.0	-5.6 ***	7.7 ***
Health professionals	-9.2 ***	-7.9 ***	-1.2 **
Other professionals (business, legal, social,…)	-0.3	-7.7 ***	7.4 ***
Physical and engineering technicians	11.6 ***	-3.4 ***	15.0 ***
Health technicians	6.2 ***	2.1 ***	4.2 ***
Other technicians (finance, police, social work,…)	-0.8	-7.8 ***	7.0 ***
Office clerks	4.8 ***	-0.8 *	5.6 ***
Personal and protective service workers	-25.0 ***	-5.4 ***	-19.6 ***
Sales and services elementary occupations	0.8 ***	3.6 ***	-2.8 **

Note: The difference is statisticaly different from zero if it is flagged with at least one *.
Source: EU-SILC (SORS), authors' calculations.

5. Conclusion

It is commonly perceived that public sector employees are over-paid as compared to their private sector colleagues, meaning that they earn positive wage premium and that the public sector wage reform in force from 2008 in Slovenia improved the position of public sector workers even further, while the consolidation measures of public finances decreased the wage gap again. The results in this study, obtained from a micro database on a time span from 2004 until 2014, point to different conclusions concerning the level and sign of the wage gap.

At the first glance, when we are comparing data at the national level for all employees, there seems to be a positive wage premium earned by the public sector employees. However, after excluding occupational groups that are not possible to compare between the public and private sector and therefore comparing "apples to apples", we find that the wage premium existed in some of the elementary occupational groups, while it was mostly negative (or not possible to determine) in all other occupational groups under the analysis. The pay raises implemented by 2008 public sector pay reform in Slovenia generally brought public sector wages closer to the private ones, although by a different degree in different occupations. The consolidation measures worsened the public sector workers position again.

Nevertheless, there are some important caveats to our analysis that must be kept in mind when interpreting the results. Besides the not completely accurate definition of the public sector and relatively wide occupational groups that are used to compare wages, most important deficiency relates to some strong assumptions on determinants affecting wages. More precisely, such as assuming equal productivity, job protection or fringe benefits in public and private sector when comparing their wages. Therefore, the estimations of wage premium cannot be taken as some exact numbers, but rather as rough approximations pointing at

probably negative or in some occupations positive wage premium. Nevertheless, testing the specification of the model on other countries yields similar results.

Furthermore, the Blinder-Oaxaca decomposition confirmed that about 70% of the wage gap is explained by the explanatory variables and the remaining part is not explained, the result similar to other studies for Slovenia. The explaining part prevails in upper wage classes and the unexplained part is more pronounced at the low wage tail.

From a policy point of view, even though the public sector wage reform increased equality among public and private sector workers its timing was very inconvenient for the fiscal policy, putting additional pressures on the government deficit at the time of high fiscal consolidation needs. The situation of reversing the equalization of public – private differences, which happened after the introduction of austerity measures in 2012, has probably turned again with gradual removal of austerity measures since end 2015. However, the data in our analysis do not cover this reversal. In addition, positive wage premium in low wage classes can be justified as a social corrigendum while the negative wage premium in higher wage classes correspond to usually higher job protection in public sector. However, comparably lower wages in the public sector in high wage classes might discourage high productive individuals to search for jobs in the private sector, causing the quality of public services to deteriorate.

6. Literature

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APPENDIX I: Regression results

1. Without dummies for occupations:

	All occupations - All years	All occupations - before 2008	All occupations - 2008 till 2011	All occupations - after 2011	Comparable occupations - All years	Comparable occupations - before 2008	Comparable occupations - 2008 till 2011	Comparable occupations - after 2011
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Female dummy	-0.165***	-0.141***	-0.182***	-0.175***	-0.176***	-0.159***	-0.183***	-0.185***
	(0.004)	(0.005)	(0.006)	(0.007)	(0.006)	(0.008)	(0.008)	(0.010)
Married dummy	0.022***	0.013**	0.026***	0.030***	0.025***	0.009	0.030***	0.040***
	(0.004)	(0.006)	(0.006)	(0.007)	(0.006)	(0.009)	(0.009)	(0.010)
Part-time dummy	-0.536***	-0.448***	-0.525***	-0.644***	-0.584***	-0.482***	-0.573***	-0.694***
	(0.011)	(0.019)	(0.015)	(0.017)	(0.015)	(0.029)	(0.020)	(0.025)
Public sector dummy	0.067***	0.083***	0.081***	0.017**	-0.012**	-0.016**	0.011	-0.046***
	(0.004)	(0.007)	(0.007)	(0.008)	(0.006)	(0.008)	(0.008)	(0.010)
Low_education	-0.252***	-0.279***	-0.241***	-0.203***	-0.350***	-0.398***	-0.342***	-0.290***
	(0.004)	(0.006)	(0.007)	(0.008)	(0.007)	(0.010)	(0.011)	(0.013)
Medium_education (omitted group)								
High_education	0.494***	0.527***	0.493***	0.463***	0.455***	0.478***	0.448***	0.439***
	(0.005)	(0.008)	(0.007)	(0.008)	(0.006)	(0.009)	(0.009)	(0.010)
age	0.124***	0.122***	0.122***	0.130***	0.154***	0.155***	0.154***	0.152***
	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)	(0.005)	(0.005)	(0.005)
age2	-0.030***	-0.028***	-0.032***	-0.033***	-0.042***	-0.041***	-0.042***	-0.048***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)
year== 2004	-0.196***	(dropped)	(dropped)	(dropped)	-0.131***	(dropped)	(dropped)	(dropped)
	(0.006)				(0.009)			
year== 2005	-0.165***	0.029***	(dropped)	(dropped)	-0.117***	0.013**	(dropped)	(dropped)
	(0.006)	(0.004)			(0.009)	(0.006)		
year== 2006	-0.144***	0.047***	(dropped)	(dropped)	-0.108***	0.020***	(dropped)	(dropped)
	(0.006)	(0.005)			(0.009)	(0.007)		
year== 2007	-0.101***	0.090***	(dropped)	(dropped)	-0.076***	0.052***	(dropped)	(dropped)
	(0.006)	(0.005)			(0.008)	(0.008)		
year== 2008	-0.029***	(dropped)	-0.062***	(dropped)	-0.004	(dropped)	-0.057***	(dropped)
	(0.006)		(0.005)		(0.008)		(0.008)	
year== 2009	-0.016***	(dropped)	-0.049***	(dropped)	0.022**	(dropped)	-0.032***	(dropped)
	(0.006)		(0.005)		(0.008)		(0.007)	
year== 2010	0.013**	(dropped)	-0.021***	(dropped)	0.041***	(dropped)	-0.013**	(dropped)
	(0.006)		(0.004)		(0.009)		(0.006)	
year== 2011	0.033***	(dropped)	(dropped)	(dropped)	0.053***	(dropped)	(dropped)	(dropped)
	(0.006)				(0.008)			
year== 2012	0.012**	(dropped)	(dropped)	0.011**	0.028***	(dropped)	(dropped)	0.026***
	(0.005)			(0.005)	(0.008)			(0.008)
year== 2013	-0.001	(dropped)	(dropped)	-0.002	0.003	(dropped)	(dropped)	0.002
	(0.005)			(0.005)	(0.007)			(0.007)
year== 2014 (omitted group)								
constant	7.242***	7.032***	7.278***	7.266***	7.320***	7.185***	7.368***	7.341***
	(0.006)	(0.007)	(0.007)	(0.008)	(0.009)	(0.011)	(0.011)	(0.013)
Number of observations	100,618	38,419	37,734	24,465	52,301	19,042	20,166	13,093
Adjusted R2	0.437	0.417	0.416	0.397	0.429	0.417	0.416	0.403

note: *** p<0.01, ** p<0.05, * p<0.1

Source: authors' calculations.

2. Dummies for occupations included:

	All occupations - All years	All occupations - before 2008	All occupations - after 2008	All occupations - 2008 till 2011	All occupations - after 2011	Comparable occupations - All years	Comparable occupations - before 2008	Comparable occupations - after 2008	Comparable occupations - 2008 till 2011	Comparable occupations - after 2011
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Female dummy	-0.161***	-0.149***	-0.168***	-0.171***	-0.164***	-0.145***	-0.125***	-0.154***	-0.150***	-0.159***
	(0.004)	(0.006)	(0.005)	(0.006)	(0.007)	(0.006)	(0.009)	(0.007)	(0.008)	(0.010)
Married dummy	0.021***	0.010*	0.027***	0.025***	0.030***	0.021***	0.006	0.029***	0.025***	0.033***
	(0.004)	(0.006)	(0.005)	(0.006)	(0.007)	(0.006)	(0.008)	(0.007)	(0.008)	(0.010)
Part-time dummy	-0.507***	-0.421***	-0.546***	-0.498***	-0.611***	-0.544***	-0.447***	-0.583***	-0.536***	-0.646***
	(0.010)	(0.018)	(0.012)	(0.015)	(0.017)	(0.014)	(0.026)	(0.016)	(0.020)	(0.024)
Public sector dummy	0.004	0.017**	-0.005	0.022***	-0.045***	-0.002	0.008	-0.009	0.016*	-0.047***
	(0.005)	(0.008)	(0.007)	(0.008)	(0.009)	(0.006)	(0.008)	(0.007)	(0.009)	(0.010)
Low_education	-0.123***	-0.137***	-0.109***	-0.115***	-0.092***	-0.142***	-0.176***	-0.122***	-0.135***	-0.097***
	(0.004)	(0.006)	(0.006)	(0.007)	(0.009)	(0.008)	(0.012)	(0.010)	(0.012)	(0.015)
Medium_education (omitted group)										
High_education	0.247***	0.259***	0.246***	0.254***	0.234***	0.262***	0.285***	0.253***	0.266***	0.234***
	(0.006)	(0.010)	(0.007)	(0.009)	(0.010)	(0.007)	(0.012)	(0.009)	(0.011)	(0.013)
age	0.110***	0.105***	0.112***	0.109***	0.117***	0.141***	0.140***	0.142***	0.142***	0.142***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)
age2	-0.034***	-0.031***	-0.036***	-0.036***	-0.037***	-0.046***	-0.043***	-0.049***	-0.048***	-0.052***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.005)
year== 2004	-0.227***	-0.064***	(dropped)	(dropped)	(dropped)	-0.176***	(dropped)	(dropped)	(dropped)	(dropped)
	(0.006)	(0.004)				(0.008)				
year== 2005	-0.193***	-0.032***	(dropped)	(dropped)	(dropped)	-0.153***	0.022***	(dropped)	(dropped)	(dropped)
	(0.005)	(0.004)				(0.008)	(0.005)			
year== 2006	-0.160***	(dropped)	(dropped)	(dropped)	(dropped)	-0.131***	0.041***	(dropped)	(dropped)	(dropped)
	(0.005)					(0.008)	(0.007)			
year== 2007	-0.116***	0.044***	(dropped)	(dropped)	(dropped)	-0.095***	0.078***	(dropped)	(dropped)	(dropped)
	(0.005)	(0.004)				(0.008)	(0.007)			
year== 2008	-0.044***	(dropped)	-0.045***	-0.043***	(dropped)	-0.024***	(dropped)	-0.026***	-0.064***	(dropped)
	(0.005)		(0.005)	(0.004)		(0.008)		(0.008)	(0.007)	
year== 2009	-0.030***	(dropped)	-0.031***	-0.029***	(dropped)	0.003	(dropped)	0.001	-0.037***	(dropped)
	(0.005)		(0.005)	(0.004)		(0.008)		(0.008)	(0.007)	
year== 2010	-0.002	(dropped)	-0.002	(dropped)	(dropped)	0.023***	(dropped)	0.021***	-0.017***	(dropped)
	(0.005)		(0.006)			(0.008)		(0.008)	(0.006)	
year== 2011	0.018***	(dropped)	0.018***	0.020***	(dropped)	0.039***	(dropped)	0.038***	(dropped)	(dropped)
	(0.005)		(0.005)	(0.004)		(0.008)		(0.008)		
year== 2012	0.003	(dropped)	0.003	(dropped)	0.002	0.016**	(dropped)	0.016**	(dropped)	0.015**
	(0.005)		(0.005)		(0.005)	(0.007)		(0.007)		(0.007)
year== 2013	-0.005	(dropped)	-0.005	(dropped)	-0.006	-0.001	(dropped)	-0.002	(dropped)	-0.003
	(0.004)		(0.004)		(0.004)	(0.006)		(0.006)		(0.006)
year== 2014 (omitted group)										
11 Chief executives, senior officials and legislators	0.398***	0.469***	0.364***	0.394***	0.356***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.037)	(0.052)	(0.046)	(0.058)	(0.060)					
12 Corporate managers	0.198***	0.255***	0.164***	0.164***	0.171***	-0.081***	-0.034	0.173***	-0.118***	-0.106***
	(0.019)	(0.030)	(0.024)	(0.029)	(0.034)	(0.023)	(0.036)	(0.022)	(0.034)	(0.037)
13 Managers of small enterprises	-0.148***	-0.172***	-0.137***	-0.137**	-0.124**	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.037)	(0.062)	(0.045)	(0.065)	(0.055)					
21 Physical, mathematical and engineering science prof.	0.037**	0.113***	-0.000	-0.034	0.053**	-0.224***	-0.160***	0.025	-0.299***	-0.213***
	(0.016)	(0.025)	(0.020)	(0.024)	(0.026)	(0.020)	(0.032)	(0.017)	(0.030)	(0.029)
22 Life science and health professionals	0.272***	0.286***	0.262***	0.279***	0.270***	(dropped)	(dropped)	0.278***	(dropped)	(dropped)
	(0.021)	(0.034)	(0.026)	(0.034)	(0.032)			(0.023)		
23 Teaching professionals	0.033**	0.112***	-0.005	-0.018	0.026	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.014)	(0.021)	(0.017)	(0.021)	(0.022)					
24 Other professionals	0.080***	0.122***	0.055***	0.039*	0.085***	-0.191***	-0.161***	0.071***	-0.236***	-0.186***
	(0.015)	(0.023)	(0.019)	(0.024)	(0.025)	(0.019)	(0.031)	(0.016)	(0.030)	(0.028)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
31 Physical and engineering technicians	-0.057***	-0.024	-0.074***	-0.085***	-0.051**	-0.319***	-0.285***	-0.054***	-0.350***	-0.323***
	(0.014)	(0.021)	(0.018)	(0.022)	(0.024)	(0.019)	(0.031)	(0.015)	(0.030)	(0.030)
32 Life science and health technicians	-0.019	-0.007	-0.023	-0.049**	0.013	-0.280***	-0.275***	(dropped)	-0.313***	-0.253***
	(0.014)	(0.020)	(0.018)	(0.022)	(0.024)	(0.019)	(0.031)		(0.030)	(0.031)
33 Teaching technicians	-0.078***	-0.015	-0.131***	-0.165***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.020)	(0.026)	(0.027)	(0.029)						
34 Other technicians	-0.082***	-0.039*	-0.107***	-0.124***	-0.074***	-0.349***	-0.311***	-0.090***	-0.396***	-0.346***
	(0.014)	(0.020)	(0.017)	(0.021)	(0.023)	(0.018)	(0.030)	(0.013)	(0.029)	(0.027)
41 Office clerks	-0.190***	-0.141***	-0.219***	-0.222***	-0.208***	-0.455***	-0.410***	-0.201***	-0.493***	-0.479***
	(0.013)	(0.020)	(0.017)	(0.021)	(0.022)	(0.019)	(0.030)	(0.012)	(0.029)	(0.028)
42 Customer services clerks	-0.112***	-0.053**	-0.149***	-0.158***	-0.124***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.018)	(0.027)	(0.021)	(0.026)	(0.030)					
51 Personal and protective service workers	-0.337***	-0.326***	-0.341***	-0.349***	-0.320***	-0.583***	-0.573***	-0.307***	-0.600***	-0.583***
	(0.013)	(0.020)	(0.017)	(0.021)	(0.022)	(0.019)	(0.031)	(0.012)	(0.030)	(0.029)
52 Sales workers	-0.366***	-0.340***	-0.379***	-0.410***	-0.324***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.014)	(0.021)	(0.018)	(0.022)	(0.023)					
61 Skilled agricultural workers	-0.349***	-0.325***	-0.360***	-0.383***	-0.312***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.020)	(0.031)	(0.025)	(0.029)	(0.034)					
71 Extraction and building trades workers	-0.383***	-0.354***	-0.396***	-0.388***	-0.410***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.016)	(0.022)	(0.020)	(0.024)	(0.027)					
72 Metal, machinery and related trades workers	-0.276***	-0.268***	-0.277***	-0.307***	-0.229***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.014)	(0.020)	(0.017)	(0.021)	(0.022)					
73 Precision, handicraft, craft printing, related trades workers	-0.309***	-0.322***	-0.300***	-0.331***	-0.246***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.027)	(0.039)	(0.032)	(0.038)	(0.045)					
74 Other craft and related trades workers	-0.417***	-0.398***	-0.430***	-0.462***	-0.383***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.015)	(0.021)	(0.018)	(0.023)	(0.024)					
81 Stationary-plant and related operators	-0.257***	-0.250***	-0.262***	-0.293***	-0.226***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.015)	(0.023)	(0.019)	(0.024)	(0.025)					
82 Machine oprators and assemblers	-0.374***	-0.343***	-0.382***	-0.396***	-0.330***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.014)	(0.020)	(0.018)	(0.022)	(0.026)					
83 Drivers and mobile plant operators	-0.356***	-0.347***	-0.357***	-0.372***	-0.326***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.015)	(0.021)	(0.018)	(0.023)	(0.024)					
91 Sales and services elementary occupations	-0.469***	-0.449***	-0.483***	-0.505***	-0.447***	-0.725***	-0.699***	-0.461***	-0.769***	-0.718***
	(0.014)	(0.020)	(0.017)	(0.021)	(0.022)	(0.019)	(0.032)	(0.013)	(0.030)	(0.029)
92 Agricultural, forestry and fishery labourers	-0.538***	-0.536***	-0.537***	-0.519***	-0.559***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.032)	(0.041)	(0.045)	(0.058)	(0.059)					
93 Labourers in mining, construction manufacturing and transport	-0.416***	-0.394***	-0.428***	-0.453***	-0.381***	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
	(0.014)	(0.020)	(0.018)	(0.022)	(0.023)					
constant	7.510***	7.309***	7.532***	7.540***	7.512***	7.749***	7.528***	7.496***	7.821***	7.784***
	(0.013)	(0.019)	(0.016)	(0.020)	(0.021)	(0.020)	(0.031)	(0.015)	(0.030)	(0.030)
Number of observations	100,325	38,231	62,094	37,685	24,409	52,301	19,042	33,259	20,166	13,093
Adjusted R2	0.516	0.508	0.488	0.497	0.478	0.498	0.487	0.482	0.485	0.481

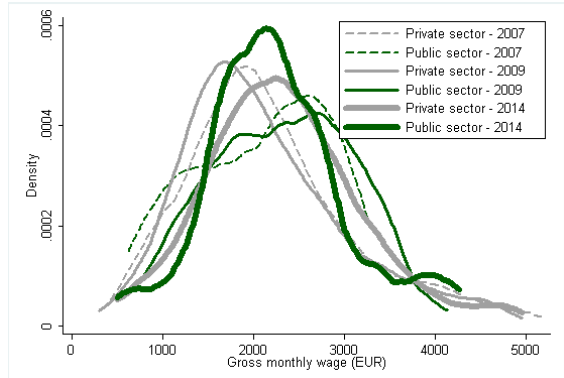note: *** p<0.01, ** p<0.05, * p<0.1

Source: authors' calculations.

APPENDIX II: wage distributions in public and private sector by occupational group in Slovenia
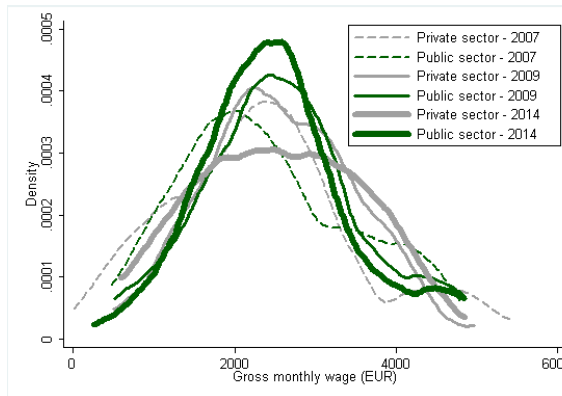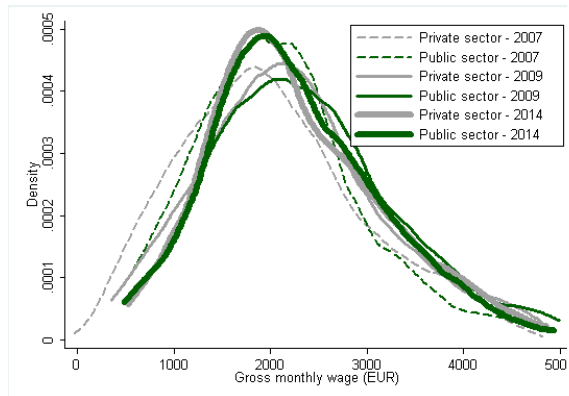
Corporate managers
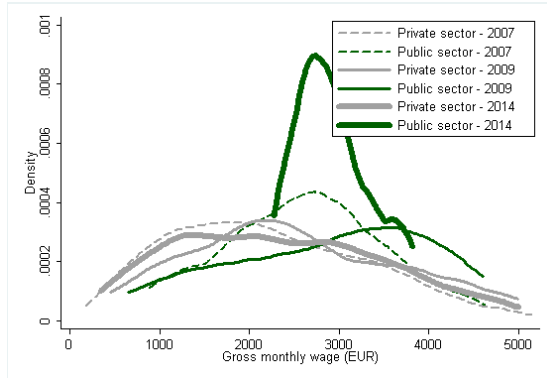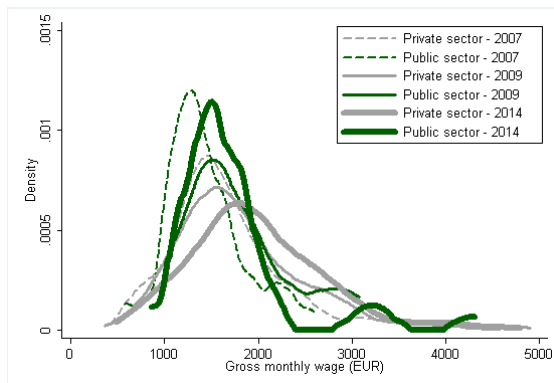

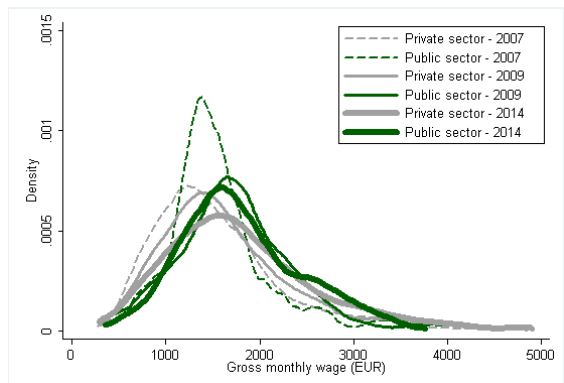Physical, mathematical, engineering professionals

Health professionals
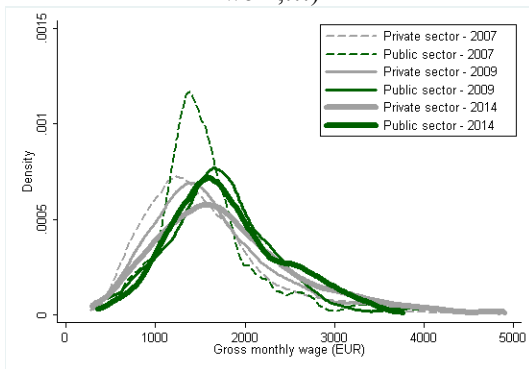

Other professionals (business, legal, social,…)
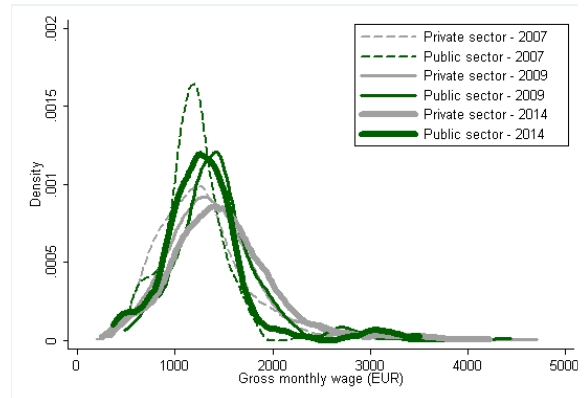

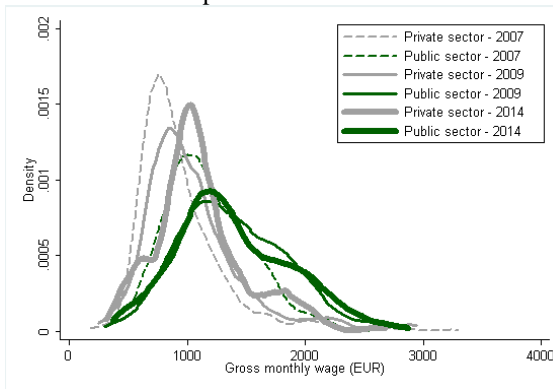Physical and engineering technicians

Health technicians

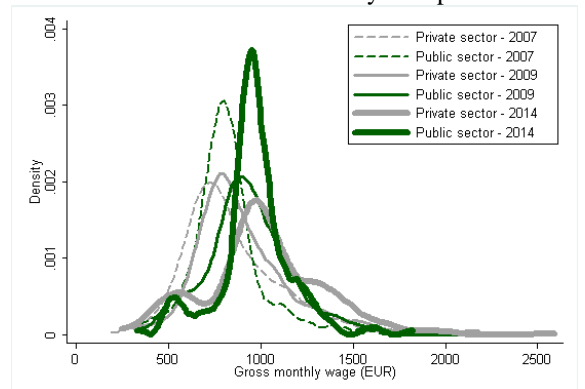Other technicians (finance, police, social work,…)

Office clerks

Personal and protective service workers

Sales and services elementary occupations

Source: authors' calculations.