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The public–private sector wage gap in Latvia

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ABSTRACT

This study investigates the public–private sector wage gap in Latvia using microdata from the labour force survey. The severity of public sector wage cuts employed as a response to the economic crisis and subsequent recovery provides a test bed to analyse whether and how the public–private sector wage gap has adjusted after consolidation-driven wage cuts. Findings reveal that the observed wage gap is slightly in favour of the public sector; however, once differences in individual characteristics and selection effects are considered, results point to a private sector wage premium. Findings also suggest that the private sector wage premium has increased since the pre-crisis period. A significant private sector wage premium raises doubts on whether a system that is reliant on discretionary fiscal measures is efficient enough in eliminating unwarranted differences in wage. In particular, whether a re-adjustment process of public sector wages works after consolidation-driven wage cuts.

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1. Introduction

Investigating public–private sector wage differentials has regained the importance in the context of recent economic crisis when governments across Europe had to engage in considerable consolidation efforts, including public sector wage cuts, to achieve sustainable budgetary positions. Despite the severity of wage cuts, the question on the appropriateness of the structure and level of public sector wages was often neglected in the midst of discussions on fiscal consolidation. In the last few years, however, there has been a growing interest in the interaction between wages in public and private sectors (Campos, Depalo, Papapetrou, Perez, & Ramos, 2017; European Commission, 2014; Holm-Hadulla, Kamath, Lamo, Perez, & Schuknecht, 2010).

This study investigates the public–private sector wage gap in Latvia nearly a decade after the crisis and seeks to elucidate its various dimensions, including the importance of endowment, selection and distributional effects. The severity of the public sector wage cuts employed during the crisis (European Federation of Public Service Unions [EPSU], 2011) and the subsequent recovery renders Latvia an interesting case study on how the public–private sector wage gap has adjusted after consolidation-driven wage cuts.

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The Baltic states were the frontrunners in a race to consolidate the public sector wage bill when the economic downturn started in 2008–2009. Although nominal hourly wage cuts as well as a reduction in bonuses and fringe benefits were employed in all three Baltic states, the sheer magnitude of the adjustment was the largest in Latvia (Masso & Espenberg, 2013). Economic recovery following the crisis has been accompanied by wage growth in both public and private sector, which therefore creates promising conditions to analyse whether (and how) the public–private sector wage gap adjusts after consolidation-driven wage cuts. This might be particularly interesting considering that public sector wages in Latvia are set with discretionary decisions.¹

The importance of assessing and understanding the public–private sector wage gap stems from various reasons. Firstly, unjustified differences in wages between the public and private sectors might carry important economic implications. Previous evidence shows that private sector wages are highly responsive to the shocks in public sector wages (Afonso & Gomes, 2008; European Commission, 2014). Disproportionally high wages in the public sector may result in queuing for public sector jobs and thus put pressure on private sector wages. Consequently, increasing unit labour costs might undermine the country's international competitiveness (Lane & Perotti, 2003) and reduce private sector profitability (Alesina, Ardagna, Perotti, & Schiantarelli, 2002). In turn, unduly low wages in the public sector could render public employers uncompetitive in terms of attracting and retaining skilled employees which in time might be reflected in the inferior quality of essential public services. Secondly, the public sector wage bill is one of the largest expenditure positions in the government's budget. In the case of Latvia, wages accounted for more than a quarter of general government spending and 9.9% of GDP in 2015.² Hence, imprudent wage setting in the public sector might not only hamper the country's competitiveness, but also add to fiscal vulnerability (Holm-Hadulla et al., 2010). Thirdly, in years following the crisis, governments have faced pressure to revise previous measures and increase the wages for public sector employees. The responsiveness of private sector wages to shocks in public sector wages tends to be lower when shocks are driven by consolidation efforts (European Commission, 2014); therefore, calls for public sector wage re-adjustment might indeed be warranted. However, a decision to increase public sector wages should be well-justified as it carries risks to budgetary positions and might have adverse side-effects in the labour market.

In recent years, research into public–private sector wage gaps has become diverse in terms of geographical coverage and methodologies used. Despite its growing popularity, the comparison of wages between the two sectors can be challenging, especially considering that activities covered by the public and private sector do not always overlap. Occupations in predominantly public industries like healthcare and education might require different qualification and skill sets than occupations in predominantly private industries, e.g. construction, finance and insurance. It has been well documented that public and private sector employees differ in many dimensions including education attainment (Christofides & Pashardes, 2002; Garcia-Perez & Jimeno, 2007; Grotkowska, Wincenciak, & Gajderowicz, 2016), gender composition (Castro, Salto, & Steiner, 2013) and job experience (Hospido & Moral-Benito, 2016; Nikolic, Rubil, & Tomic, 2017). Hence, drawing conclusions solely from the observed (unconditional) wage gap might be misleading, and accounting for differences in observable characteristics is an essential part of the assessment of wage gaps.

Another aspect that has seen increasing importance is the sample selection bias which is prone to arise from the non-random nature of employment and sector choices. While selection into employment is often assessed in literature, selection into sectors has not received as much attention.³ The latter arises if individuals who expect comparative advantage within a certain sector actually chose to work in that sector and therefore benefit from it more than a randomly selected individual with the same observed characteristics. Ignoring the selection effects or controlling for one type of selection only and failing to account for the other might lead to biased estimates and misleading conclusions.

Despite a considerable amount of literature concerning most of the countries in Europe, little is known about the public–private sector wage gap in Latvia. Current evidence is mostly drawn from cross-country studies that have examined the public–private sector wage gap in an international perspective (Castro et al., 2013; Christofides & Michael, 2013). These studies, however, mainly focus on cross-country comparison and do not elaborate on country-specific considerations. It is therefore not surprising that they show mixed results regarding the wage gap and factors explaining it.

The econometric analysis used in this study is based on Oaxaca and Ransom (1994) decomposition with correction for double sample selection. This strategy takes into account that unobserved factors which guide individuals into paid employment and steer their choice of the sector could also be significant determinants of wage. To test the robustness of findings, different specifications have been employed to construct the selection terms and decompose the observed wage gap.

The findings reveal that despite the unconditional wage gap being slightly in favour of the public sector (wages in the public sector are roughly 3% higher than in the private sector), the conditional wage gap is significantly in favour of the private sector, implying a private sector wage premium that ranges from 8% to 10%. Findings also suggest that the observed wage gap has narrowed since the pre-crisis period while the private sector wage premium has increased. The observed wage gap is positive for low-wage earners; however, it becomes insignificant at the highest deciles of the wage distribution. The unexplained part indicates a public sector wage premium for low-wage earners and the opposite for high-wage earners. Overall, the significant private sector wage premium raises doubts on whether a system that is reliant on discretionary fiscal measures is efficient enough in eliminating unwarranted differences in wage.

The remainder of the paper is organized as follows: Section 2 discusses the wage setting practices in the public sector and adjustments made during the recent economic downturn. Section 3 reviews previous literature on public–private sector wage gaps. Section 4 describes the methodology used in the study. The results are presented separately for Riga and other regions in Section 5. The last section concludes with a summary and discussion of the findings.

2. Public sector wage setting practices and fiscal adjustment

Public sector entities mostly operate under different circumstances than the private sector companies. The incentives for public sector employers are rarely related to profit-seeking and instead, they might want to maximize social welfare (Gregory & Borland, 1999) and, in some cases, chances of being (re)elected (Matschke, 2003). Moreover, the market conditions under which both sectors operate also tend to differ. Although in some cases

public sector employers engage in a market-based competition with their private sector counterparts, the vast majority of goods and services provided by the public sector are one-of-a-kind. These specific circumstances as well as the potential implications on private sector wages and competitiveness call for a carefully designed public sector wage setting framework.

Although there is a great deal of heterogeneity in public sector wage setting practices among EU member states, a distinctive borderline can be drawn between the countries in which wages are set through a decentralized bargaining process and those in which they are set by legislative decisions (European Commission, 2014). Latvia, like the number of other Eastern European countries, belongs to the latter.

Public sector⁴ wage setting in Latvia is regulated by normative acts and the prevalence of decentralized bargaining is low. Margins for wages are set using a grid that considers the complexity of the position as well as experience and performance of the employee. Although the current system helps to ensure transparency in wage setting practices, previous studies have questioned its effectiveness. For most occupation groups, but especially for high-level management, public sector wages fall short of the targeted values and of wages in analogous private sector positions (FONTES, 2016). Furthermore, these differences in wages cannot be explained solely by imperfect comparability of positions in both sectors. Public sector wages seem to be lower also for those positions that are relatively common in the private sector (such as IT specialists).

Wage setting procedures are likely to affect the size and the dynamics of the public-private sector wage differential. Due to the similarity with the wage setting practices in the private sector, one could expect a smaller wage differential in those countries where public sector wages are set through decentralized bargaining. Also, the adjustment process after exogenous shocks to the public sector wages should be faster in these countries. This is because the decentralized bargaining process ensures that workers' demands are directly transmitted to the employer, which can take the necessary actions to eliminate the relative disadvantage with respect to the private sector. In countries where wages are set with legislative decisions, the adjustment process is not always built-in and could take more time. The differences in the adjustment process might be particularly relevant when the exogenous shock is consolidation-driven and of large magnitude. In such cases, fiscal constraints might limit the government's ability to undertake discretionary measures to re-adjust public sector wages, therefore potentially causing a permanent comparative disadvantage for public sector employees.

The response to the unprecedented economic circumstances during the recent economic crisis and mounting fiscal imbalances included notable consolidation efforts in a number of EU member states. In most cases, public sector wage cuts were part of the effort; however, few were of similar magnitude as the cuts undertaken by the government of Latvia. The Memorandum of Understanding⁵ (European Commission, 2009) foresaw notable cuts in public sector employment and wages that were not limited to central administration only, but applied to local governments and state-owned companies as well.⁶ In 2009, gross wages below 300 LVL (415 EUR) were cut by 15% and those above 300 LVL were cut by 20%. Furthermore, also performance bonuses and other benefits saw significant reductions (FONTES, 2016). In contrast to the other Baltic states, the wage cuts were complemented with reduced public sector employment (Masso &

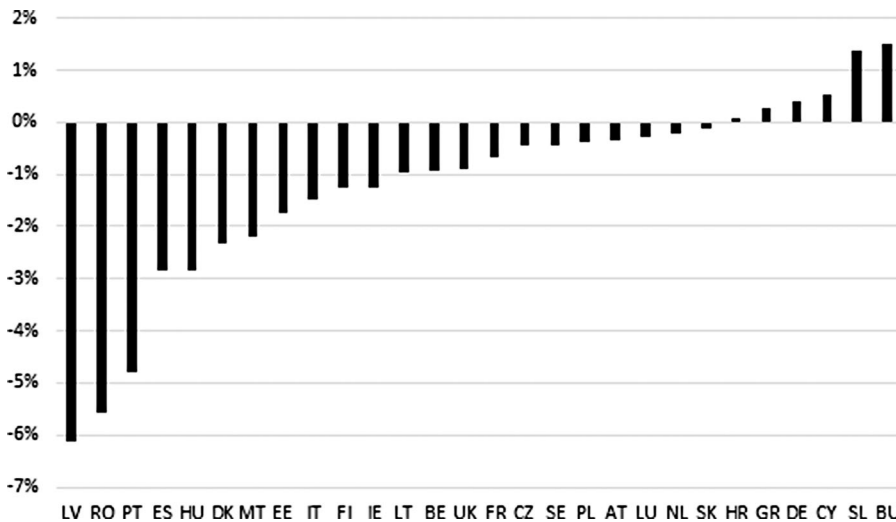


Figure 1. Changes in compensation of employees as a share of total general government expenditure (from 2008 to 2012).

Note: Data source Eurostat.

Espenberg, 2013). As a result, the compensation of employees as a share of total general government expenditure fell from 30% in 2008 to 24% in 2012 (Figure 1).

In the years following the crisis, economic recovery in Latvia has been more resilient than in most other EU countries, and it has been accompanied by rapid wage growth in both public and private sectors. Nevertheless, indicative survey results suggest that the vast majority of employees in the public sector are underpaid compared to their private sector counterparts (FONTES, 2016). This raises questions about public sector wage adjustment after extraordinary measures undertaken by the government of Latvia during the crisis and calls for an examination of the public–private sector wage gap.

3. Literature review

The literature on public–private sector wage gaps has been extensive in terms of geographical and time coverage. Moreover, empirical methods that have been used to address the issue are numerous. Describing the large variety of results found in the empirical literature is beyond the scope of this paper, therefore this section provides a selective overview of literature that employs wage gap decomposition analysis.

Though the public–private sector wage gap is sometimes assessed from a macroeconomic perspective, most of the previous work is based on microdata. Studies mostly use Mincerian type wage equations and employ decomposition methods like Oaxaca-Blinder (Blinder, 1973; Oaxaca, 1973) or Oaxaca-Ransom (Oaxaca & Ransom, 1994) in order to elucidate the extent to which the observed wage gap is explained by differences in observed individual characteristics and what is left unexplained. Decomposition methods are sometimes complemented with selectivity correction to account for the non-random nature of employment (Christofides & Michael, 2013), sectoral selection (Christofides & Pashardes, 2002; Dustmann & Van Soest, 1998) or both (Garcia-Perez &

Jimeno, 2007; Heitmueller, 2006). Another strand of literature focuses on distributional characteristics of the public–private wage gap by using quantile decomposition techniques (Bargain & Melly, 2008; Campos & Pereira, 2009; Depalo & Giordano, 2011; Hospido & Moral-Benito, 2016). This is done to provide a more comprehensive overview of the wage gap at different percentiles of the wage distribution.

Overall, previous studies show a great deal of heterogeneity in the results which to a large extent can be attributed to the differences in sample choice, the definition of the public sector and empirical methods applied. Despite the difficulties of country-level comparison, previous studies show that somewhat different pictures emerge for Western Europe and Central and Eastern Europe (CEE) (European Commission, 2014).

A considerable amount of literature has been published on public–private sector wage gaps in Western Europe (Bargain & Melly, 2008; Campos & Pereira, 2009; Garcia-Perez & Jimeno, 2007; Giordano et al., 2011 among many others). These studies mostly find a significant observed wage gap in favour of the public sector that is to large extent explained by better endowments. The magnitude of the unconditional and conditional wage gaps, however, varies from country to country. Part of this variation can be associated with the differences in institutional characteristics such as public sector wage setting practices, union density and stringency of employment protection legislation (European Commission, 2014).

Existing research also recognizes the critical role played by selection effects which might alter the decomposition results. For example, Heitmueller (2006) finds that the male private sector wage premium in Scotland is mainly caused by sector selection. For Spain, the public sector wage premium is reduced by half when selection effects are also taken into consideration (Hospido & Moral-Benito, 2016). Similar conclusions have been reached for Greece (Kanellopoulos, 1997) and other European countries (Christofides & Michael, 2013).

Studies that have used quantile decomposition methods reveal that public sector employees enjoy a wage premium at lower percentiles of wage distribution whilst the opposite is true for high-wage earners (Bargain & Melly, 2008; Campos & Pereira, 2009; Depalo & Giordano, 2011; Lucifora & Meurs, 2006). This might lead to public sector employers facing difficulties in recruiting and retaining high-skilled employees while, in the meantime, paying above-market wages for low-skilled counterparts.

Existing evidence for CEE countries suggests that the public–private sector wage gap has changed over time in line with the transition from central planning to market economies (Lausev, 2014). At the early stages of transition, the wage gap is usually found to be in favour of the private sector (Adamchik & Bedi, 2000 for Poland; Leping, 2006 for Estonia), whereas at later stages it either vanishes or turns positive, i.e. in favour of the public sector (Grotkowska et al., 2016 for Poland; Masso & Espenberg, 2013 for Estonia; Nikolic et al., 2017 for Croatia and Serbia). Explanations for such wage gap dynamics are numerous. First, it might reflect the selection effects that are prone to arise if a rapidly developing private sector lures away the high-skilled public sector employees at early stages of transition (Adamchik & Bedi, 2000). Second, one can argue that wage setting in profit-seeking private companies might be more flexible than in state-owned companies and therefore respond quicker to changes in productivity (Adamchik, Hycak, & King, 2003). Third,

governments could face difficulties to align public sector remuneration to the fast-growing private sector and simultaneously avoid excessive deficits. At later stages of transition, these effects might become less relevant.

In contrast to most of the countries in Western Europe (and to some in CEE), little attention has been paid to the public–private sector wage gap in Latvia. Moreover, existing results are rather controversial. A cross-country analysis conducted by Castro et al. (2013) reveals that the observed wage gap in Latvia (close to 7% in favour of the public sector) is well below EU average. Furthermore, when differences in individual characteristics are accounted for, the unexplained component of the wage gap turns out to be negative. In turn, Christofides and Michael (2013) find the public–private sector wage gap to be one of the highest in Europe (above 45%) and it remains significant even when differences in individual characteristics are accounted for. Variation in findings might to some extent be attributable to different definitions of the public sector. Castro et al. (2013) opt for a public sector identifier available in their dataset, whereas Christofides and Michael (2013) use the narrow definition of public sector (NACE rev. 2. code L ‘public administration and defence, compulsory social security’) which might not be appropriate in the case of Latvia since health, education and other industries contribute significantly to public sector employment.

Despite the importance of selection effects found in many studies for other European countries and the evidence of selection effects at play in Latvia (Hazans, 2008), so far very little attention has been paid to the role that selection effects play in explaining the public–private sector wage gap in Latvia. Even though Christofides and Michael (2013) adjust the wage gap for selection into employment, selection into sectors was left untreated. In the case of Latvia, to the best of the author’s knowledge, there are no studies that consider both sources of selectivity.

Recently, there has been an increased interest in the developments of public–private sector wage gap during and after the crisis, presumably considering the sizable public sector wage cuts used as a response to the severe economic downturn (European Commission, 2014). However, there seems to be no common trend in the way how the public–private sector wage gap has changed over the recent years, possibly owing to different paths countries took as a response to the crisis (EPSU, 2011), different initial positions (Nikolic et al., 2017) and differences in institutional settings. Investigating the public–private sector wage gap in Latvia might provide a useful addition to the existing evidence, particularly considering the severity of the wage cuts employed during the economic downturn.

4. Econometric model

The estimation procedure is constructed in three steps. First, the individuals’ choice of employment status (employed or not-employed) and choice of the sector is estimated taking into account the observed factors that might influence both decisions. Second, separate wage equations are estimated for public and private sector employees. Third, the observed public and private sector wage gap is decomposed into: (a) part explained by differences in the explanatory variables, (b) part attributable to selectivity effects and (c) the part that remains unexplained.

4.1. Selectivity and wage equations

Decisions to be employed and in which sector to be employed are most likely made simultaneously as it does not seem likely that individuals first choose to be employed and then decide in which sector to be employed. A joint-decision (or simultaneous decision) framework is therefore used (Maddala, 1983). Let the employment status and the choice of the sector for individual i be determined by (1) and (2), respectively:

$$I_{1i}^* = Z_i\gamma + \epsilon_{1i}, \quad (1)$$

$$I_{1i} = 1 \quad \text{if } I_{1i}^* > 0,$$

$$I_{1i} = 0 \quad \text{if } I_{1i}^* \leq 0,$$

$$I_{2i}^* = B_i\beta + \epsilon_{2i}, \quad (2)$$

$$I_{2i} = 1 \quad \text{if } I_{2i}^* > 0,$$

$$I_{2i} = 0 \quad \text{if } I_{2i}^* \leq 0,$$

where I_{1i} and I_{2i} are dummy variables that reflect individual's employment status ($I_{1i} = 1$ if individual is employed and $I_{1i} = 0$ otherwise) and the choice of the sector ($I_{2i} = 1$ in the case of the public sector and $I_{2i} = 0$ in the case of the private sector). I_{1i}^* and I_{2i}^* are the latent variables; Z_i and B_i are the vectors of exogenous explanatory variables with respective coefficient vectors γ and β . ϵ_{1i} and ϵ_{2i} are the error terms that are distributed bivariate normal and may or may not be correlated. This framework implies that an individual will choose to be employed if the utility from employment exceeds the utility from non-employment ($I_{1i} = 1$ if $I_{1i}^* > 0$). Similarly, individuals will choose public sector employment if its expected utility (e.g. in form of preferences or higher wage) exceeds that of the private sector ($I_{2i} = 1$ if $I_{2i}^* > 0$). However, neither of the two latent variables are observed and only the outcome binary variables (I_{1i} and I_{2i}) are available. Due to the simultaneous nature of selection framework bivariate probit is used to estimate baseline specifications for (1) and (2).⁷

Once (1) and (2) are estimated, four sample correction terms (two for selection into employment and two for selection into sectors) can be created. Construction procedure, however, depends on the independence of both decisions, i.e. whether unobserved factors affecting employment and choice of the sector are uncorrelated, $\rho_{\epsilon_1, \epsilon_2} = 0$. In case error terms are not correlated, correction terms can be constructed as follows:

$$\hat{\lambda}_{I_{1, \text{pub}, i}} = \frac{\phi(Z_i\hat{\gamma})}{\Phi(Z_i\hat{\gamma})}, \quad (3)$$

$$\hat{\lambda}_{I_{1, \text{pri}, i}} = \frac{\phi(Z_i\hat{\gamma})}{\Phi(Z_i\hat{\gamma})}, \quad (4)$$

$$\hat{\lambda}_{I_{2, \text{pub}, i}} = \frac{\phi(B_i\hat{\beta})}{\Phi(B_i\hat{\beta})}, \quad (5)$$

$$\hat{\lambda}_{I_{2, \text{pri}, i}} = \frac{-\phi(B_i\hat{\beta})}{\Phi(-B_i\hat{\beta})}, \quad (6)$$

where $\hat{\lambda}_{ln,j,i}$ are the respective correction terms for selection into employment (first two terms) and the choice of the sector (last two terms); ϕ is the standard normal density function and Φ is the standard normal distribution function. If employment and sectoral choice decisions are not independent ($\rho_{\epsilon_1, \epsilon_2} \neq 0$), construction of correction terms becomes more complicated.⁸ The next step is to estimate wage equations for public and private sector employees separately:

$$Y_{pub,i} = X_i a_{pub} + \rho_{\epsilon_1, \mu_{pub}} \sigma_{u_{pub}} \hat{\lambda}_{1,pub,i} + \rho_{\epsilon_2, \mu_{pub}} \sigma_{u_{pub}} \hat{\lambda}_{2,pub,i}, \quad (7)$$

$$Y_{pri,i} = X_i a_{pri} + \rho_{\epsilon_1, \mu_{pri}} \sigma_{u_{pri}} \hat{\lambda}_{1,pri,i} + \rho_{\epsilon_2, \mu_{pri}} \sigma_{u_{pri}} \hat{\lambda}_{2,pri,i}, \quad (8)$$

where $Y_{pub,i}$ and $Y_{pri,i}$ are the log wages in public and private sectors, X_i is a vector of explanatory variables and a_{pub} and a_{pri} are the respective regression coefficients.⁹ Selection terms test for (and if applicable correct for) the biases that are prone to arise due to the systematic nature employment and sector choices.

An estimation of the two-step model requires some identification assumptions. Heckman (1979) selection models can be identified even when there are no additional variables available. This occurs because the correction term (inverse Mills ratio) is estimated by the non-linear probit model and therefore it will not be perfectly correlated with explanatory variables, even if all the variables used to estimate selection are the same as covariates in wage equations. However, relying on the functional form only is hardly seen as a plausible solution.¹⁰ Therefore, it is desirable to include at least one variable that determines selection processes (included Z_i and B_i) without exhibiting a direct effect on wages.

In the case of employment equation, we follow a large body of literature and use household demographic variables. These include two variables indicating the presence of children in a household, a variable capturing the presence of an elderly person in a household and a binary variable whether an individual lives alone.¹¹ Previous evidence indicates that the presence of children indeed affects the likelihood of being employed (Hazans, 2008; Heckman, 1974; Huber & Mellace, 2011) albeit somewhat differently for both genders (Heitmueller, 2006). Similarly, the presence of an elderly person might be negatively correlated with employment as one can argue that it induces some form of caretaking and therefore reduces the time available for work. In turn, the fact that individual lives alone could be positively correlated with employment as those living alone might face higher financial pressure to cover the costs of living. Previous evidence for Latvia provides support for this hypothesis (Hazans, 2008).

In the case of sector choice equation, a variable that indicates whether an individual has other household members working in the public sector is used, thus following a seminal study by Christofides and Pashardes (2002). There are at least two reasons why having a family member in the public (private) sector could influence an individual's decision to prefer or seek a job in the respective sector. First, family members might share a common set of values including those of a preferable job setting. Second, one could argue that, due to family networking, the cost of job searching might be lower in a sector (but most particularly in an industry) in which a family member is employed. The second argument is explored further by adding an additional dummy variable which indicates whether any other household members work in the same NACE industry.¹²

4.2. Wage gap decomposition

Once selectivity adjusted wage equations are estimated, the public–private sector wage gap can be written as:

$$\begin{aligned}
 Y_{\text{pub},i} - Y_{\text{pri},i} = & \hat{a}_{\text{pop}}(\bar{X}_{\text{pub},i} - \bar{X}_{\text{pri},i}) + \bar{X}_{\text{pub},i}(\hat{a}_{\text{pub}} - \hat{a}_{\text{pop}}) + \bar{X}_{\text{pri},i}(\hat{a}_{\text{pop}} - \hat{a}_{\text{pri}}) \\
 & + (\rho_{1,u_{\text{pub}}} \sigma_{u_{\text{pub}}} \hat{\lambda}_{1,\text{pub},i} + \rho_{2,u_{\text{pub}}} \sigma_{u_{\text{pub}}} \hat{\lambda}_{2,\text{pub},i}) \\
 & - (\rho_{1,u_{\text{pri}}} \sigma_{u_{\text{pri}}} \hat{\lambda}_{1,\text{priv},i} - \rho_{2,u_{\text{pri}}} \sigma_{u_{\text{pri}}} \hat{\lambda}_{2,\text{pri},i}).
 \end{aligned} \tag{9}$$

The first term on the right-hand side of (9) is the endowment effect i.e. part of the total wage gap attributable to differences in means of explanatory variables which are weighted by the estimated wage equation coefficients for the whole population (both public and private sector employees, \hat{a}_{pop}). The next two terms represent the unexplained part, i.e. the differences in market evaluation of explanatory variables. The last two terms measure the contribution of selection effects to the observed wage gap.

As a last source of inference, the quantile decomposition method developed by Chernozhukov, Fernández-Val, and Melly (2009) and Melly (2005) is used. This method provides a valuable insight on how the wage gap varies amongst employees at different wage levels.

4.3. Data

Data are drawn from the labour force survey (LFS) of Latvia for 2015. The survey is conducted annually by the Central Statistics Bureau and it provides a comprehensive (and nationally representative) set of data on individuals' personal and household characteristics, education attainment, working status, type of employment, monthly wage, hours worked, etc.

The sample used in the study includes full-time employees, aged 18–65. To make income streams more comparable across both sectors, self-employed individuals (who are mostly concentrated in the private sector) were excluded from the sample.¹³ Observations with missing information on important variables used in the study, such as wage or education level, were dropped. Furthermore, the sample was trimmed from the observations with below minimum monthly wages. The resulting sample consists of 11,712 individuals of whom 4487 (38%) work in the public sector and 7225 (62%) in the private sector.

The sample was further subdivided on the bases of the region. Various reasons motivate the estimation of wage gaps separately for Riga (the metropolitan area with neighbouring counties included; from here on referred to as Riga) and other regions. First, persistently higher unemployment rates outside of the capital city might lead to a higher wage gap in favour of the public sector, as wages in the private sector could be more responsive to higher unemployment level. Second, the extent of the wage gap can also be affected by notable differences in productivity levels between the capital city and other regions. Profit-maximizing private sector companies might be more inclined to align the wages to productivity than their public sector counterparts for whom profit maximization is not the main objective. This also might lead to a higher wage gap in favour of the public sector in less productive regions outside of the capital city.

One advantage of LFS is that it contains a dummy variable identifying whether an individual is employed in the public sector. The variable captures a broad definition of the public sector not being limited to a certain NACE industry or government institutions.¹⁴ This offers a more precise distinction between public and private sectors than NACE classification since the use of the latter implies making strict assumptions on how to treat industries with significant shares of both public and private sector employees (for example health and education). However, one should be aware that use of the broader public sector definition might come at a cost of reduced cross-country comparability. The public sector dummy captures not only government institutions, but also state-owned companies for which wage setting should be similar to the private sector. Therefore, cross-country differences in the wage gap estimates might be to some extent explained by different involvements of the state in market activities.

The data on net wages (from the main job) are reported as both continuous numbers and intervals. In cases when only the latter is available, the former is equated to a mean figure of available continuous wages within the respective interval. One shortcoming of the data set is that wages higher than 2000 EUR are censored (all reported as 2000 EUR¹⁵) to preserve confidentiality. Such observations, however, account for less than 0.4% of the sample and therefore should have a negligible effect on findings.

Table 1 reports the descriptive statistics for public and private sector employees in Riga and other regions of Latvia. Average wages in the public sector are slightly higher in both regions (2.3% in Riga and 3.1% in other regions). Kernel density plots (Figures A1 and A2) reveal that significant differences in wage distribution can be observed between both sectors, particularly in the capital city. The incidence of relatively low and relatively high wages seems to be more common in the private sector. This provides support for employing the quantile decomposition to go beyond the means and obtain more information on the nature of the wage gap.

Table 1. Descriptive statistics (mean values).

	Riga		Other regions	
	Public sector	Private sector	Public sector	Private sector
Log monthly wage	6.317	6.294	6.141	6.111
Education lower than secondary	0.027	0.058	0.040	0.117
Secondary education (general)	0.149	0.254	0.161	0.292
Secondary professional degree	0.212	0.341	0.292	0.406
Higher education degree	0.613	0.346	0.507	0.185
Age	44.4	40.6	45.1	40.3
Disability	0.012	0.006	0.012	0.009
Currently studying	0.043	0.040	0.040	0.019
Male	0.322	0.540	0.371	0.597
Married	0.567	0.508	0.601	0.488
Ethnicity (Latvian)	0.703	0.573	0.733	0.687
Citizen of Latvia	0.932	0.829	0.927	0.897
Job tenure	10.9	6.8	12.4	6.8
Lives in urban area	0.812	0.817	0.612	0.593
Household member works in public sector	0.322	0.184	0.318	0.252
Household member works in the same NACE ind.	0.166	0.197	0.142	0.187
Lives with children under 8 y.o.	0.280	0.303	0.264	0.299
Lives with children 8 to 18 y.o.	0.206	0.195	0.228	0.232
Lives with elderly person	0.123	0.113	0.096	0.097
Lives alone	0.108	0.099	0.125	0.096
Observations	1400	2948	3087	4277

Stark differences in wages between the capital city and other regions can be observed in both sectors. Wages in Riga are approximately 19% higher than in other regions, thus supporting previously made arguments on different labour market conditions in the capital city and other regions.

The data on variables are broadly consistent with the major trends found in previous studies. In both regions, public sector employees are predominantly female as opposed to private sector employees who are mostly male; the share of married individuals is higher in the public sector; public sector employees are on average older and more experienced. The share of Latvians as well as the share of individuals holding Latvian citizenship is larger in the public sector, possibly reflecting the higher necessity for fluent knowledge of the Latvian language in public sector jobs. The difference is more pronounced in Riga which might be explained by a larger concentration of international companies with the main language of communication being other than Latvian (mostly English or Russian). Little difference exists between the two sectors in terms of household demographics (presence of children, elderly persons (aged 75 or above) and living alone).¹⁶ Interestingly, public sector employees seem to be more likely to live in the same household with another public sector employee. This might be due to a common set of preferences among household members. Another explanation might be related to 'networking', i.e. a household member working in the public sector might reduce the cost of job searching in the respective sector (Christofides & Pashardes, 2002). Working in the same sector with another household member is, however, more common in the private sector.

Significant differences between the two sectors exist in terms of education attainment. The share of employees with secondary (or lower) education is notably higher in the private sector. In turn, the proportion of employees with higher education is much larger in the public sector, especially outside of the capital city.

5. Results

5.1. Selection effects and wage equations

First, the probit estimates of employment and choice of sector equations are briefly presented. Table 2 contains the regression coefficients and their significance levels estimated using both univariate and bivariate probit. Differences between the estimates of two models are negligible. Correlation between the error terms of selection equations is insignificant in both regions, hence not supporting simultaneous estimation.

Results show that education plays a significant role in determining the employment status as well as the choice of the sector. Relative to the omitted group of individuals with general secondary education, those with a degree in higher education are more likely to be employed and to work in the public sector, most particularly outside of the capital city. Causality, however, remains unclear as the findings can reflect both: higher public sector demand for high-skilled employees; and a tendency of high-skilled employees to seek a public sector job. Secondary professional education can be associated with a higher likelihood of being employed in both regions whereas the impact of sectoral choice is significant only outside the capital city. Individuals with primary education are less likely to be employed; however, results suggest no impact on sectoral choice.

Table 2. Estimation results for employment and choice of sector equations.

	Riga		Other regions	
	Bivariate probit	Univariate probit	Bivariate probit	Univariate probit
Employment equation				
Education lower than secondary	-0.575***	-0.574***	-0.366***	-0.367***
Secondary professional degree	0.192***	0.191***	0.213***	0.213***
Higher education degree	0.447***	0.446***	0.768***	0.768***
Age	0.145***	0.144***	0.159***	0.158***
Age squared	-0.002***	-0.002***	-0.002***	-0.002***
Disability	-1.864***	-1.864***	-1.627***	-1.627***
Currently studying	-0.975***	-0.976***	-1.028***	-1.028***
Male	0.269***	0.270***	0.216***	0.217***
Married	0.110*	0.112*	0.166***	0.167***
Ethnicity (Latvian)	0.191***	0.191***	0.211***	0.209***
Citizen of Latvia	0.246***	0.245***	0.041	0.041
Lives in urban area	-0.026	-0.027	0.236***	0.234***
Lives with children under 8 y.o.	-0.130**	-0.130**	-0.034	-0.030
Lives with children 8 to 18 y.o.	0.057	0.058	0.038	0.045
Lives with elderly person	-0.263***	-0.264***	-0.251***	-0.252***
Lives alone	-0.051	-0.045	0.023	0.032
Region	Included	Included	Included	Included
Observations		6260		12302
Choice of sector equation				
Education lower than secondary	0.054	0.098	-0.131	-0.096
Secondary professional degree	0.013	-0.001	0.119**	0.100**
Higher education degree	0.621***	0.598***	0.955***	0.900***
Age	0.032	0.023	0.013	-0.001
Age squared	-0.0001	-0.0001	0.0001	0.0003*
Disability	0.049	0.225	-0.137	0.061
Currently studying	0.279*	0.355**	0.579***	0.697***
Male	-0.447***	-0.464***	-0.330***	-0.351***
Married	-0.008	-0.014	0.125***	0.112***
Ethnicity (Latvian)	0.203***	0.194***	0.155***	0.140***
Citizen of Latvia	0.417***	0.401***	0.021	0.017
Lives in urban area	0.091*	0.093	-0.039	-0.058
H.h. member works in pub. sec.	0.571***	0.573***	0.232***	0.233***
H.h. member in same NACE. ind.	-0.170**	-0.171**	-0.233***	-0.234***
Region	Included	Included	Included	Included
Observations	6260	4348	12302	7364
Rho	0.144			0.179

*Significance at 90%;

**Significance at 95%;

***Significance at 99%.

Coefficient estimates for other variables reveal that men are more likely than women to be employed, whereas women are more likely to work in the public sector presumably reflecting a high prevalence of women in education and health industries. Latvians are more likely than non-Latvians to be employed and to work in the public sector. Similarly, the Latvian citizenship is positively related to being employed and working in the public sector; however, the estimates are significant only in Riga. Both variables might at least partially proxy the Latvian language skills that are required for a majority of jobs, but most particularly the ones in central government institutions which are generally located in Riga. Individuals living in urban areas outside of the capital city have a higher probability to be employed than those living in rural areas, possibly reflecting scarce job opportunities outside of regional centres. The likelihood of being employed increases with age, but the impact on the choice of the sector is insignificant.

In case of employment equation, coefficient estimates for identification variables reveal that individuals living in a household with an elderly person are less likely to be employed than others. Similarly, individuals living in a household with children (aged 0–8) are less likely to be employed; however, this effect is significant only in Riga. Estimated coefficients in sectoral choice equations show that the presence of a household member who is working in the public sector is associated with a significantly higher probability of being employed in the public sector. Working in the same NACE industry with another household member is more prevalent in the private sector. This seems reasonable because exploiting family connections in a privately owned company should be easier than in the public sector, particularly if a family member owns the company. Overall, the estimated coefficients for identification variables are significant and in line with previous evidence for other countries (Christofides & Pashardes, 2002; Heitmueller, 2006).

Next, the estimates of wage equations for both sectors are presented. Table 3 reports the results of baseline specification with selection terms created from first stage bivariate probit estimates. Table A1 provides the estimates of other specifications (OLS without selection terms and a model with selection terms constructed from univariate probit) as a robustness check.¹⁷

Overall wage equation coefficients are consistent with the findings of previous studies (e.g. Vilerts, Krasnopjorovs, & Brekis, 2017). Results reveal that higher education has a pronounced positive effect on wages in both regions and sectors with estimated coefficients for higher education exceeding 0.46 in most cases. The higher education wage premium is notably lower in the private sector outside of Riga, possibly reflecting limited demand for high-skilled employees. Individuals with primary education receive significantly lower wages than individuals with secondary education (omitted group) in all cases apart

Table 3. Estimation results for wage equations (selection effects from bivariate probit).

	Riga		Other regions	
	Public sector	Private sector	Public sector	Private sector
Education lower than secondary	-0.112	-0.283***	-0.158***	-0.113***
Secondary professional degree	0.055	0.029	0.078***	0.0003
Higher education degree	0.465***	0.472***	0.491***	0.151**
Age	0.032**	0.065***	0.032***	0.022**
Age squared	-0.0004**	-0.001***	-0.0004***	-0.0003***
Disability	-0.253	-0.676***	-0.256**	-0.157
Currently studying	0.067	-0.065	0.101	-0.150*
Male	0.189***	0.241***	0.203***	0.296***
Married	0.048**	0.063***	0.047**	0.029**
Ethnicity (Latvian)	0.085***	0.120***	0.073***	0.027
Citizen of Latvia	0.150***	0.182***	-0.027	-0.010
Job tenure	0.006***	0.008***	0.005***	0.005***
Lives in urban area	0.004	0.051***	0.084***	0.031**
Selection terms				
Employment	0.063	0.401**	0.122	0.137
Choice of sector	0.104	0.107	0.267**	-0.296***
Region	Included	Included	Included	Included
Observations	1400	2948	3087	4277
R-squared	0.336	0.282	0.282	0.220

*Significance at 90%;

**Significance at 95%;

***Significance at 99%.

from public sector employees in Riga for whom the coefficient estimate is not significant. This might reflect more compressed wage dispersion at the lower end of the public sector wage distribution. Public sector employers' reluctance to pay minimum wages is often shown by quantile decomposition which reveals that the public sector wage premium is the highest at lower percentiles of the wage distribution, i.e. the so-called good employer phenomena (Bargain & Melly, 2008; Lucifora & Meurs, 2006). A secondary professional degree has little impact on wage if compared to general secondary education with the only exception being public sector employees outside of Riga.

Estimated coefficients for other variables reveal that married individuals receive higher wages than others. The wage premium for men is significant in both regions and it is somewhat larger in the private sector. Ethnicity and citizenship positively impact the wages in Riga, whereas in other regions the effects are mostly insignificant. Coefficient estimates show that wages are increasing with age, however at a slowing pace. Similarly, wages increase with job tenure.

Coefficients for selection terms confirm that both sources of sample selection should be considered. Outside of the capital city, the coefficients on the choice of sector selection term carry opposing signs indicating that unobservable factors that steer an individual to work in the public sector are positively (negatively) correlated with wages in public (private) sector. Coefficient estimates for selection into employment are positive, but not statistically significant which is somewhat surprising considering the relatively low employment levels outside of the capital city. Overall, selection effects are positive in both sectors. Hence, the observed wages are higher than they would be for randomly selected individuals with identical observable characteristics.¹⁸

In the case of Riga, unobservable factors that steer an individual's choice of the sector are not significantly correlated with wages in neither of the two sectors; however, private sector employees are positively selected in terms of selection into employment.

5.2. Decomposition results

At this point, decomposition of the observed wage gap can be performed. Table 4 reports the observed wage gaps and the decomposition results using standard Oaxaca-Ransom as well as selection-adjusted Oaxaca-Ransom methods for both regions.

Table 4. Wage gap decomposition results.

	Riga		Other regions	
	Oaxaca-Ransom (1)	Selection adj. Oaxaca-Ransom (2)	Oaxaca-Ransom (3)	Selection adj. Oaxaca-Ransom (4)
Observed wage gap	0.023	0.023	0.031***	0.031***
Explained part	0.087***	0.109***	0.044***	0.033***
Unexplained part	-0.064***	-0.104***	-0.013*	-0.080***
Selection effect	-	0.018	-	0.077***
Employment		-0.133***		-0.013
Choice of sector		0.151		0.090***

*Significance at 90%;

**Significance at 95%;

***Significance at 99%.

The observed wage gap outside of the capital city indicates that wages in the public sector are roughly 3% higher compared to the private sector. In turn, the observed wage gap in Riga is not significantly different from zero. Estimates are broadly in line with Castro et al. (2013), but significantly lower than Christofides and Michael's (2013) findings, possibly because of the different public sector definitions they use.

Table 4, columns 1 and 3, reports the decomposition results when selection is not considered. The endowment effect is positive and significant in both regions, thus reflecting better individual characteristics for public sector employees. The magnitude of the explained part, however, varies by region. Outside of the capital city, the explained part slightly exceeds the observed wage gap; hence, the unexplained part implies a small (and barely significant) private sector wage premium (-0.013). In Riga, the endowment effect is larger (0.087) and it significantly exceeds the observed wage gap. Therefore, also the unexplained part is larger (-0.064). In both regions, significant contribution in explaining the observed wage gap comes from differences in education attainment (Table A3). This is mostly due to the occurrence of employees with higher education being notably higher in the public sector. The fact that employees with an education that is lower than secondary are more frequent in the private sector provides a similar effect (albeit of smaller magnitude) in explaining the wage gap. Higher job tenure of public sector employees also contributes to explaining the wage gap. The opposite effect comes from gender composition, which favours the private sector. Previous evidence indicates that even when differences in observed characteristics are accounted for in case of Latvia men receive higher wages than women (Vilerts & Krasnopjorovs, 2016). Overall, it seems that for Latvia (similarly to other CEE countries), better endowments for public sector employees account for a larger share of the observed wage gap than in Western European countries (European Commission, 2014).

Since standard Oaxaca-Ransom decompositions do not take into consideration the sample selection, the non-random nature of the employed sample and the sectoral choice might lead to biased results. Therefore, Table 4, columns 2 and 4, reports the decomposition results when selection effects are accounted for.¹⁹ The set of characteristics and the extent to which these characteristics explain the observed wage gap is similar to the previous specifications (0.109 in Riga and 0.033 in other regions); however, the unexplained part is significantly larger (-0.104 and -0.080 , respectively). This is due to positive (but significant only outside of the capital city) selection effects which indicate that public sector employees are better selected, i.e. if observable characteristics and the respective market returns (regression coefficients) were identical in both sectors, public sector employees would still receive higher wages due to better unobservable characteristics.²⁰

To get a glimpse on how the public–private sector wage gap has changed over time the same methodology was applied to LFS data for 2008. Table 5 summarizes the decompositions results.

Interestingly, the observable differences in wages were higher in 2008. In Riga, wages in the public sector were approximately 5.3% higher than in the private sector whereas outside of the capital city the difference was 10.7%. The endowment effect, however, accounts for a smaller share of the observed wage gap if compared to 2015. Hence, the unexplained part of the wage gap is lower and in the case of other regions it even suggests a wage premium for public sector employees.

Table 5. Wage gap decomposition results (2008).

	Riga		Other regions	
	Oaxaca-Ransom (1)	Selection adj. Oaxaca-Ransom (2)	Oaxaca-Ransom (3)	Selection adj. Oaxaca-Ransom (4)
Observed wage gap	0.052**	0.052**	0.102***	0.102***
Explained part	0.084***	0.044***	0.069***	0.089***
Unexplained part	-0.032**	-0.198	0.033***	0.033***
Selection effect	-	0.206	-	-0.020***
Employment		0.126		-0.092***
Choice of sector		0.080		0.072*

*Significance at 90%;
 **Significance at 95%;
 ***Significance at 99%.

The aggregate selection effect is insignificant in Riga and in favour of the private sector outside of the capital city. One possible explanation for the positive selection in the private sector (particularly from selection into employment) could be related to the effects of the booming construction industry which attracted individuals from unemployment and other sectors. However, given that the individual selection effects are mostly insignificant, caution must be exercised when interpreting these results. Despite the uncertainty of the underlying selection effects, the decomposition components, nevertheless, provide some information on how the wage gap has changed over time. Overall, it seems that the conditional wage gap has become more favourable for the private sector, possibly echoing the significant public sector wage cuts during the crisis.

To elucidate the nature of the public-private sector wage gap for high- and low-wage earners, panels (a) of Figures 2 and 3 illustrate the observed wage gaps at different points of the wage distribution. Corresponding conditional wage gaps (the unexplained part) obtained from quantile decompositions are shown in panels (b).²¹

The observed wage gap is positive for low-wage earners and it becomes insignificant at the highest deciles of the wage distribution. Similar to the findings for Western Europe

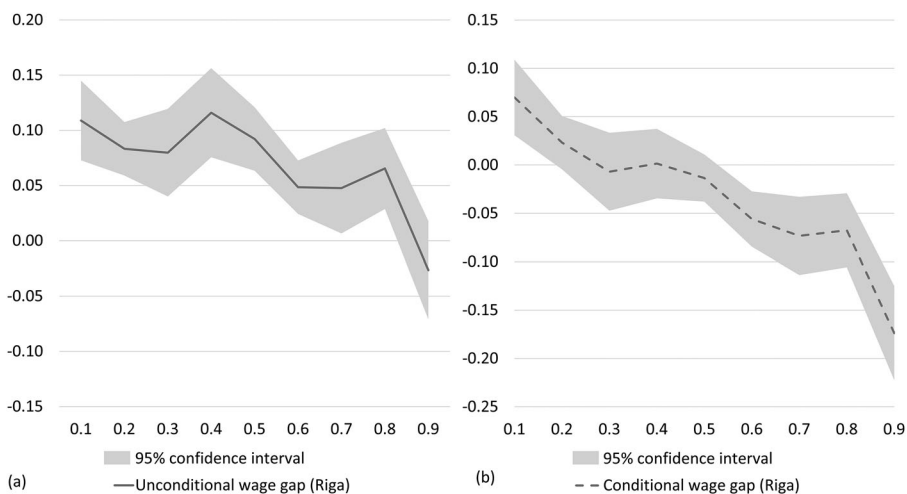


Figure 2. Quantile decomposition results (Riga) (a – unconditional wage gap; b – conditional wage gap).

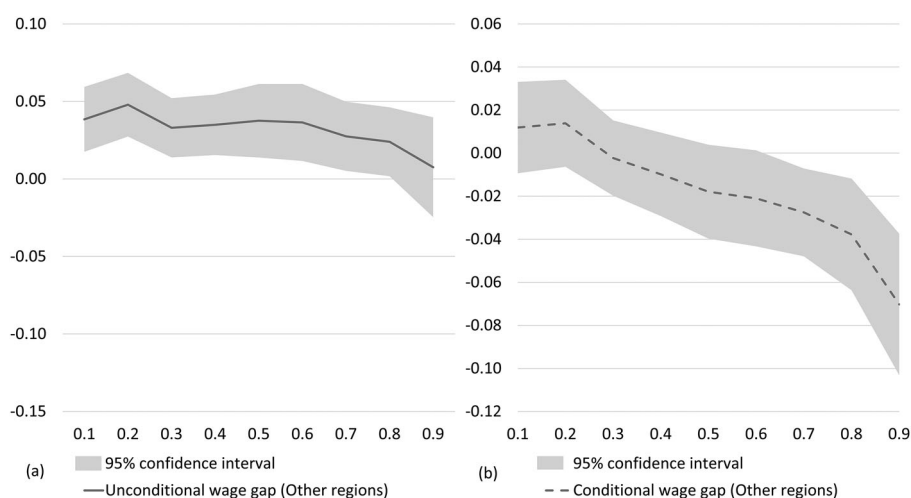


Figure 3. Quantile decomposition results (Other regions) (a – unconditional wage gap; b – conditional wage gap).

(e.g. Bargain & Melly, 2008), the unexplained part follows a downward slope. This is particularly visible in the capital city, where the wage premium is positive at the lower end of the wage distribution, hence, pointing to a public sector wage premium. In turn, at the upper half of wage distribution, the wage premium turns negative suggesting a wage premium for high-wage earners in the private sector. This effect is evident also in regions outside of the capital city; however, similarly to the findings of Oaxaca-Ransom decompositions, the magnitude of the unexplained part is somewhat lower. Overall, quantile decomposition results suggest that public sector employers seem to be reluctant to pay very low or very high wages (possibly avoiding public opposition), even if this entails a deviation from a 'fair' wage setting. Another explanation for the public sector wage premium at the lowest deciles of wage distribution could be related to a relatively high incidence of unofficial wages (and hence also official wages at the minimum level) in the private sector.

6. Discussion and conclusion

Using the microdata from LFS of 2015, this study has investigated the public–private sector wage gap in Latvia in order to establish whether the observed differences in wages can be explained by differences in individual characteristics and selection effects.

The results of this study show that despite the unconditional wage gap being slightly in favour of the public sector, the unexplained part (conditional wage gap) is significantly in favour of the private sector. Hence, the results entail a private sector wage premium ranging from 8% to 10%. The difference between the conditional and unconditional wage gaps is attributable to better individual characteristics and favourable selection effects for public sector employees. Considering that public sector wages in Latvia are regulated by normative acts, statistically significant public sector wage penalty raises doubts on whether a system that is reliant on discretionary fiscal measures is efficient

enough in eliminating unwarranted differences in wage. In particular, the concerns whether and how the re-adjustment process of public sector wages works after consolidation-driven wage cuts. Findings provide some evidence that the private sector wage premium has increased after the wage cuts undertaken by the government as a response to the crisis.

The interpretation of the unexplained part, however, is not always straight-forward. Firstly, because the unexplained part depends on the observable characteristics that are used as explanatory variables. In case significant wage determinants (both observable or unobservable) are missing, the unexplained part captures all potential effects of differences in these variables. Secondly, even though findings are robust to weights commonly used in decomposition analysis, the extent of the unexplained gap may vary if other non-discriminatory wage structure is used. Thirdly, it is possible that public sector employees accept lower wages because they are compensated with better fringe benefits such as health insurance, more generous pension plans or higher job security. Furthermore, one cannot rule out that some individuals might desire to be a civil servant and work for a common good and hence prefer a public sector job even if it entails a wage penalty.

Certain institutional characteristics might also affect the magnitude of wage premium. For example, higher trade union density might reduce the differences in wages, since trade unions are likely to reduce the dispersion of wages. Similarly to the other Baltic states, trade union density in Latvia is low, which might add to existence and magnitude of the wage premium.

From methodological perspective, this paper has highlighted the importance to account for the selection effects which arise due to the non-random nature of the employed sample and selection into sectors. The results suggest that public sector employees are better selected, i.e. if observable characteristics and the respective market returns were identical in both sectors, public sector employees would still receive higher wages due to better unobservable characteristics. However, in the case of Latvia, these findings are significant only outside of the capital city.

Further disaggregation of selection effects reemphasises the necessity to consider both sources of selection and to address Riga separately from other regions of Latvia. In Riga, private sector employees are more prone to receive higher wages than otherwise identical non-employed individuals (not apparent for public sector employees and for employees in other regions). This might be due to the competitive nature of the private sector in Riga. In both regions, public sector employees are better off in their sector if compared to their counterparts in the private sector. Hence, unobservables that steer individuals into the public sector also contribute to higher wages. Presumably, this is due to the specific nature of some occupations found only in the public sector.

Taken together, these results suggest that ignoring selection effects would lead to the underestimation of the private sector wage premium. Similarly, considering only one source of selection would lead to somewhat different results.

In conclusion, a note of caution should be made not to treat the findings as unequivocal, but rather as indicative evidence. Furthermore, findings might apply only to Latvia and are not necessarily applicable for other countries. Nevertheless, the findings provide some valuable insight for policy makers. A negative sign of the unexplained part of the wage gap shows that private sector employees enjoy a wage premium. This might raise questions on

the adequacy of the wages in the public sector, although, as was mentioned previously, there might be various alternative reasons that justify the existence of the premium.

Differences in the unexplained part of the wage gap between Riga and other regions remain significant across a majority of specifications. This should be borne in mind if public sectors wages are brought in line with the private sector. What would be sufficient increase for Riga might have an adverse effect in other regions.

Quantile decompositions reveal that the private sector wage premium is the highest for high-wage earners. This would appear to indicate that the current public sector wage setting raises difficulties in retaining highly qualified employees. Raising wages for all employees in the public sector would probably not be a feasible solution as it would induce a public sector wage premium at the lower end of the wage distribution. In turn, the decision to increase wages for highly qualified individuals only could probably help to retain these individuals, but also face incomprehension from society. Hence, it appears that a one-size-fits-all solution might not be applicable in the case of Latvia.

Notes

1. Lack of collective wage bargaining and automatic indexation might limit the necessary adjustment to eliminate unjustified differences in wages, particularly when fiscal policy is constrained.
2. The figure was close to 30% of total expenditure and 11.4% of GDP in the pre-crisis period.
3. There are, however, various studies that do consider it (see Lausev, 2014 for summary).
4. Including education, research, health care and law enforcement institutions
5. An agreement between the government of Latvia and the international lenders which spelled out the conditions for financial assistance during the crisis.
6. Also, healthcare, education, research, law enforcement and other institutions where wages are regulated by normative acts experienced reduction in employment and wages.
7. Univariate probits are used as a robustness check. Correlation between selection equation error terms is insignificant; therefore, both models reveal very similar results.
8. In such cases, the construction of selection hazards considers bivariate normal distribution and adjusts the selection terms with error correlation (Maddala, 1983). In case of this study, $\rho_{\epsilon_1, \epsilon_2}$ is not significantly different from zero, therefore formulas to compute selection hazards when $\rho_{\epsilon_1, \epsilon_2} \neq 0$ are not reported.
9. Let Σ be the covariance matrix $(\epsilon_{1i}, \epsilon_{2i}, u_{pub,i}, u_{pri,i})$. Where $(u_{pub,i}, u_{pri,i})$ are the respective error terms from wage equations. $\Sigma = \begin{bmatrix} 1 & \rho_{\epsilon_1, \epsilon_2} & \rho_{\epsilon_1, u_{pub}} \sigma_{u_{pub}} & \rho_{\epsilon_1, u_{pri}} \sigma_{u_{pri}} \\ \rho_{\epsilon_1, \epsilon_2} & 1 & \rho_{\epsilon_2, u_{pub}} \sigma_{u_{pub}} & \rho_{\epsilon_2, u_{pri}} \sigma_{u_{pri}} \\ \rho_{\epsilon_1, u_{pub}} \sigma_{u_{pub}} & \rho_{\epsilon_2, u_{pub}} \sigma_{u_{pub}} & \sigma_{u_{pub}} & - \\ \rho_{\epsilon_1, u_{pri}} \sigma_{u_{pri}} & \rho_{\epsilon_2, u_{pri}} \sigma_{u_{pri}} & - & \sigma_{u_{pri}} \end{bmatrix}$
10. Inverse Mills ratio is rather linear over a wide range of values.
11. Variables capture the presence of 0–8; 8–18 and over 75-year-olds and if individual lives alone.
12. Dustmann and Van Soest (1998) follow somewhat similar approach by introducing parents' occupational group variables.
13. Furthermore, LFS contains no information on income from self-employment.
14. Broad definition includes central and local government institutions, companies with central or local government capital participation of at least 50%.
15. In some cases, corresponding interval value 'above 2200' allows to identify wages that are larger than 2200 EUR.
16. Sectors also have similar composition of individuals living in urban/rural areas, individuals who are studying and individuals who have reported disability.

17. The estimated coefficients do not change significantly when selection terms are constructed from univariate probits. In turn, the estimates from the specification with no selection terms occasionally vary in magnitude and significance, therefore reemphasising the need to take into account selection effects.
18. Selection effect is computed as a product of the estimated coefficient and mean selection term (see Christofides & Pashardes, 2002). The mean choice of the sector selection term for the public sector is 0.876, therefore the wages of those that have actually chosen to work in the public sector are higher by $0.234 = (0.876 \times 0.234)$ than for an otherwise identical individual in the population at large. This holds also for the private sector with the selection effect being $0.144 = [(-0.486) \times (-0.296)]$, respectively.
19. Results obtained with different weighing method (Oaxaca-Blinder approach) reveals similar picture. To save the space, these results are not reported in the study, but are available upon request.
20. When selection effects are disaggregated, different pictures emerge in each region. Outside of Riga, no major differences exist in employment selection between the two sectors, whereas sectoral selection is positive. This implies that public sector employees are better off in their sector if compared to their counterparts in the private sector. In the capital city, the effect from selection into employment is negative thus reflecting that private sector employees are more prone to receive higher wages than otherwise identical non-employed individuals (an occurrence not apparent for public sector employees). This is, however, offset by public sector employees being favourably selected in terms of sectoral selection.
21. The quantile decomposition method proposed and developed by Chernozhukov et al. (2009) employs a different non-discriminatory wage structure, therefore point estimates are not directly comparable with estimates from Oaxaca and Ransom (1994) decompositions.

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Appendices

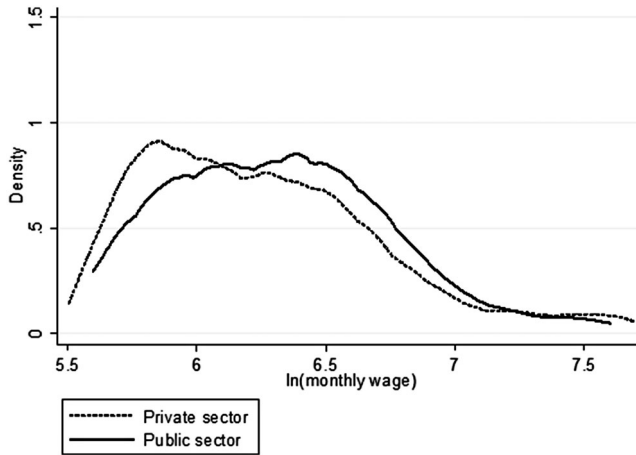


Figure A1. Kernel density plot of log monthly wages in Riga.

Note: Kolmogorov–Smirnov test for equality of distribution functions: $D = 0.1017$; p value = .000.

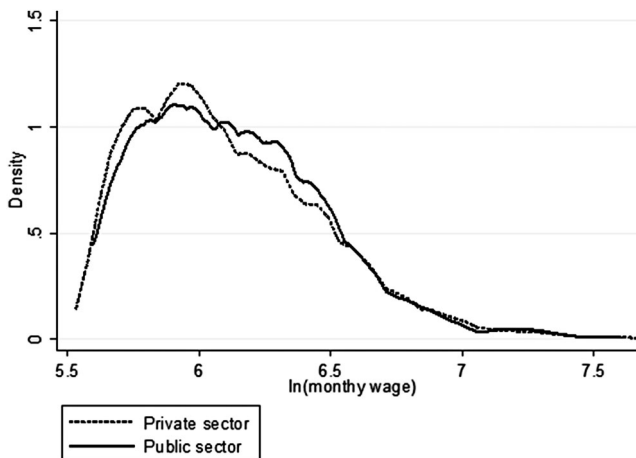


Figure A2. Kernel density plot of wages in other regions.

Note: Kolmogorov–Smirnov test for equality of distribution functions: $D = 0.0482$; p value = .011.

Table A1. Estimation results for wage equations OLS and specification with selection effects from univariate probits (Riga).

	Public sector		Private sector	
	OLS	Univariate probit	OLS	Univariate probit
Education lower than secondary	-0.090	-0.108	-0.167***	-0.280***
Secondary professional degree	0.048	0.053	-0.006	0.028
Higher education degree	0.409***	0.464***	0.373***	0.470***
Age	0.025***	0.031**	0.039***	0.064***
Age squared	-0.0003***	-0.0004**	-0.001***	-0.001***
Disability	-0.172***	-0.240	-0.222***	-0.660***
Currently studying	0.077	0.073	0.149**	-0.059
Male	0.209***	0.187***	0.216***	0.240***
Married	0.039*	0.047**	0.046**	0.063***
Ethnicity (Latvian)	0.066**	0.085***	0.080***	0.119***
Citizen of Latvia	0.107**	0.149***	0.120***	0.181***
Job tenure	0.006***	0.006***	0.007***	0.008***
Lives in urban area	-0.002	0.004	0.054***	0.051***
Selection terms				
Employment		0.061		0.396**
Choice of sector		0.101		0.105
Region	Included	Included	Included	Included
Observations	1400	1400	2948	2948
R-squared	0.324	0.325	0.279	0.281

*Significance at 90%;

**Significance at 95%;

***Significance at 99%.

Table A2. Estimation results for wage equations OLS and specification with selection effects from univariate probits (other regions).

	Public sector		Private sector	
	OLS	Univariate probit	OLS	Univariate probit
Education lower than secondary	-0.103**	-0.152***	-0.098***	-0.117***
Secondary professional degree	0.037**	0.073***	0.002	0.003
Higher education degree	0.280***	0.482***	0.263***	0.163***
Age	0.020***	0.030***	0.010***	0.025***
Age squared	-0.0003***	-0.0004***	-0.0001***	-0.0004***
Disability	-0.104	-0.229*	-0.023	-0.191
Currently studying	0.074**	0.116	0.020	-0.174**
Male	0.246***	0.199***	0.238***	0.300***
Married	0.012	0.045***	0.037***	0.032**
Ethnicity (Latvian)	0.033**	0.070***	0.035**	0.028
Citizen of Latvia	-0.036	-0.028	-0.008	-0.009
Job tenure	0.006***	0.005***	0.005***	0.005***
Lives in urban area	0.077***	0.082***	0.011	0.034**
Selection terms				
Employment		0.128		0.142*
Choice of sector		0.274***		-0.284***
Region	Included	Included	Included	Included
Observations	3087	3087	4277	4277
R-squared	0.279	0.283	0.218	0.220

*Significance at 90%;

**Significance at 95%;

***Significance at 99%.

Table A3. Endowment effects.

	Riga		Other regions	
	Oaxaca-Ransom	Selection-adjusted Oaxaca-Ransom	Oaxaca-Ransom	Selection-adjusted Oaxaca-Ransom
Education lower than secondary	0.007***	0.010***	0.011***	0.011***
Secondary education degree	0.006***	0.006***	0.006***	0.006***
Secondary professional degree	0.006***	0.003	0.004***	0.004***
Higher education degree	0.083***	0.104***	0.070***	0.076***
Currently studying	0.0003	-0.0001	0.001	-0.001
Disability	-0.001	-0.003	-0.0002	-0.001
Male	-0.048***	-0.053***	-0.055***	-0.061***
Married	0.003*	0.003**	0.003***	0.003***
Ethnicity (Latvian)	0.009***	0.013***	0.002**	0.002***
Citizen of Latvia	0.011***	0.017***	-0.001	-0.0004
Age	0.129***	0.202***	0.076***	0.127***
Age squared	-0.141***	-0.215***	-0.087***	-0.147***
Job tenure	0.025***	0.024***	0.028***	0.030***
Lives in urban area	-0.0002	-0.0002	0.001	0.001
Region	-0.001	-0.002*	-0.014***	-0.017***
Total endowment effect	0.087***	0.109***	0.044***	0.033***

*Significance at 90%;

**Significance at 95%;

***Significance at 99%.