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PUBLIC-PRIVATE SECTOR WAGE DIFFERENTIAL IN ESTONIA: EVIDENCE FROM QUANTILE REGRESSION

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PUBLIC-PRIVATE SECTOR WAGE DIFFERENTIAL IN ESTONIA: EVIDENCE FROM QUANTILE REGRESSION

Kristjan-Olari Leping[1]

Abstract

In this paper the wage differential between the public and private sector is estimated by means of the quantile regression method, which will provide a more complex picture of the distribution of the public-private sector wage differential than can be obtained with ordinary mean regression. The evidence from quantile regression shows that there is a negative wage differential for higher quantiles, but no significant difference in wages for lower quantiles. The other main results are that women benefit more from working in the public sector than men, and that employees with higher educational levels benefit more from working in the public sector than low-educated workers.

Keywords: Public sector, wage differential, quantile regression

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INTRODUCTION

Public sector pay has always attracted politicians' attention in any country and Estonia is not an exception. The public sector's wage bill is an important cost article in the public sector's budgetary costs, being one of the determinants of the balance of the public sector budget. The wage level in the public sector can also affect wages in the private sector and thereby influence the inflation rate. Overly high wages in the public sector compared to wages in the private sector can cause inflation and budgetary deficit, while overly low wages will reduce employees' motivation in the public sector, making it difficult to hire skilled and loyal employees, thereby deteriorating the performance of public sector organisations.

In Estonia the growth of the wage rate has been fast in the recent years, the yearly growth rates of the average nominal wage having been around 10 per cent. Rapid wage growth, however, may bring about a situation when the growth rates in the public and private sector are unbalanced.

The aim of this paper is to estimate the public-private sector wage differential in Estonia. Additionally, possible differences in the public-private sector wage gap due to the gender and educational level of the employees are investigated. The data used for this estimation come from the Estonian Labour Force Survey. Quantile regression will be used for estimating the public-private sector wage differential, which in comparison with mean regression will give a more complex picture of the distribution of the public-private sector wage differential. For the sake of comparison, the same regression models are estimated with ordinary least squares method.

The results of the quantile regression show that that there is a negative wage differential for higher quantiles, while there is no significant difference in wages for lower quantiles.

The paper is organised as follows. First, the theoretical background to the problem is described, which includes pointing out several factors that might induce differences between the wage rates in the public and private sector. Thereafter an overview is given of previous empirical research in this field. Then, the basics of the quantile regression method are explained. Next, the data used in the current paper are described, which is followed by the description of the specification of the regression models estimated herein. Finally, the results of the quantile regression analysis are presented and the conclusions are drawn.

THEORETICAL BACKGROUND

In the literature, a number of reasons have been given for the occurrence of earnings differentials between the private and public sector. Firstly, the public sector may be able to pay more since their wages are only subjected to a price floor because of private sector competition. Gunderson (1979) has suggested that wages in the private sector are determined by the profit-maximising behaviour of enterprises. Public sector organisations usually have different aims, but in many cases wages in the public sector are affected by the vote-maximising behaviour of politicians. On the one hand, then, there exists a floor for public sector wages, as employers in the public sector have to compete with employers in the private sector for their workforce. On the other hand, however, as distinct from the private sector, there exists no wage ceiling for public sector wages because public sector organisations do not maximise their profits. Secondly, unions are usually more pervasive in the public sector, which could put upward pressure on wages. Finally, the fact that government services are usually considered essential implies that demand for these services is inelastic. Thus, the derived demand for labour will also be inelastic and wage increases can be passed onto consumers (i.e., taxpayers).

Other factors may lead to lower public sector wages. First, although profit maximisation does not drive the wage-determination process, this sector is subjected to consumer (i.e., taxpayer) scrutiny. Provincial and local public sector employees, in particular, may see their wages examined more closely as taxpayers may be better informed about these administrative levels than about the centralised federal government. Second, non-wage advantages, such as generous pension plans, may compensate for lower wages in the public sector. Third, if the public sector has monopsony power, wages may be lower. This could be relevant in small labour markets or in certain professions, such as post-secondary education, where provincial governments are the only employers. (Mueller 1998)

The public-private wage differences can be dependent on the economic cycles. For instance, differences in the cyclical responsiveness of the earnings of the public and private sector employees may cause short-run changes in the public-private sector wage differential. Earnings of private sector employees generally vary pro-cyclically. Thus, if the pay structure is less flexible in the public sector and cannot react after an economic boom or a crisis, the public-private sector wage differential will vary counter-cyclically. (Melly 2003) Borjas (1984) presents another theory of why the public/private earnings differentials may vary over time. In his model, electoral wage cycles are generated as a result of optimising behaviour on the part of voters, bureaucrats, and the government. His empirical analysis of the U.S. data indicates that federal wage rates rise significantly more in election years.

Public-private wage differences have been empirically most thoroughly investigated in the U.S.A. For example, the study by Poterba and Rueben (1994) showed that the wage distribution was wider in the private sector and that state and local government workers enjoyed a wage premium at the lower tail of the distribution, but a wage penalty at the upper tail. The results of some earlier papers, for example Smith (1976), where only the average of the public-private wage differential on U.S. and United Kingdom data has been estimated, have pointed out that generally there exists a positive public-private wage differential. Mueller (1998) studied this issue on Canadian data, finding that public sector rent payments tend to be the highest for federal government employees, females, and individuals at the lower tail of the wage distribution. Lucifora and Meurs (2004) carried out a comparative study of the public sector wage gap in three Western European countries: France, Great Britain and Italy. The results of their analysis show that in France, Great Britain and Italy low-skilled public sector workers are paid higher wages than their private sector counterparts, while the reverse is true about high-skilled workers. These effects are bigger for females. In general, wage gap estimates suggest that females are better off being in the public sector, particularly at the lowest deciles, while the opposite is true for men at the highest deciles. Institutional differences across countries seem to indicate that a 'glass ceiling effect' characterises private sector pay (at top deciles) to females in France and Italy, while a so-called 'low floor effect' distinguishes private sector payments to low-skilled women in Britain.

Very little research has been done into public-private wage differentials in countries whose economic background is similar to that of Estonia. As regards the Central and Eastern European countries, there is a paper by Adamchik and Bedi (2000), which analyses the problem on the basis of Polish data. The authors have used the data from the Polish Labour Force Survey conducted in 1996. So the data come from the period when Poland was in the middle of the transition from a planned to market economy and the market conditions as well as the situation in the labour market were different from the conditions in Estonia at present. Nevertheless, their study shows higher wages in the private sector, the gap being especially large in the case of male workers with university education. They also point out that for males, the extent of the wage gap for those with university education and the negative selection effects suggest that the public sector may be facing difficulties in retaining and recruiting highly educated and high-calibre individuals. Additionally, they state that even if there are no recruitment problems, the widening wage gaps might promote moonlighting. The other paper about public-private sector wage differentials in former socialist countries is written by Reilly (2003) about the problems in Serbia based on the 1995 to 2000 data. The results of this paper are somewhat controversial and raise questions as the estimates suggest that the hourly wage premium for a private sector job at the 50th percentile of the conditional wage distribution was just over 20% in 1995, insignificantly different from zero in 1996, 1997 and 1999, and nearly 24% in 1998.

In earlier studies only the mean of the public-private sector wage differential was estimated. For example, the U.S. data research by Smith (1976) or Katz and Murphy (1992) was based only on mean regression. Poterba and Rueben (1994) were the first to apply quantile regression to study public-private wage differentials. Since there is a suspicion that the public sector compresses the distribution of earnings of the employees who work in that sector relative to private sector employees, the application of the quantile regression method would give more accurate results as the least squares estimate of the mean public sector wage premium gives an incomplete picture of the conditional distribution. Evidence of this effect is available for Canada (Mueller 1998), the UK (Disney and Gosling 1998) and Zambia (Nielsen and Rosholm 2001). There are also some other econometrical methods, which have been used in the analysis of public-private wage differentials. For example, Stelcner, van der Gaag and Wijverberg (1989), Adamchik and Bedi (2000) and Heitmuller (2004) have used endogenous switching regression models that allow controlling for possible sample selection bias. The results of these estimations show that selection bias between working and not working is not an issue, but the selection of workers between public and private employment is not random. Melly (2005) has used instrumental variable quantile regression for estimating the public-private sector wage gap.

According to the previous literature, it is quite difficult to hypothesise about the public-private sector wage differentials in Estonia, as almost no research has been done on this issue in the countries that are at the same level of economic development as Estonia. The evidence from the highly developed western countries shows that on average there can be a positive wage gap between the public and private sector, but in some cases, like Poterba and Rueben (1994), there are no differences on average. Public sector wages compared to private sector wages tend to be higher for low-waged workers and lower for high-waged workers. Women and workers with lower education usually benefit more from working in the public sector. In some cases the public-private wage gap can be negative too, for example, for highly educated men. On the other hand, in the case of the transition countries the situation is converse, as the wages tend to be higher in the private sector for all categories. But these transition countries were investigated in the mid-1990s and the situation may be significantly different in present-day Estonia.

As regards the effect of the possible determinants of the public-private sector wage difference pointed out by Mueller (1998), the influence of trade unions on the public sector employment is likely to be low in Estonia, where trade unions and collective bargaining play a significant role neither in the public nor private sector. In 2000, only 16% of the employed were trade union members and collective bargaining covered only 14% of the wage contracts. Collective bargaining is more characteristic of the sectors of healthcare and education, which mostly belong to the public sector, and also of transport, energy and mining, which belong both to the public and private sector. (Rõõm 2003) As the public sector tends to be more unionised, the low unionisation of the Estonian labour market should lower the public-private sector wage differential. There are some non-wage advantages to public sector employees, such as better job protection or longer paid vacations and in very few cases better pension schemes, but not all public sector employees are eligible for these benefits. The mobility between different sectors has also been relatively high in Estonia; the labour hiring and separation rates were around 16–18% between 1998 and 2000, but at the same time, the geographical mobility of Estonian labour force has been low. (Rõõm 2002) High inter-sectoral labour mobility could lower the monopsony power of the public sector employers, which should increase the wages in the public sector, but on the other hand, the low geographical mobility of labour decreases the public sector wages, especially in peripheral regions.

QUANTILE REGRESSION

The purpose of the classical least squares estimation is to answer the question "How does the conditional expectation of a random variable *Y*, $E(Y|X)$ depend on some explanatory variables *X*?" usually under some assumptions about the functional form of $E(Y|X)$, e.g., linearity. On the other hand, quantile regression enables posing such a question at any quantile of the conditional distribution. Ratther than assuming that covariates shift only the location or scale of the conditional distribution, quantile regression methods enable one to explore potential effects on the shape of the distribution as well. (Koenker 1978) For example, if the effect of training programmes for the unemployed is to shorten the unemployment spells for those who have been unemployed for a long time and to lengthen the shortest spells, then the average treatment effect estimated by ordinary least squares method can be insignificant. At the same time, the treatment effect on the shape of the distribution of unemployment durations could, nevertheless, be significant.

Quantile regression is a statistical technique intended to estimate, and conduct inference about, conditional quantile functions. Just as classical linear regression methods based on minimising sums of squared residuals enable one to estimate models for conditional mean functions, quantile regression methods offer a mechanism for estimating models for the conditional median function, and a full range of other conditional quantile functions. By supplementing the estimation of conditional mean functions with techniques for estimating an entire family of conditional quantile functions, quantile regression is capable of providing a more complete statistical analysis of the stochastic relationships among random variables.

Quantile regression is less restrictive than mean regression (OLS) in that it permits the parameters β_τ to differ at various points of the conditional distribution of the dependent variable *Y,* thus permitting a more complete characterisation of the regression relationship. Quantile regression is less sensitive than mean regression to the presence of outliers in the dependent variable − a common occurrence in developing country data. This is so because in quantile regression the residuals to be minimised are not squared as in OLS, therefore outliers receive less emphasis. If the error term of the regression is not distributed normally, quantile regression may be more efficient than mean regression (Buchinsky and Moshe 1998).

The quantile function, i.e., $Q_Y(\tau)$ as a function of τ, completely describes the distribution of the random variable *Y*. The estimation of conditional quantile functions allows one to obtain a more comprehensive picture of how the conditional distribution of *Y* depends on *X*. In other words, this means that there is a possibility to investigate the influence of explanatory variables on the shape of the distribution.

The conditional quantile function is defined as the τ-th quantile $Q_{Y|X}(\tau|x)$ in the conditional distribution $F_{Y|X}(y|x)$ of a dependent variable *Y* given the value $X = x$ of covariates: for fixed τ, $0<\tau< 1$, $Q_{Y|X}(\tau|x) = \inf\{y : F_{Y|X}(y|x) \geq \tau\}$. To estimate the location of the conditional distribution, the conditional median $Q_{Y|X}(0.5|x)$ can be used as an alternative to the conditional mean. A range of conditional quantiles provide a parsimonious description of the entire conditional distribution of *Y,* given that $X = x$.

Just as it is possible to define the sample mean as a solution to the problem of minimisation of a sum of squared residuals, the median can be defined as a solution to the problem of minimisation of a sum of absolute residuals. Since the symmetry of the absolute value yields the median, minimising asymmetrically weighed absolute residuals yields quantiles. (Koenker 2001)

For any $0<\tau<1$, define the piecewise linear "check function", $\rho_\tau(u) = u(\tau - I(u < 0))$

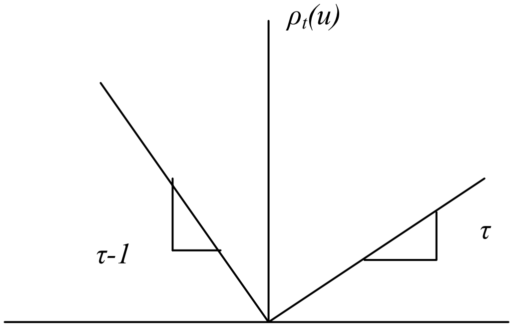


Figure 1. Quantile regression function.

Minimising the expectation of $\rho_\tau(Y - \xi)$ with respect to ξ yields solutions $\xi(\tau)$, the smallest of which is $Q_{Y|X}(\tau|x)$ defined above. The sample analogue of $Q_{Y|X}(\tau|x)$ based on a random sample $\{y_1,...y_n\}$ of Y is called the τ-th sample quantile, and may be found by solving

$$\min_{\xi \in R} \sum_{i=1}^{n} \rho_\tau (y_i - \xi) \ .$$

Similarly to the idea of estimating the unconditional mean viewed as the minimiser,

$$\hat{\mu} = \arg\min_{\mu \in R} \sum (y_i - \mu)^2$$

can be extended to the estimation of the linear conditional mean function $E(Y|X = x) = x'\beta$ by solving

$$\hat{\beta} = \arg\min_{\mu \in R^p} \sum (y_i - x_i'\beta)^2 ,$$

the linear conditional quantile function,
$Q_Y(\tau|X = x) = x'\beta(\tau)$, can be estimated by solving

$$\hat{\beta}(\tau) = \arg\min_{\mu \in R^p} \sum \rho_\tau (y_i - x_i'\beta) \ .$$

The resulting minimisation problem can be solved by linear programming methods. (Koenker and Hallock 2001)

The most important properties of quantile regression can be summarised as follows (Koenker 2000):

1. Quantile regression can be used to characterise the entire conditional distribution of Y, given that $X = x$ by looking at different values of τ.
2. Quantiles are equivariant to monotone transformations. That is, $Q_{h(Y)|X}(\tau|x) = h(Q_{Y|X}(\tau|x))$ for any monotone function $h(\cdot)$. For example, the conditional median of log earnings is the log of the conditional median of earnings.
3. Quantiles are robust to outliers on *Y*.
4. Median regression estimators can be more efficient in comparison to mean regression estimators when the error term is non-normal.
5. Quantile regression allows one to detect heteroskedastivity.

Quantile regression has been used in a broad range of application settings. For instance, reference growth curves for children's height and weight have a long history in pediatric medicine. Quantile regression methods may also be used to estimate upper and lower quantile reference curves as a function of age, sex, and other covariates without imposing stringent parametric assumptions on the relationships among these curves (Cole 1992). Besides medicine, environmental issues (e.g., Haire et al (2000)) and geology (e.g., Fountain and Vecchia (1999)) have often been analysed by quantile regression. In the field of economics, however, quantile regression methods have not been so common as mean regression, but have nevertheless been used to study determinants of wages, discrimination effects, and trends in income inequality (Schultze 2004). Several recent studies have modelled the performance of public school students in standardised exams as a function of socio-economic characteristics such as their parents' income and educational attainment, and policy variables such as class size, school expenditures, and teachers' qualifications. It seems rather implausible that such covariate effects should all act so as to shift the entire distribution of the test results by a fixed amount. It is of obvious interest to know whether policy interventions would alter the performance of the strongest students in the same way as they affect weaker students. Such questions are naturally investigated within the quantile regression framework. (Koenker 2001)

DATA

The dataset used in this paper comes from the Estonian Labour Force Survey (ELFS) 2003. The sample used by the survey was based on the database of addresses of the nationwide census, which was conducted in 2000. The ELFS is a quarterly survey; this paper makes use of the results of the second, third and fourth quarters of 2003. The ELFS is a household survey, which includes only the residents of Estonia. It means that foreign workers are excluded from the sample, but it is not likely to be a problem, as foreigners in Estonia usually do not work in the public sector. Not all members of the household are included in the survey, but only those in the working age (15–74 years).

The sample used comprised 11,771 observations, but only 6,305 people of those were employed, and the unemployed and people out of the labour market were not used in the regressions. 4,644 of the above employed workers were employed in the private sector and 1,652 in the public sector. Some observations where the employer was not known were left out of the sample. Due to missing values in the explanatory variables, the sample actually used in the estimation of the parameters of regression models was limited to 4,459 observations.

The ELFS contains information about the net wages of employees, but due to the simplicity of the Estonian personal income tax system, which in 2003 was based on 26% proportional tax rate and a basic exemption of 1,000 kroons per month, gross wages could be easily calculated. As the wage data were based on the household questionnaire survey, the wages reported here may differ from the official wage statistics based on the data from the employers.

MODEL

In order to estimate the public-private sector wage differential, quantile regression is used in this paper. For the sake of comparison, the same differential is also estimated by the mean regression using the ordinary least squares method. As the number of monthly working hours varies across individuals and monthly wages depend on the number of monthly working hours, then it is more useful to model hourly instead of monthly wages. Therefore the natural logarithm of hourly net wages will be used as the dependent variable in the regression. The hourly net wages are calculated on the basis of the reported monthly net wages and average weekly working hours. The wages are given in Estonian kroons. It has been taken into account that in the case of 40 weekly working hours there will be 183 monthly working hours. So the average net wage is calculated according to the following formula

$$W_{weekly} = \frac{W_{monthly}}{H_{monthly}} \cdot \frac{40}{183} \quad .$$

In order to estimate the public-private sector wage gap, the effect of other factors has also to be taken account of. The quantile regression equation estimated in this paper is as follows:

$$Q_{Y_i}\left(\tau \middle| X\right) = X_i \beta_\tau + PUBLIC_i \chi_\tau ,$$

where Y_i is the log-hourly wage for worker *i*, X_i is a set of explanatory variables for worker *i*, $PUBLIC_i$ is a dummy variable for working in the public sector ($PUBLIC_i = 1$ if the worker *i* is employed in the public sector and $PUBLIC_i = 0$ if the worker *i* is employed in the private sector). Here the public sector comprises all kinds of organizations owned by either the central government or local authorities. β_τ and χ_τ are the parameters of the model in case of estimation of the τ-th quantile. For the sake of comparison, the ordinary least squares version of the same equation is also estimated. This variant of the wage equation is as follows:

$$Y_i = X_i \beta + PUBLIC_i \chi + \varepsilon_i .$$

The set of explanatory variables used in regression equations X_i is described in Table 1.

Table 1.

List of explanatory variables of the regression model

Variable	Description
AGE	age of the worker at the time of the survey (years)
AGE^2	age of the worker squared (calculated from the previous variable)
TENURE	time worked on the current job (years)
MANAGER	dummy variable for legislators, senior officials and managers
PROFESSIONAL	dummy variable for professionals
TECHNICIAN	dummy variable for technicians and associate professionals
CLERK	dummy variable for clerks
SERVICE-WORKER	dummy variable for service workers, and shop and market sales workers
SKILLAGRI	dummy variable for skilled agricultural and fishery workers
CRAFT	dummy variable for craft and related workers
OPREATOR	dummy variable for plant and machine operators and assemblers
BIGEMPL	dummy variable for employment in big companies (BIGEMPL=1 if the number of employees>200, BIGEMPL=0 otherwise)
TALLINN	dummy variable for the place of employment (TALLINN=1 if the job is situated in the capital, TALLINN=0 otherwise)
PART-TIME	dummy variable for part-time job (PART-TIME=1 if the average number of weekly work hours<35, PART-TIME=0 otherwise)
EDUC3	dummy variable for level 3 education
EDUC2	dummy variable for level 2 education
MARRIED	dummy variable for married workers
NONEST	dummy variable for non-Estonian nationals
WOMAN	dummy variable for women
Q3	dummy variable for the 3rd quarter
Q4	dummy variable for the 4th quarter

The first of these variables include workers' age and tenure. Next there are dummy variables for different occupational categories. The occupational categories used in the regression equation come from the ISCO88 classification. Nine different occupational categories are distinguished here, namely, those of legislators; senior officials and managers; professionals; technicians and associate professionals; clerks; service workers and shop and market sales workers; skilled agricultural and fishery workers; craft and related trades workers; plant and machine operators and assemblers; elementary occupations. Elementary occupations are selected as a base and eight dummy variables controlling for different occupational categories are entered in the regression equation. As several authors (Brown and Medoff 1988, Burdett and Mortensen 1998, Fox 2004) have pointed out, there can exist a big employer-effect on the wage rate as wage levels in big companies tend to be higher than the average. As there tend to occur remarkable regional differences in the wage levels in Estonia, a dummy variable controlling for the location of the job in the capital of Estonia is included. A difference between the wage rates of part-time and full-time employed being likely, a dummy variable for part-time employment is included. To take into account the effect of education on wages, three educational levels are distinguished between in this model. The educational levels are based on the ISCED97 classification. So educational level 1 consists here of the ISCED97 levels 0–2, level 2 of the ISCED97 levels 3–4, and education level 3 of the ISCED97 levels 5–6. In the model, education level 1 is selected as the base and dummy variables for educational levels 2 and 3 are included in the regression equation. There are also dummy variables for married workers, non-Estonians and women. In order to take account of the possible seasonality of the wage rates, dummy variables for the 3^{rd} and 4^{th} quarter are included.

In this paper, five different conditional quantiles (0.1, 0.25, 0.5, 0.75, and 0.9) of wage distribution are estimated; additionally, the conditional mean is estimated by the ordinary least squares equation. The parameters of these equations are first estimated on the sample of all employed workers, after which additionally separate samples for men and women and for different levels of education are used This method enables us to find out whether different categories of workers benefit or lose differently by being employed in the public sector.

RESULTS

The results of the quantile regression based on the sample of all employed workers are presented in Appendix 1. The estimates show that the wage levels increase with the age of the worker, but as the parameter of age squared is negative, then the gain from a higher age will decrease when the age increases. The tenure effect is positive and statistically significant. By comparison of the occupational groups it appears that being employed as a professional raises the wage the most in the case of the lower quantiles, while in the case of the higher quantiles the gain from being employed as a manager is slightly bigger. Technicians, associate professionals, clerks, craft and related workers are occupational categories whose wage levels under *ceteris paribus* conditions are lower than those of the two previous categories, but higher than other categories. Service workers, skilled agricultural and fishery workers, plant and machine operators and assemblers, and elementary occupations are occupational categories with the lowest wage levels. Regarding the relationship between the employer's size and wages, it can be said that on average there exists a positive big-employer wage effect, which is insignificant in the case of the 90th quantile and is bigger in the case of lower quantiles. So it can be said that low-wage workers benefit more from working in big companies than high-wage workers. Part-time workers are paid higher hourly wages, but the difference is bigger in the case of higher quantiles and it is not significant in the case of the 10th and 25th percentile. There is a positive effect of education on the wage rate, the wages of the educational level 3 being the highest and those of the educational level 1 the lowest, although the difference between the effects of level 2 and level 1 education is not statistically significant. Being married raises the wage level and this effect is higher in the higher quantiles. Non-Estonians get lower wages and this effect does not vary very much across different quantiles. Women get lower wages and this difference is much bigger in case of higher quantiles. The dummy variable for the 3rd quarter is not statistically significant, but the one for the 4th quarter is positively correlated with the wage rate. The reason for that is that usually workers receive some bonus payment at the end of the year.

The estimates for the public-private sector wage differential are graphically shown in Figure 2.

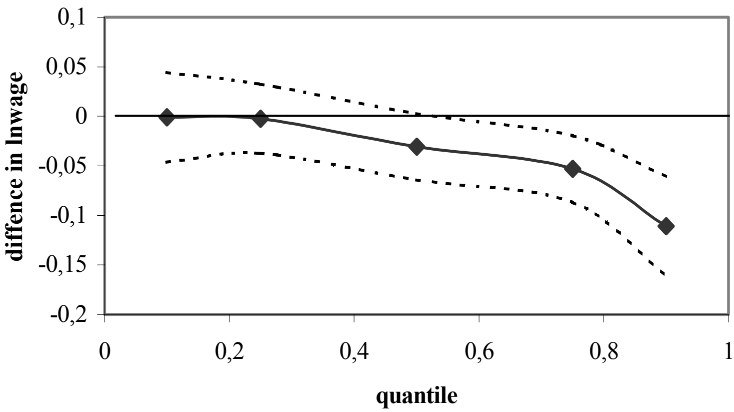


Figure 2. The public-private wage differential and its 95% confidence intervals.

The public-private wage differential is zero for the lower quantiles and it is negative for the higher quantiles, which means that working in the public sector increases the wages of the low-paid workers and decreases the wages of high-paid workers. In case of the median of the wage distribution, working in the public sector at a 3% lower wage rate and in the case of the 75th percentile, the difference is approximately 5%. The difference is biggest in the case of the 90th percentile, when the gap is 11%. The mean regression estimation of the public-private sector wage gap is negative − on average working in the public sector lowers the wage rate by nearly 6%.

This kind of public-private sector wage gap pattern is similar to those estimated in the developed countries. The results are clearly different from those obtained by Adamchik and Bedi on Polish data and by Reily on Serbian data, where the public-private sector differential was negative for all quantiles. On the other hand, the average of the public-private sector wage differential in Estonia was negative, which is not a usual result for western countries. Yet the public sector wage effect of present-day Estonia seems to be more similar to the effect observed in Western European countries than to that of the transition countries in the mid-1990s. Unfortunately, due to lack of empirical research in this field it is not possible to compare the results of this analysis to other Central and Eastern European countries.

It should be mentioned that the public-private sector wage differential may be affected by the political and economic cycles. There were general parliamentary elections in March 2003 in Estonia and according to the theory by Borjas (1984), public sector wages can be higher in the election year. If this is true, the public-private sector wage differential should be lower in other years. 2003 can be considered a year, that belongs to the growth-phase of the economic cycle. If public sector wages depend less on the economic cycles, then in the case of economic growth, private sector wages will grow faster, making the public-private sector wage differential decrease. Analysis of the political and economic cycles is not the aim of this paper, but if the effects of these cycles are reverse for the year 2003 in Estonia, their overall effect on the public-private sector wage differential is probably not very big.

Next the public-private sector wage differential will be estimated separately on the samples of men and women. The estimates of these regressions are presented in Appendixes 2 and 3 and the public-private wage differential for men and women is graphically shown in Figure 3.

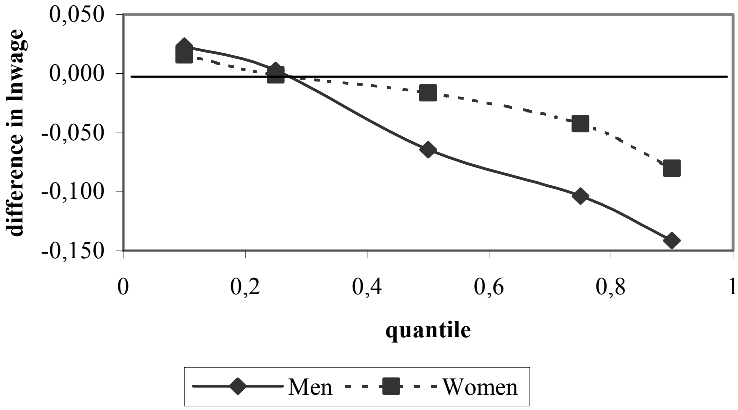


Figure 3. The public-private wage differential for men and women.

It appears that women benefit more, or actually lose less from working in the public sector than men in the case of most quantiles, but there is no difference in the case of the 10^th^ and 25^th^ percentile. The estimates of the 25^th^, 50^th^ and 75^th^ percentile show that the public-private sector wage gap is smaller for women than for men. In the case of the 90^th^ percentile, women lose 8% of their wage and men 14% of their wage if they work in the public sector. The pattern of the wage differential for men is steeper than for women, which is probably caused by men's more uneven wage distribution. The estimations of the mean regression show that on average the public-private sector wage differential for women is –3.5% and for men –8%. However, due to the relatively small sample size these differences are statistically not significant (see Appendix 7).

Finally, the public-private sector wage differential for workers with different educational levels will be estimated. The estimation results are presented in Appendixes 4, 5 and 6 and graphically shown in Figure 4.

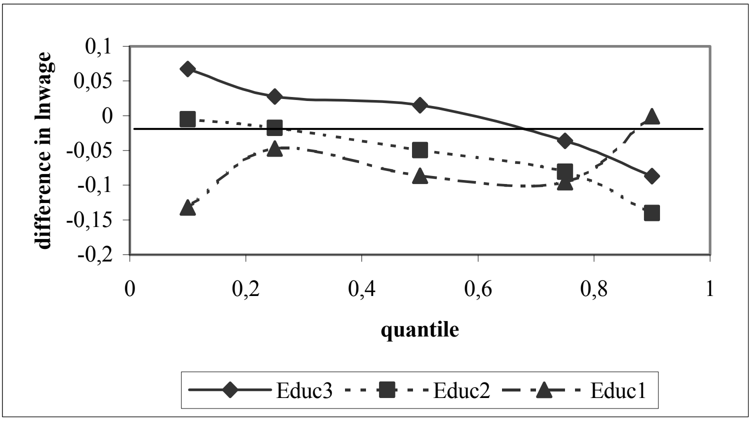


Figure 4. The public-private wage differential for workers with different educational levels.

The estimation results show that workers with university education (level 3) benefit from working in the public sector in the case of lower quantiles, while they lose from it in the case of higher quantiles. Employees with educational level 2 will lose from working in the public sector in the case of higher quantiles. In the case of lower quantiles, the wage gap is not significant for them. Workers with the lowest education level have a somewhat different wage pattern from the other educational groups. For them in the case of lower quantiles wages in the private sector are higher (more than 13% in the case of the 10th percentile), but this difference is much smaller in the case of higher quantiles and is zero at the 90th percentile. Such a pattern may be caused by the fact that under 15% of employees with educational level 1 work in the public sector. The estimations of the mean regression show that on average the public-private sector wage differential is zero for employees with level 3 education and it is –8% for both employees with level 2 and level 1 education. In this case also, due to the relatively small sample size, these differences between the wage gap profiles are statistically not significant (see Appendix 7).

CONCLUSIONS

The aim of this paper was to estimate the public-private sector wage differentials in Estonia by application of the quantile regression method. The results of the regression analysis show that the public-private wage differential is zero for the lower quantiles and negative for the higher quantiles. This means that employees with higher wage levels lose more from working in the public sector than employees with lower wages, while the potential wages in the public and private sector are equal. This result is generally similar to the results yielded by previous analyses based on other European countries and the U.S. It also appears that women benefit more from working in the public sector than men. Regarding different educational levels, employees with university-level education benefit from working in the public sector at low wage levels, but lose at higher wage levels. Employees with lower educational levels generally lose from working in the public sector. The pattern that workers with lower wages will benefit from employment in the public sector found support for all educational levels, except for workers with the lowest educational level, in whose case the situation was the other way round.

It can be concluded that in Estonia the wages earned by high-paid workers, especially males, in the public sector are remarkably lower than in the private sector. This can cause problems for the public sector in finding high-skilled employees and may lower the motivation of people working in the public sector. But as long as working in the public sector can bring some non-wage advantages, the situation in actual fact need not be so bad at all. However, finding an answer to this problem requires further research.

In order to extend this analysis, it will be necessary to analyse the public-private sector wage differential across different years, which would allow capturing the possible effects of political and economic cycles. Such analysis would also provide information about the dynamics of the public-private sector wage differential during the transition process. The other issues to be investigated are the problem of selecting the possible sample and the decision processes of employees about whether to work in the private or public sector. Therefore some other econometric methods, for example the instrumental variables method, should be combined with quantile regression and the decision to work in the public sector should be treated as endogenous.

REFERENCES

Adamchik, V. A., Bedi, A. S. 'Wage differentials between the public and the private sectors: evidence from an economy in transition', *Labour Economics*, Vol. 7, 2000, pp. 203–224.

Borjas G. J. 'Electoral cycles and the earnings of federal bureaucrats', *Economic Inquiry*, Vol.22, 1984, pp. 447–459.

Brown, C., Medoff, J. 'The employer size-wage effect', *The Journal of Political Economy*, Vol. 97, No.5, 1989, pp. 1027–1059.

Buchinsky, M**.** Recent 'Advances in Quantile Regression Models', *Journal of Human Resources*, 33, 1, 1998, pp. 88–126.

Burdett, K and. Mortensen, D. T. 'Wage Differentials, Employer Size, and Unemployment', *International Economic Review*, Vol. 39, No.2, 1998, pp. 257–273.

Cole, T. J. Fitting Smoothed Centile Curves to Reference Data, *Journal of the Royal Statistical Society*, Series A, Vol. 151, No. 3, 1978, pp. 385–418.

Diseney, R., Gosling, A. 'Does It Pay to Work in the Public Sector?' *Fiscal Studies*, Vol. 19, No. 4, 1998, pp. 347–374.

Fountain, A. G., Vecchia, A. 'How Many Stakes Are Required to Measure the Mass Balance of a Glacier? How Many Stakes Are Required to Measure the Mass Balance of a Glacier?' *Geografiska Annaler. Series A, Physical Geography*, Vol. 81, No. 4, 1999, pp. 563–573.

Fox, J. T. 'The Employer-Size Wage Effect: Prices and Quantities by Worker Age', The University of Chicago, 2004, 72 p.

Gunderson, M. 'Earnings Differentials between the Public and Private Sectors', *The Canadian Journal of Economics*, Vol. 12, No. 2, 1979, pp. 228–242.

Haire, S. L., Bock, C. E., Cade, B. S., Bennet, B.C. 'The Role of Landscape and Habitat Charactericstics in Limiting Abundance of Grassland Nesting Songbirds in an Urban Open Space', *Landscape and Urban Planning*, 1999, Vol. 48, pp. 65–82.

Heitmueller, A. 'Public-Private Sector Wage Differentials in Scotland: An Endogenous Switching Model', IZA Discussion Paper No. 992, 2004, 33 p.

Katz, L. F., Murphy, K. E. 'Changes in Relative Wages, 1963–1987; Supply and Demand Factors', *Quarterly Journal of Economics*, Vol. 107, 1992, pp. 35–78.

Koenker, R., Bassett, G. 'Regression quantiles', *Econometrica*, 46, 1978, pp. 33–50.

Koenker, R. 'Quantile regression', *International Encyclopedia of Social & Behavioral Sciences*, 2000, pp. 8893–8899.

Koenker, R., Hallock, K. 'Quantile regression', *The Journal of Economic Perspectives*, Vol.14, No.4, 2001, pp. 143–156.

Lucifora, C., Meurs, D. 'The Public Sector Pay Gap in France, Great Britain and Italy', IZA Discussion Paper No. 1041, 2004, 20 p.

Melly, B. 'Public-private sector wage differentials in Germany: evidence from quantile regression', University of St. Gallen, 2003, 27 p.

Melly, B. 'Public and private sector wage distributions controlling for endogenous sector choice', University of St. Gallen, 2005, 51 p.

Mueller, R. 'Public–private sector wage differentials in Canada: evidence from quantile regressions', *Economics Letters*, 60,1998, pp. 229–235.

Poterba, J. M., Rueben, K. S. 'The distribution of public sector wage premia: new evidence using quantile regression methods', NBER Working Paper No. 4734, 1994, 40 p.

Reily, B. 'The Private Sector Wage Premium in Serbia (1995 – 2000): A Quantile Regression Approach', University of Sussex Discussion Papers in Economic, No. 98, 2003, 40 p.

Rosholm, M., Nilesen, H. S. 'The Public-Private Sector Wage Gap in Zambia in the 1990s: A Quantile Regression Approach', *Empirical Economics*, Vol. 26, 2001, 169–182.

Rõõm, M. 'Eesti tööturu korraldus ja teiste riikide praktika', *Kroon&Majandus*, Nr.1, 2003, lk.43–53.

Rõõm, M. 'Unemployment and Labour Mobility in Estonia: Analysis using Duration Models', Working Papers of Eesti Pank No 7, 2002, 33 p.

Schultze, N. 'Applied Quantile Regression: Microeconometric, Financial, and Environmental Analyses', Tübingen, 2004, 157 p.

Smith, S. P. 'Pay differentials between federal government and private sectors workers', *Industrial and Labour Relations Review*, No. 29, 1976, pp. 233–257.

Stelcner, M., van der Gaag, J., Wijverberg, W. 'A Switching Regression Model of Public-Private Sector Wage Differentials in Peru', *Journal of Human Resources*, Vol. 24 No.3, 1989, pp. 545–559.

Appendix 1

Estimates for the parameters and standard errors of the regression model

Variable	10th		25th		50th		75th		90th		Mean	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
AGE	0.015	0.005	0.014	0.004	0.017	0.004	0.019	0.004	0.027	0.006	0.017	0.003
AGE^2	–0.00024	0.00006	–0.00021	0.00004	–0.00025	0.00004	–0.00028	0.00004	–0.00036	0.00007	–0.00026	0.00004
TENURE	0.005	0.001	0.003	0.001	0.003	0.001	0.004	0.001	0.004	0.001	0.005	0.001
MANAGER	0.350	0.045	0.502	0.034	0.578	0.032	0.644	0.031	0.684	0.046	0.540	0.029
PROFESSIONAL	0.487	0.044	0.580	0.033	0.631	0.031	0.625	0.031	0.648	0.046	0.604	0.028
TECHNICIAN	0.231	0.041	0.318	0.030	0.357	0.029	0.369	0.029	0.414	0.044	0.348	0.026
CLERK	0.222	0.049	0.315	0.038	0.305	0.036	0.313	0.037	0.317	0.055	0.300	0.033
SERVICE-WORKER	0.026	0.037	0.077	0.028	0.049	0.027	0.035	0.027	0.101	0.042	0.024	0.024
SKILLAGRI	0.017	0.082	0.096	0.064	0.078	0.063	0.118	0.065	0.086	0.095	0.066	0.057
CRAFT	0.191	0.036	0.270	0.028	0.287	0.027	0.265	0.027	0.259	0.042	0.273	0.024
OPERATOR	0.180	0.035	0.257	0.027	0.246	0.026	0.233	0.027	0.213	0.041	0.236	0.024
BIGEMPL	0.177	0.030	0.135	0.023	0.127	0.022	0.102	0.022	0.055	0.034	0.129	0.020
TALLINN	0.196	0.023	0.197	0.018	0.220	0.017	0.222	0.018	0.211	0.027	0.221	0.016
PART-TIME	–0.030	0.036	0.025	0.027	0.139	0.025	0.197	0.025	0.255	0.037	0.102	0.023
EDUC3	0.155	0.039	0.132	0.028	0.129	0.027	0.171	0.026	0.210	0.040	0.181	0.024

EDUC2	0.040	0.030	0.027	0.023	0.002	0.022	0.038	0.022	0.035	0.035	0.032	0.020
MARRIED	0.027	0.020	0.024	0.015	0.038	0.015	0.063	0.015	0.064	0.023	0.044	0.013
NON-EST	–0.131	0.021	–0.162	0.016	–0.177	0.016	–0.186	0.016	–0.215	0.024	–0.170	0.014
WOMAN	–0.084	0.021	–0.164	0.016	–0.237	0.016	–0.259	0.016	–0.315	0.024	–0.201	0.014
Q3	0.019	0.023	0.011	0.017	0.006	0.017	0.003	0.017	0.011	0.026	–0.002	0.015
Q4	0.046	0.022	0.045	0.017	0.050	0.017	0.055	0.017	0.065	0.026	0.053	0.015
PUBLIC	–0.001	0.023	–0.002	0.018	–0.031	0.017	–0.053	0.017	–0.111	0.026	–0.056	0.015
CONSTANT	1.974	0.108	2.215	0.081	2.404	0.077	2.606	0.076	2.695	0.118	2.374	0.069

N = 4,459

Appendix 2

Estimates for the parameters and standard errors of the regression model (men)

Variable	10th		25th		50th		75th		90th		Mean	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
AGE	0.021	0.008	0.019	0.007	0.027	0.006	0.028	0.005	0.034	0.009	0.022	0.005
AGE^2	–0.00036	0.00009	–0.00031	0.00008	–0.00038	0.00007	–0.00040	0.00006	–0.00047	0.00010	–0.00034	0.00006
TENURE	0.007	0.002	0.007	0.002	0.004	0.002	0.007	0.001	0.006	0.002	0.007	0.001
MANAGER	0.351	0.070	0.537	0.064	0.600	0.053	0.597	0.044	0.639	0.073	0.514	0.047
PROFESSIONAL	0.503	0.078	0.533	0.069	0.542	0.059	0.504	0.051	0.439	0.086	0.517	0.052
TECHNICIAN	0.298	0.079	0.381	0.072	0.447	0.060	0.388	0.051	0.463	0.087	0.365	0.053
CLERK	0.455	0.095	0.459	0.090	0.433	0.076	0.313	0.065	0.358	0.100	0.373	0.068
SERVICE-WORKER	–0.087	0.073	0.129	0.067	0.100	0.057	0.050	0.049	0.142	0.085	–0.023	0.050
SKILLAGRI	–0.084	0.131	0.045	0.127	0.049	0.108	–0.011	0.092	0.025	0.116	–0.038	0.096
CRAFT	0.209	0.051	0.313	0.049	0.296	0.041	0.262	0.035	0.238	0.061	0.263	0.036
OPERATOR	0.200	0.051	0.275	0.049	0.272	0.042	0.238	0.036	0.208	0.062	0.221	0.037
BIGEMPL	0.226	0.044	0.161	0.041	0.152	0.035	0.129	0.030	0.061	0.050	0.173	0.031
TALLINN	0.151	0.036	0.187	0.034	0.197	0.029	0.223	0.025	0.242	0.041	0.209	0.025
PART-TIME	–0.162	0.070	–0.160	0.067	–0.037	0.056	0.231	0.046	0.247	0.077	0.024	0.049
EDUC3	0.138	0.061	0.158	0.054	0.153	0.046	0.238	0.039	0.213	0.066	0.224	0.041

EDUC2	0.013	0.045	0.006	0.040	–0.007	0.034	0.056	0.029	0.014	0.052	0.032	0.030
MARRIED	0.021	0.036	0.043	0.032	0.092	0.027	0.130	0.023	0.113	0.037	0.080	0.023
NON-EST	–0.070	0.035	–0.167	0.031	–0.170	0.027	–0.162	0.022	–0.134	0.037	–0.162	0.023
Q3	0.005	0.036	0.000	0.033	–0.003	0.028	–0.002	0.024	0.000	0.040	–0.010	0.024
Q4	0.080	0.036	0.054	0.033	0.061	0.028	0.055	0.024	0.095	0.041	0.060	0.025
PUBLIC	0.023	0.041	0.003	0.037	–0.064	0.032	–0.104	0.028	–0.142	0.047	–0.079	0.028
CONSTANT	1.939	0.167	2.137	0.148	2.210	0.120	2.411	0.100	2.558	0.161	2.318	0.105

N = 2,076

Appendix 3

Estimates for the parameters and standard errors of the regression model (women)

Variable	10th		25th		50th		75th		90th		Mean	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
AGE	0.015	0.005	0.006	0.003	0.011	0.004	0.011	0.006	0.015	0.007	0.011	0.004
AGE^2	–0.00020	0.00006	–0.00010	0.00004	–0.00018	0.00005	–0.00018	0.00007	–0.00020	0.00008	–0.00017	0.00005
TENURE	0.003	0.001	0.002	0.001	0.003	0.001	0.002	0.001	0.001	0.001	0.003	0.001
MANAGER	0.414	0.044	0.469	0.028	0.571	0.037	0.718	0.049	0.722	0.053	0.563	0.035
PROFESSIONAL	0.505	0.042	0.591	0.025	0.690	0.032	0.737	0.043	0.739	0.048	0.658	0.031
TECHNICIAN	0.262	0.035	0.305	0.022	0.362	0.029	0.389	0.039	0.415	0.045	0.359	0.028
CLERK	0.147	0.042	0.256	0.027	0.292	0.036	0.335	0.049	0.353	0.055	0.288	0.035
SERVICE-WORKER	0.070	0.032	0.055	0.020	0.047	0.027	0.063	0.037	0.059	0.043	0.050	0.026
SKILLAGRI	0.102	0.084	0.078	0.052	0.125	0.071	0.161	0.095	0.241	0.112	0.167	0.068
CRAFT	0.222	0.045	0.241	0.029	0.301	0.039	0.240	0.053	0.269	0.063	0.270	0.038
OPERATOR	0.221	0.040	0.254	0.026	0.294	0.035	0.269	0.048	0.239	0.055	0.262	0.033
BIGEMPL	0.113	0.031	0.084	0.020	0.090	0.027	0.074	0.038	0.049	0.042	0.073	0.026
TALLINN	0.177	0.023	0.223	0.015	0.242	0.020	0.217	0.027	0.183	0.031	0.232	0.019
PART-TIME	0.040	0.031	0.063	0.019	0.150	0.025	0.190	0.033	0.244	0.037	0.117	0.024
EDUC3	0.144	0.040	0.108	0.024	0.109	0.031	0.111	0.041	0.133	0.046	0.155	0.029

EDUC2	0.061	0.033	0.015	0.020	0.006	0.027	0.008	0.037	–0.019	0.042	0.029	0.026
MARRIED	0.039	0.019	0.017	0.012	0.005	0.016	0.014	0.022	0.032	0.027	0.023	0.016
NON-EST	–0.135	0.021	–0.152	0.013	–0.178	0.018	–0.204	0.025	–0.242	0.028	–0.179	0.017
Q3	0.045	0.023	0.003	0.014	0.002	0.019	0.004	0.026	0.003	0.030	0.003	0.018
Q4	0.059	0.022	0.036	0.014	0.028	0.019	0.035	0.026	0.053	0.030	0.046	0.018
PUBLIC	0.016	0.022	–0.001	0.014	–0.016	0.018	–0.042	0.025	–0.080	0.029	–0.035	0.018
CONSTANT	1.809	0.114	2.209	0.071	2.292	0.095	2.536	0.128	2.669	0.151	2.268	0.091

N = 2,383

Appendix 4

Estimates for the parameters and standard errors of the regression model (educational level 3)

Variable	10th		25th		50th		75th		90th		Mean	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
AGE	0.017	0.010	0.022	0.006	0.011	0.008	0.008	0.009	0.005	0.010	0.015	0.007
AGE^2	–0.00025	0.00011	–0.00032	0.00007	–0.00018	0.00008	–0.00016	0.00010	–0.00011	0.00011	–0.00023	0.00008
TENURE	–0.001	0.002	0.000	0.001	0.002	0.002	0.005	0.002	0.006	0.002	0.003	0.001
MANAGER	0.522	0.083	0.667	0.051	0.767	0.060	0.821	0.075	0.968	0.078	0.721	0.055
PROFESSIONAL	0.626	0.074	0.673	0.048	0.751	0.056	0.729	0.070	0.779	0.072	0.713	0.051
TECHNICIAN	0.365	0.080	0.434	0.050	0.460	0.058	0.530	0.074	0.555	0.075	0.463	0.053
CLERK	0.217	0.111	0.340	0.068	0.315	0.078	0.446	0.099	0.392	0.103	0.317	0.072
SERVICE-WORKER	0.112	0.088	0.131	0.055	0.063	0.065	0.064	0.083	0.000	0.088	0.060	0.060
SKILLAGRI	–0.671	0.112	–0.673	0.162	0.212	0.190	0.274	0.242	0.151	0.111	–0.194	0.189
CRAFT	0.300	0.110	0.415	0.067	0.445	0.078	0.412	0.098	0.562	0.101	0.408	0.072
OPERATOR	0.303	0.106	0.347	0.066	0.414	0.077	0.372	0.098	0.304	0.102	0.355	0.070
BIGEMPL	0.185	0.054	0.160	0.035	0.125	0.041	0.098	0.052	0.067	0.056	0.123	0.037
TALLINN	0.259	0.041	0.250	0.026	0.272	0.030	0.245	0.038	0.235	0.041	0.277	0.027
PART-TIME	0.117	0.061	0.234	0.038	0.214	0.042	0.274	0.053	0.332	0.051	0.231	0.038
MARRIED	0.027	0.039	0.051	0.024	0.054	0.028	0.095	0.035	0.093	0.038	0.067	0.025

NON-EST	–0.125	0.040	–0.193	0.025	–0.212	0.029	–0.247	0.036	–0.256	0.037	–0.221	0.026
WOMAN	–0.146	0.041	–0.182	0.025	–0.213	0.029	–0.248	0.037	–0.274	0.038	–0.216	0.027
Q3	0.008	0.043	–0.004	0.026	0.017	0.031	0.006	0.039	–0.030	0.042	–0.013	0.028
Q4	0.007	0.042	0.015	0.026	0.041	0.031	0.039	0.039	0.005	0.042	0.016	0.028
PUBLIC	0.067	0.039	0.028	0.025	0.015	0.029	–0.036	0.036	–0.087	0.036	0.002	0.026
CONSTANT	2.010	0.239	2.116	0.147	2.538	0.175	2.845	0.214	3.138	0.214	2.474	0.160

N = 1,295

Appendix 5

Estimates for the parameters and standard errors of the regression model (educational level 2)

Variable	10th		25th		50th		75th		90th		Mean	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
AGE	0.009	0.007	0.009	0.006	0.017	0.005	0.024	0.005	0.022	0.007	0.017	0.005
AGE^2	–0.00019	0.00008	–0.00018	0.00006	–0.00027	0.00006	–0.00034	0.00006	–0.00032	0.00008	–0.00027	0.00005
TENURE	0.007	0.002	0.006	0.001	0.005	0.001	0.004	0.001	0.006	0.002	0.007	0.001
MANAGER	0.325	0.060	0.423	0.047	0.496	0.042	0.539	0.045	0.527	0.061	0.457	0.039
PROFESSIONAL	0.382	0.069	0.510	0.052	0.505	0.046	0.604	0.050	0.629	0.066	0.521	0.042
TECHNICIAN	0.224	0.051	0.284	0.040	0.348	0.036	0.376	0.039	0.445	0.053	0.347	0.033
CLERK	0.220	0.062	0.280	0.048	0.303	0.043	0.379	0.046	0.361	0.065	0.320	0.040
SERVICE-WORKER	0.041	0.046	0.072	0.036	0.050	0.032	0.082	0.034	0.144	0.047	0.052	0.029
SKILLAGRI	0.082	0.100	0.093	0.084	0.127	0.076	0.151	0.082	0.131	0.104	0.099	0.070
CRAFT	0.171	0.046	0.249	0.036	0.269	0.032	0.259	0.034	0.236	0.047	0.256	0.030
OPERATOR	0.157	0.045	0.222	0.036	0.211	0.032	0.227	0.035	0.220	0.047	0.220	0.029
BIGEMPL	0.202	0.039	0.154	0.031	0.144	0.028	0.098	0.030	0.017	0.042	0.138	0.026
TALLINN	0.150	0.030	0.149	0.024	0.180	0.023	0.198	0.024	0.208	0.033	0.197	0.021
PART-TIME	–0.119	0.051	–0.030	0.040	0.111	0.035	0.141	0.037	0.241	0.050	0.058	0.032
MARRIED	0.050	0.027	0.026	0.021	0.020	0.019	0.062	0.020	0.076	0.027	0.047	0.017

NON-EST	–0.119	0.029	–0.164	0.022	–0.190	0.020	–0.172	0.022	–0.196	0.030	–0.170	0.018
WOMAN	–0.091	0.029	–0.166	0.022	–0.233	0.020	–0.283	0.021	–0.329	0.029	–0.205	0.018
Q3	–0.027	0.030	–0.002	0.024	–0.013	0.021	–0.022	0.023	0.012	0.032	–0.017	0.020
Q4	0.003	0.030	0.042	0.024	0.048	0.021	0.054	0.023	0.085	0.031	0.059	0.019
PUBLIC	–0.005	0.032	–0.018	0.025	–0.050	0.022	–0.081	0.024	–0.140	0.033	–0.083	0.020
CONSTANT	2.212	0.154	2.410	0.116	2.472	0.105	2.567	0.110	2.832	0.148	2.466	0.096

N = 2,596

Appendix 6

Estimates for the parameters and standard errors of the regression model (educational level 1)

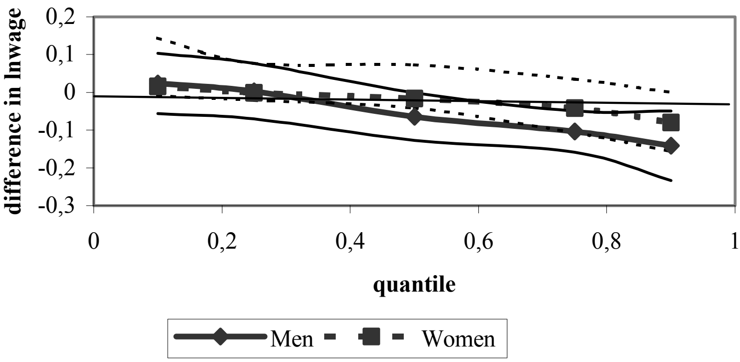
Variable	10th		25th		50th		75th		90th		Mean	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
AGE	0.005	0.013	0.026	0.009	0.019	0.007	0.024	0.009	0.050	0.010	0.023	0.007
AGE^2	–0.00009	0.00015	–0.00030	0.00011	–0.00023	0.00008	–0.00032	0.00011	–0.00060	0.00012	–0.00029	0.00008
TENURE	0.003	0.004	0.000	0.003	0.000	0.002	–0.002	0.003	–0.005	0.003	0.000	0.002
MANAGER	0.322	0.115	0.473	0.183	0.446	0.117	0.301	0.184	0.221	0.081	0.367	0.144
PROFESSIONAL	0.064	0.167	–0.041	0.157	–0.073	0.176	–0.277	0.158	–0.445	0.120	–0.140	0.232
TECHNICIAN	0.014	0.107	0.085	0.172	0.414	0.118	0.435	0.134	0.263	0.076	0.250	0.135
CLERK	0.311	0.173	0.353	0.123	0.388	0.088	0.220	0.124	0.142	0.121	0.302	0.100
SERVICE-WORKER	–0.422	0.122	–0.013	0.080	–0.004	0.058	0.009	0.079	0.044	0.077	–0.099	0.063
SKILLAGRI	–0.110	0.194	0.018	0.134	0.053	0.100	–0.158	0.137	0.180	0.143	0.042	0.112
CRAFT	0.228	0.091	0.219	0.062	0.261	0.045	0.238	0.064	0.261	0.068	0.257	0.050
OPERATOR	0.196	0.091	0.258	0.064	0.268	0.045	0.216	0.061	0.194	0.063	0.220	0.049
BIGEMPL	0.086	0.102	0.025	0.073	0.011	0.054	0.075	0.073	0.024	0.070	0.069	0.060
TALLINN	0.066	0.091	0.301	0.060	0.231	0.045	0.175	0.060	0.089	0.058	0.174	0.049
PART-TIME	–0.135	0.125	–0.169	0.072	–0.078	0.052	0.149	0.067	0.168	0.076	–0.067	0.057
MARRIED	–0.006	0.068	0.016	0.048	0.001	0.035	0.040	0.050	0.022	0.050	–0.013	0.039

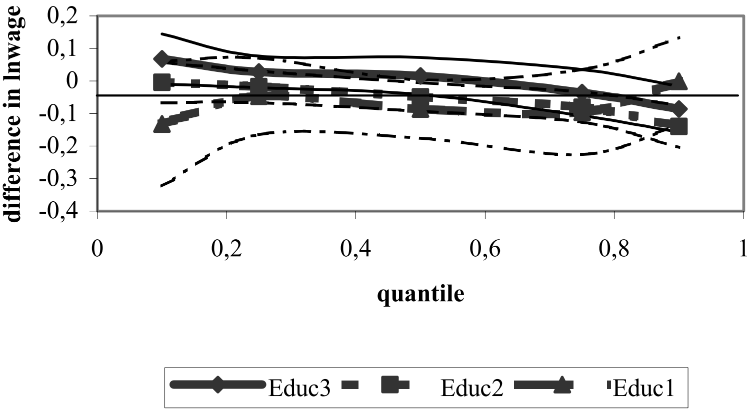
NON-EST	–0.064	0.073	–0.065	0.049	–0.040	0.036	–0.073	0.050	–0.055	0.053	–0.014	0.040
WOMAN	–0.003	0.081	–0.159	0.050	–0.189	0.035	–0.178	0.047	–0.239	0.049	–0.141	0.039
Q3	0.189	0.080	0.085	0.051	0.011	0.037	0.030	0.051	0.034	0.055	0.095	0.040
Q4	0.182	0.077	0.086	0.052	0.054	0.037	0.096	0.050	0.113	0.050	0.092	0.040
PUBLIC	–0.132	0.098	–0.047	0.060	–0.086	0.045	–0.096	0.066	–0.001	0.068	–0.077	0.051
CONSTANT	2.032	0.259	1.927	0.187	2.283	0.129	2.478	0.178	2.249	0.186	2.193	0.143

N = 568

Appendix 7

95% confidence intervals for the regression estimates





KOKKUVÕTE

AVALIKU JA ERASEKTORI PALGAERINEVUSTE HINDAMINE KVANTIILREGRESSIOONI ABIL EESTI NÄITEL

Kristjan-Olari Leping

Avaliku sektori töötajate palgatase mõjutab olulisel määral avaliku sektori kulusid ja riigieelarve tasakaalu. Samuti võivad avaliku sektori töötajate palgad avaldada mõju erasektori palkadele ja inflatsiooni kiirusele. Liiga kõrge palgatase avalikus sektoris võib põhjustada inflatsiooni kiirenemist ja eelarvedefitsiiti, samas kui avaliku sektori liiga madal palgatase võib põhjustada avaliku sektori organisatsioonidele raskusi kvalifitseeritud tööjõu leidmisel.

Taasiseseisvusperioodi jooksul on palkade kasvutempo olnud Eestis kiire, viimaste aastate jooksul on keskmine palk tõusnud ligikaudu 10 protsenti aastas. Palkade kiire kasvu korral võib juhtuda, et palkade kasvutempo era- ja avalikus sektoris on olnud erinev, mistõttu võivad nimetatud sektorite palgatasemed olla erinevad. Tulenevalt nimetatud asjaoludest on käesoleva artikli eesmärgiks hinnata avaliku ja erasektori palgaerinevusi Eestis. Palgaerinevuste hindamiseks kasutakse 2003. a. Eesti Tööjõu-uuringu andmeid ja kvantiilregressiooni meetodit.

Analüüsi tulemused näitavad, et madalapalgaliste töötajate puhul on potentsiaalne palgatase nii avalikus kui erasektoris võrdne, kuid kõrgepalgalistel töötajatel on erasektoris märkimisväärselt paremad palgavõimalused. Nimetatud tulemus on sarnane varasemate Lääne-Euroopa riikides ja USA-s läbiviidud uuringute tulemustega. Samuti selgus antud uuringust, et meestel on erasektoris töötamisest saadav kasu suurem kui naistel. Erinevate haridustasemega töötajate kohta võib väita, et kõrgharidusega töötajad madalamate palgatasemete korral võidavad,

kuid kõrgete palgatasemete korral kaotavad avalikus sektoris töötamisest. Kesk- ja kutseharidusega töötajate puhul on erasektoris töötamisest saadav kasu suurem kui kõrgharidusega töötajate puhul. Kõige madalama haridustasemega töötajatel on avaliku ja erasektori palgaerinevused kõige suuremad.

Nimetatud tulemuste alusel võiks eeldada, et Eesti avaliku sektori organisatsioonidel võib olla probleeme kõrge kvalifikatsiooniga tööjõu leidmisel, kuna nimetud töötajatel on erasektoris märkimisväärselt suuremad teenimisvõimalused. Samas võivad avaliku sektoris töötamist soodustada mõned teised tegurid nagu näiteks suuremad hüvitised töölt lahkumisel või pikem puhkus. Seetõttu vajab nimetatud küsimus täiendavat analüüsi. Samuti oleks tulevikus vajalik analüüsida majandus- ja poliitiliste tsüklite mõju avaliku ja erasektori palgaerinevustele.