Jurnal Wacana Kinerja
Volume 21 | Nomor 2 | November 2018
10.31845/jwk.v21i2.96

Wage Premium of The Public Sector in Indonesia

Wage premium Sektor Publik di Indonesia

Rizky Fitria[1]

Pusat Pengembangan Program dan Pembinaan Diklat (P3D)
Lembaga Administrasi Negara (LAN)
Jl. Veteran No. 10 Jakarta Pusat
Telp. (021) 3868201, Fax. (021) 3868210

(Diterima 20/08/18; revisi 12/11/18)

Abstrak

Apakah pegawai pemerintah Indonesia digaji terlalu tinggi? Perbandingan terbaik untuk menilai tingkat gaji pegawai di sektor publik adalah dengan melihat remunerasi yang diterima oleh pekerja sektor swasta. Oleh karena itu, kajian ini menginvestigasi perbedaan gaji antara sektor publik dan swasta di Indonesia. Untuk memperoleh estimasi yang akurat, perbedaan upah yang muncul karena perbedaan karakteristik pegawai, karakteristik pekerjaan dan masalah *selection bias* perlu dieliminasi. Untuk itu, kajian ini menerapkan berbagai metodologi seperti *Heckman Correction Method* dan *Quantile Wage Regression* dengan menggunakan data terbaru yang diambil dari *Indonesia Family Life Survey* (IFLS) 5 tahun 2014. Kajian ini menemukan perbedaan upah yang positif antara sektor publik dan swasta di Indonesia, yang berarti bahwa pegawai pemerintah Indonesia memperoleh gaji yang lebih tinggi dibandingkan dengan pekerja sektor swasta. Hasil tersebut konsisten dengan penelitian terdahulu di negara lain tetapi memberikan pola yang berbeda jika dibandingkan dengan penelitian sebelumnya yang menggunakan data Indonesia. Perbedaan upah yang ditemukan di kajian ini lebih tinggi untuk individu dengan tingkat pendidikan tinggi dan bervariasi sepanjang distribusi upah. Tingkat upah yang lebih tinggi ini seharusnya dapat meningkatkan produktivitas pegawai pemerintah dan menarik minat pekerja bertalenta tinggi untuk bekerja di sektor publik.

Kata kunci: *wage premium*, perbedaan upah, sektor publik dan swasta.

Klasifikasi JEL: J310, J24, J43

Abstract

Are Indonesian government officials overpaid? Practically, the best comparison for the public sector's wage is the private sector's remuneration. Therefore, this study investigates the wage differential between public and private sectors in Indonesia. To obtain robust estimations, it needs to eliminate the effects from differences in workers' and jobs' characteristic as well as the selection bias problem. Therefore, it applies various methodologies such as Heckman Correction Method and Quantile Wage Regression by using the newest data retrieved from Indonesia Family Life Survey (IFLS) 5 in 2014. The results suggest that differences in wages among two sectors are positive, meaning that Indonesia's government workers earned higher wages with respect to their private counterparts. Some of those results were consistent with former studies in other countries but revealed different trends compared to previous Indonesian data. The wage

[1] Email: fitria.rizky@gmail.com

gap found in this study was higher for individuals with tertiary education level and varied along the wage distribution. This higher wage rate is supposed to boost civil servants' productivity as well as attract high talented employees to enroll as government officials.

***Keywords**: wage premium, wage differential, public and private sectors.*

JEL classification: J310, J24, J43

1. BACKGROUND

The quality of public governance in Indonesia has stayed behind other South-East Asian countries such as the Philippines, Thailand, Malaysia, Vietnam and Singapore (*OECD Economic Surveys Indonesia*, 2016)[2]. Moreover, in terms of generating structural changes to develop the economy, the Indonesian government was reported to experience various barriers such as endemic corruption, skills shortage, excessive bureaucratic regulation and poor infrastructure. To overcome these barriers and make significant improvements, the government needs to create a harmonized bureaucracy and offer greater incentives for their employees both in central and regional levels.

The relative changes in public-sector's incentives, in turn, could affect the labor supply decision, as well as the wage determination in the private sector in Indonesia. If both workers compete in one labor market, the civil servants' higher wage would force the private companies to increase their remuneration for attracting highly-talented individuals. Conversely, if the government sets its wage rate far below that of the private sector, it would end up with low-talented and low-motivated employees and thus, Indonesia would have difficulties in enhancing its economic conditions. It is, therefore, appealing to examine the wage comparison and differential between public and private sectors.

As a theoretical matter, there exists some explanations related to wage heterogeneity (Cahuc & Zylberberg, 2004). For example, the theory of human capital presented by Becker which takes into account the individual competences to clarify the differential of the wage among workers. It means, the presence of wage heterogeneity in this case is associated with workers' characteristics such as age, education, experience and training. This is then ended up in the notion that education creates more competent individuals in ways that are more valuable in the labor market (Becker, 1964).

Another justification comes from hedonic theory of wages proposed by Rosen (1974). This theory suggests that the differences in wages rise from hard working conditions. In other words, employees which have the same competency levels could earn different wages depending on their working conditions, including the working environment, the jobs' risks, the jobs' duration, and even the social prestige attached to the job. The harder a job is, the higher the wage a worker would receive. However, it means the lower the utility a worker could gain; difficulties of the job denote the disutility of the employee(Rosen, 1974).

The wage differential which appears from both theories can be studied by looking at the behavior of compensation and benefit management of a sector and compare it with another sector; in this case, the wage comparison between public and private sectors. These two sectors differ in noteworthy ways and have their own characteristics. For example, on average, public-sector's occupations require workers with high talent associated with high education levels in order to do its jobs than the private-sector. As a consequence, the wage offered by each sector could be various.

[2] In 2015, Indonesia's government effectiveness was around 40 percentiles (scale 100); while Philippines had almost 60, Malaysia had almost 80 and Singapore had 100 percentiles. It describes perceptions for civil service quality and the degree of its independence from political pressures, public service, policy formulation and implementation quality and government's credibility to commit for those policies.

However, even the employees who have equal competences could earn different level of wages for working in one sector instead of another since these two sectors hold different characteristics as explained above. Adjusting for distinct requirements and characteristics between the two sectors is then needed for generating a trusted earning differential. It means that comparing the raw average wages without controlling the workers' and jobs' characteristics could lead to a bias conclusion.

Among the two sectors, public service is commonly seen as a sector which offers relatively low wages compared to the private sector. This general view, combined with some stories of underpayment in Indonesia's civil service, to some extent justify the poor performance of Indonesia's civil servants. Nonetheless, evidence that clarifies the public-private wage differential has been lacking. Interestingly, the literature review of the wage differential of public and private sectors found only one study that fully describes the gap in Indonesia.

In 1970, Indonesian public employees were part of the most poorly paid workers in the world (Smith, 1975). The incomes received covered no more than half of the civil servants' cost of living expenditures which led to corrupt behavior among a majority of the workers. Moreover, studies conducted by The World Bank since the early 1980s often highlighted the general claims of civil servants as not being paid a proper wage. For instance, civil service clerks made about half the salary compared to their private employee counterparts, and directors-general made one-tenth to one-fifteenth the salary. In short, the claims about underpaid civil service in Indonesia seem to have been real for some period of time in the past.

However, the financial crisis in 1997 transformed the Indonesia public-sector conditions in which it embarked on a notion called the era of reform that aimed to transform governance and bureaucracy in many scopes including its public financial management. Consequently, the reform affects the mechanism of civil servants' wage setting in Indonesia. Horhoruw, et al stated that from 2008 to 2011 there were sixteen Ministries/Agencies that had been approved and gained the new performance allowance based on their promise on future reform. Moreover, the bureaucracy reform also allowed the personal performance appraisal system as a reward for them. This performance award was not only targeted on central governments but on local institutions as well (Horhoruw, Karippacheril, Sutiyono, & Thomas, 2013).

As the public sector has experienced transformation since the 2000s, this study investigates the wage differential between public and private sectors in Indonesia. It explores the latest data from Indonesia Family Life Survey 5 (IFLS 5) which provides panel survey data of Indonesia's individuals and households in 2014. The sample is representative of 83% of Indonesian population and consists of more than 30.000 individuals living in 13 provinces in Indonesia[3].

The findings using updated data could enrich and give valuable information about public-private wage differential in Indonesia for international comparison. Besides, a previous study using Ordinary Least Square (OLS) and a public-private sector dummy variable reported to have two statistical problems. Firstly, the workers observed are not a random sample of the population but a potentially self-selected one. A decision to involve in the labor market is made by one whose reservation wage is lower than wages offered (Cahuc & Zylberberg, 2004). Thus, we could expect that individuals with higher education and higher wages would be over-represented in this sample of waged workers. On the other hand, this selection would underestimate the relation between education and wages for a whole population since low-education and low-wages individuals are rare in the selected

[3] hwww.rand.org

sample. Hence, these uncorrected estimates could be biased. Secondly, unobserved household and community characteristics are not specified in the model.

This study employs different econometric techniques to overcome the statistical issues by controlling workers' and jobs' characteristics. The methods applied also aim to deal with unobserved characteristics that could be related with individuals' decisions to choose one sector over another as well. It shows that an Indonesian public-sector wage premium exists, especially for workers with a high education level. Meaning that, high education government workers in Indonesia gain higher wages with respect to their private counterparts. Furthermore, in the quantile wage regression, it is exposed that the determinant variables give different effects on the wage along the wage distribution; but generally, the highest premium is earned by workers in higher wage distribution. Meanwhile the Oaxaca-Blinder decomposition tells that the wage gap in both sectors coming from differences of workers' endowment is bigger than that of their unobservable characteristics.

The order of this study is as follows: the second part gives the overview of Indonesian public service and the third part reviews about the relevant studies related to the issue. The fourth section describes the empirical strategies followed by data used in the study. The fifth part interprets the empirical results while the discussion and limitations are presented in the sixth part. Finally, the last section provides conclusion and policy implications.

2. LITERATURE REVIEW

2.1 Indonesia's Public Sector: An Overview

The management of about four million civil servants in Indonesia is regulated by Law No. 5 of 2014 of State Civil Apparatus. This regulation appears from the amendment of Law No. 8 of 1974 and Law No. 43 of 1999 on the Fundamentals of Civil Service. It is meant to shift the old paradigm where civil servants were not recruited and assigned based on their qualifications and competences. Furthermore, civil servants have to understand that they are part of bureaucracy reform thus they have obligations to manage and develop themselves to give the best performance in serving the society.

The number of civil servants in Indonesia are 1.7% compared to the whole population (Praditya, I, 2017). Some considerations exist regarding the available vacancy of public service every year which are technical needs and the establishment of related ministries. In technical terms, the government decides the formation and qualification of new civil servants based on workload analysis in each division of central and local governments, the number of retired employees and the number of available employees as of December 31st in the current budget year. After determining the number of civil servants needed, each unit of central and local governments establishes the vacancy through the approval of the Ministry of Administrative and Bureaucratic Reform and the National Civil Service Agency. As a result, for example, at certain periods such as from 2011 to 2012 and from 2015 to 2019, the Indonesian government did not provide vacancy for administrative position because it was not needed.

To be able to work as a civil servant, the candidate should be successful on three stages of tests namely the administrative selection, the basic competences selection and the specific/field competences selection in which he/she must pass the first stage before going to the next one (Regulation of Head of National Civil Service Agency No. 9 of 2012).

Generally, those stages are standardized both for central governments and local governments.

In term of administrative selection, the candidates must fulfill the qualifications: between 18 to 35 years old, never been in imprisonment, not a member of political parties, perform the education qualifications, in a good physical and mental health, and willing to be in charge of all Indonesia's regions. The next step is to do some tests on the basic competences selection for example personal characteristics, the general intelligentsia and national insight tests. In this step, the candidate will be tested for his/her communication ability, numerical, logical and analytical capacities. The final stage is the specific/field test which is customized for each ministry or institution the candidate enrolls in. Specifically, there will be written and interview tests for looking to academic ability, psychological and physical conditions of the candidates.

According to the Law of State Civil Apparatus, Indonesian civil servants are classified into three functions which are administration, functional and principal positions, each with a basic salary scale. The source of payment for both central and local government officials comes from the central budget which is transferred through central allocation or grant for the regions. Generally, the payment system is divided into a single-scale system and a double-scale system. The former system provides the same payment for all employees who have equal rank without paying attention to the job's characteristics and responsibilities. The latter determines the workers' payment by considering those jobs' factors.

Indonesia's public service, however, adopts the combined scale system in which it gives the same level of payment for all civil servants in the same rank altogether with allowance for those who are given higher responsibilities and specific jobs that requires continuous concentration or attention (Government Regulation No. 8 of 2009). The rank of government employees is determined by their education, seniority and position levels. In addition, civil servants in Indonesia could receive other forms of allowance such as family and food allowances.

For self-development, every public service employee in Indonesia gets a chance to develop their knowledge and ability by following various training programs or assessments; that in turn could increase their rank thus affect their salary. As mentioned above, there has long been a general perception that Indonesia's public service employees have been underpaid. Nevertheless, the payment system which was designed for fulfilling employees' needs to live well with their families thus they could carry out the jobs entrusted to them makes the perception no longer applicable. The government has tried to adjust public service wage levels overtime especially after the crisis in 1997/1998 so it was not far below its private counterparts.

2.2 Wage Premiun

To some extent, public service is commonly seen as a sector which offers relatively low wages compared to the private sector (Grotkowska & Wincenciak, 2014). Regarding to the hedonic theory of wage, this can be accepted because the public sector provides a more secure work environment and lower risk jobs than the private one. However, for some countries this opinion cannot be justified statistically thus studies which aim to investigate the wage comparison have been emerged in many countries using different sources of data and methods. Generally, some previous studies related to this issue according to the countries and methods could be resumed in the table 1. Thus, this study is then expected to fill the gap of previous studies examining Indonesia's public-private wage comparison by employing different techniques of estimation.

Table 1. Related Studies

	Indonesia	Other Countries
Ordinary Least Square (OLS) Methodology	1. Filmer and Lindauer (2001)	1. Glinskaya and Lokshin (2007) 2. Morikawa (2014)
Improved Methodologies		1. Lucifora and Meurs (2004) 2. Anton and Bustillo (2015) 3. Glinskaya and Lokshin (2007) 4. Grotkowska and Wicenciak (2014)

Source: Author's compilation

There was a study conducted by Filmer and Lindauer which used Indonesia micro-data in 1998. However, they used the Ordinary Least Square (OLS) methods by involving public-private sector dummy variables. In the paper, they showed that Indonesia's government workers with low education gained a wage premium over their private sector counterparts of about 10%, meanwhile public service employees which had higher education levels earned less than they could get if they were in the private sector (Filmer & Lindauer, 2001). The same method was also used by Glinskaya and Lokshin when they examined the wage differential in India and found that wage premium existed for India's public-sector workers as high as 62% (Glinskaya & Lokshin, 2007).

Furthermore, Masayuki purposed to find public-private wage differential by examining the relative wages in gender, age, education and region for each sector separately. He employed the OLS method to compare the wage structure for public and private sectors in Japan by using the 2007 Japanese Employment Status Survey. From the study, he found that married female private sector employees endured a 10% wage penalty relative to unmarried ones while the result appeared to be insignificant for female public-sector workers. Regarding to age, older workers in both public and private sectors gained relatively higher wages compared to younger workers. In the education section, he showed that higher educated public-sector employees enjoyed a wage premium ranged from 10% to 25% relative to lower educated employees. This number was smaller than the one he found in the private sector in which higher educated workers gained more than 20% until a 40% premium relative to lower educated workers. In terms of region, after using Tokyo as the reference prefecture, the study found that wage differentials in the public sector were smaller compared to the private sector (Masayuki, 2014).

Since the OLS method could raise some statistical problems, other methods were then employed in other earlier studies. One of them was the quantile regression method using Oaxaca-Ransom decomposition. There were Lucifora and Meurs that used micro-data of three countries France, Britain and Italy to examine the public-private sector wage gap by comparing different institutional settings and the public sector payment formation. They showed that in all nations the public sector paid more for low skilled workers compared to those employed in the private sector, whereas the high skilled workers faced the opposite (Lucifora & Meurs, 2006).

More recently, Anton and Bustillo used a similar method by examining the existence and size of public-private sector wage differentials in Spain. First, they employed the Oaxaca-Blinder decomposition to decompose the explanation of the average gap into ones related to differences in workers' observable characteristics and others associated with the different remuneration of such characteristics in both sectors. After that, they unraveled how the premium or the penalty evolved across the income distribution by following the quantile

regression procedure. They concluded that there was an average positive premium to public employment which concentrated on low-skilled workers, while high-qualified workers got a penalty with respect to the same individuals who worked in the private sector (Antón & Bustillo, 2015).

Meanwhile, different econometrics techniques for examining the wage gap were employed by Glinskaya and Lokshin who used the Selection Bias Correction (SBC), which is basically similar with the Heckman Correction Model, altogether with the Propensity Score Matching (PSM) and then compared the result. They showed that differences in wages between sectors were positive and high. Depending on the method, they found that the public-sector wage premium ranging from 62% to 102% over the private-formal sector and from 164% to 259% over the private-informal sector. The wage differentials they found also tended to be higher for low-skilled workers, women and workers in the rural areas (Glinskaya & Lokshin, 2007).

PSM is a useful method for eliminating selection bias problems; however, to be conducted perfectly, it is crucial to include all variables counted for the individual sector decision. If any critical variables are omitted, then the sectors could be unbalanced and the estimation would come up with severely biased results (Streiner & Norman, 2012). Consequently, this condition makes it impossible to be employed in this study because of data availability.

Moreover, there is a Mincerian wage regression with the Heckman Correction Model incremented by the quantile wage regression done by Grotkowska and Wicenciak that showed a negative public-sector wage premium in Poland. They explained that even though in average public-sector wage rate is higher, it is caused by the concentration of better rewarded employees in this particular sector; in other words, public sector employees in Poland consist of higher qualifications and higher experienced workers compared to the private sector. After controlling some characteristics, they then concluded that private sector employees are paid more than public sector workers. The size of penalty received by public service is differentiated along the wage distribution in which less skilled employees received a slightly lower penalty than the general population while ones with high skill experienced the opposite (Grotkowska & Wincenciak, 2014).

While other studies opted to investigate the wage differential between the two sectors, then tried to find the reasons accounted for this public sector premium phenomenon (Ehrenberg & Schwarz, 1986) (Bender, 1998); (Gregory & Gerland, 1999). They conducted surveys and concluded that there are some factors which might explain the existence of wage premium received by public sector employees. Firstly, there was a monopoly power belonging to public administration that means that it does not have any rivals in the production of public services; secondly, the role of public workers as voters gave them power to press their employers for getting higher wages; thirdly, the public sector might pay special attention in recruiting high educated workers as a way to create prestige in public administration; fourth, following the argument in the Public Choice theorist bureaucrats might behave as rational agents who want to maximize their utility since they can control the budget (Holmlund, 1993)

3. RESEARCH METHODS

To investigate the wage differential between the public and the private sector in Indonesia, this study compares results gained from several methods which are the Ordinary Least Square, the Heckman Correction Model, the Quantile Regression, and the Oaxaca-Blinder Decomposition:

3.1. Ordinary Least Square (OLS)

As a beginning, this study employs standard OLS models followed one done by Filmer and Lindauer (Filmer & Lindauer, 2001). The models estimated in this method uses semi-logarithmic wage equations including a public-private sector dummy variable:

$$lnW_{is} = \alpha_0 + \gamma P_i + \beta_s X_{is} + u_{is} \quad (1)$$

The dependent variable is (ln) hourly wage of the individuals, while the independents stand for the public-private dummy variable and other wage' determinants such as education, marital status and jobs' characteristics. The coefficient of the public-private dummy variable tells the pay premium or penalty received by government workers over the private counterparts, other things being equal. Besides, the model could show the magnitude and significance of other determinant variables on the wage in each sector. However, this method could result in biased estimates of parameters if selection bias problems exist; therefore, we improve the method by including the selection term for correcting the bias.

3.2. Heckman Correction Model

This method was developed by Heckman (1979) and it is well known for dealing with a sample selection problem. The problem usually appears when individuals put themselves into a sector or group; thus, the wage determinant variables used in the OLS model cannot describe the whole population. The Heckman correction model then is used to deal with those unobserved individual characteristics that could affect the choice of the sector of employment and the wages that the individual earns in the chosen sector (Heckman, 1979).

To construct the Heckman Correction model, this study adopts the steps used by Gyourko and Tracy (1988), Glinskaya and Lokshin (2007), and Grotkowska and Wicenciak (2014). Firstly, it needs to define the potential wage equations for an individual i who works in a sector s by including the public-private dummy variable and some wage' determinant factors:

$$lnW_{is} = \beta_s X_i + \gamma P_i + \mu_{is} \quad (2)$$

The next step is to define the selection equations which depict the indirect utility function of an individual i if he or she chooses to work in one sector, where Z_{is} is the selection terms:

$$V_{is}^{*} = \beta Z_{is} + \varepsilon_{is} \quad (3)$$

The equation above is unobservable, then we argue that one will prefer one sector to another if and only if the indirect utility given by that chosen sector is greater:

$$V_{is} = \begin{cases} 1 \; if \; V_{i1} > V_{i2} \\ 2 \; if \; V_{i2} > V_{i1} \end{cases} \quad \forall i \quad (4)$$

Moreover, the probability of one being employed in one sector could be estimated by logistic distribution:

$$P_{is} = P(\varepsilon_{is} < \beta Z_{is}) = \frac{exp(\beta Z_{is})}{1 + exp(\beta Z_{is})} \quad (5)$$

After conquering the probability of an individual employed in one sector, the method is commonly done by employing a two-stage estimation procedure. On the first stage, we estimate the employees' chosen sector and obtain the selection term (Inverse Mill's ratio) for every alternative:

$$\lambda_{is} = \frac{\phi(Z_{is})}{1-\Phi(Z_{is})} \qquad (6)$$

where ϕ and Φ are a density function and a cumulative distribution of a standard normal random variable respectively. On the second stage we estimate the earning equations (2) by including the choice-specific inverse of Mill's ratio as one of the explanatory variables altogether with the other regressors. Thus, the equations become:

$$lnW_{is} = \alpha_s X_i + \gamma P_i + \sigma_1 \lambda_s + \epsilon_{is} \qquad (7)$$

The magnitude and significance of the selection terms could indicate the existence of the selection bias problem and correct it. Positive and significant coefficient means that without doing the correction, the estimation of determinant variables would have been upward-biased. On the other hand, negative and significant coefficient of selection terms tells that doing no correction would end up with downward-biased estimates.

Validation of results of this method are subject to assumption of joint normal distribution of the error terms in equations (3) and (4). If the assumption is not fulfilled, then it could result in biased estimated coefficients. To check the reliability and homogeneity of the results across the wage distribution, this study applies another method known as the quantile wage regression.

3.3. Quantile Regression Method

While the standard OLS models the relationship between independent variables and the average value of the outcome variable, the quantile regression method allows us to analyze the relationship along the whole distribution of the dependent variable. Hence this method gives more comprehensive notion since the effect of the determinant variables on the dependent variable may differ at each point of its distribution.

Following the analytical framework provided by Lucifora and Meurs (2006) and Grotkowska and Wicenciak (2014), this study assumes that the q^{th} quantile of the conditional distribution of wage is a linear function of workers' and jobs' characteristics:

$$Q^q(lnw_i|x_i) = \beta_q X_{is} + \gamma_q P_i + e_i \quad (8)$$

It is known that the OLS method minimizes the sum of squares of the error term $\Sigma_i e_i^2$. The quantile regression estimates the equation (8) by minimizing $\Sigma_i q|e_i| + \Sigma_i(1-q)|e_i|$ which shows the summation of asymmetric penalties for underprediction $\Sigma_i q|e_i|$ and overprediction $\Sigma_i(1-q)|e_i|$. It results in a specific coefficient at each quantile β_q instead of a coefficient at the mean value β to explain that different choices of quantile would estimate different values of coefficient. In other words, it shows the change in a specified quantile of wage obtained from a unit change in the independent variables.

3.4. Oaxaca-Blinder Decomposition

This is a kind of counterfactual decomposition method that is broadly used to study the mean outcome between groups. Originally, this method was used for measuring the effect of labor, capital and other unobserved productivity factors on economic growth (Solow, 1957). In this study, it is used to decompose the wage differential between public and private sectors into a part called the "explained" that is differences caused by productivity characteristics such as education or experiences, the "unexplained" part which

is accounted for unobserved factors of the individuals and the "interaction term" accounting for the fact that differences in two previous factors exist simultaneously.

Referring to theories and previous studies, the wage gap among sectors was considered as premium in the public sector rather than discrimination in the private sector. Hence, the decomposition in this study is adopted from one developed by Anton and Bustillo (2015) who used the public-sector or government workers as the reference group. Mathematically, the wage differential could be decomposed as follows (Jann, 2008):

$$E[lnW_{pub}] - E[lnW_{priv}] = [E(X_{pub}) - E(X_{priv})]' \beta_{pub} + E(X_{pub})' (\beta_{pub} - \beta_{priv}) - [E(X_{pub}) - E(X_{priv})]' (\beta_{pub} - \beta_{priv}) \quad (9)$$

This approach investigates the contribution of workers' and jobs' characteristics on an hourly wage at the average value. It estimates the wage equation from both sectors and then does the decomposition; the explained term shows the earning gap observed if both workers had same endowment and government workers were paid as their private sector counterparts. Meanwhile, the unexplained term shows the expected change in government workers' average earning, if they had the private sector workers' coefficients and the last term measures the simultaneous effect of differences both in endowment and coefficient.

3.5. Data

Data in this study was retrieved from The Indonesia Family Life Survey fifth waves (IFLS 5). The survey has been conducted five times: 1993/1994, 1997, 2000, 2007/2008 and 2014-2015 respectively by RAND in partnership with demography and survey institutes in Indonesia. It provides individual and household level data related to their behavior and outcomes that is useful in social sciences. IFLS contains multiple economic indicators such as consumption, income and assets, education attained, migration history, labor market outcomes, marital status, health status, and more essential information.

All respondents in the survey can be categorized as persons who are working or helping to get income and non-working persons (job searching, attending school, housekeeping, retired, sick/disabled and others). Since the purpose of this study is to compare wages between public and private sectors, thus it eliminates self-employed, unpaid family workers and casual workers from the sample and estimates the wage function only from the government and private employees.

Table 2. Selected Samples

Categorization of Jobs	Frequency
Government Workers	687
Private Workers	2,798
Total	3,485

Source: IFLS5, Author's compilation

Moreover, the choice of a dependent variable used makes it better to drop some unreasonable observations; thus, the number of narrowed samples becomes the remaining.

The dependent variable employed in this study is hourly salary or wage of everyone including the value of all benefits they receive. It is derived from the division of the previous month's salary with previous week working hours of observations in IFLS 5. Meanwhile the explanatory variables tell the information related to the individuals which are age, education level, marital status, gender, working years, residential and job characteristics (appendix 1). Descriptive statistics of each variable is explained for every sector and shown in tables 3:

Table 3. Descriptive Statistics of Government Workers

Variables	Obs.	Mean	Std. Dev.	Min	Max
Hourly Wage	687	47,184.1	680792.4	595.238	1.79e+07
Age	687	36.754	7.671	21	49
Education Level	687	2.716	.488	1	3
Marital Status	687	.853	.354	0	1
Gender	687	.527	.499	0	1
Working Years	687	10.076	7.454	0	35
Urban	687	.639	.481	0	1

Source: IFLS5, Author's compilation

Table 4. Descriptive Statistics of Private Workers

Variables	Obs.	Mean	Std. Dev.	Min	Max
Hourly Wage	2,798	14,391.65	158095.5	164.063	8333334
Age	2,798	32.784	6.818	21	49
Education Level	2,798	1.890	.722	1	3
Marital Status	2,798	.765	.424	0	1
Gender	2,798	.627	.484	0	1
Working Years	2,798	5.764	6.127	0	35
Urban	2,798	.728	.445	0	1

Source: IFLS5, Author's compilation

On average, the hourly wage rate of government workers is higher than that of private workers. Regarding to age and education level, government workers in Indonesia seem to be older and possess a higher degree compared to their private counterparts. Besides, most government workers are married and have been working longer years.

4. RESULT AND DISCUSSION

4. 1. Estimation Result

This section provides the results of Indonesia's public-private sectors wage comparation. The average hourly wage of all employers was 20,856.05 IDR. Government workers on average earned 47,184.1 IDR or about 3.28 points higher compared by private sector workers who gained 14,391.65 IDR per hour.

According to the area they lived, government workers in urban areas received higher average hourly wages than they would have yielded if they were in rural areas. The difference was high namely 62,784.14 IDR compared to 19,569.51 IDR. Similar conditions applied for private sector employees in which those who lived in urban areas gained meanly 16,103.89 IDR and ones who stayed in rural areas received 9,800.156 IDR per hour. It means the average wage gap between government workers and private sector employees was higher in urban areas than in rural areas.

Regarding gender, male government workers were paid an average 72,100.35 IDR which was higher than female workers who received 19,431.24IDR per hour. Meanwhile for private sector workers, female employees earned a slightly higher income 16,968.81 IDR compared to the males 12,857.7 IDR. As for public-private sector wage differences, it was largest for males rather than for female employees.

Differences in education level, marital status or other job characteristics also could result in a variation in hourly average salary among workers. Tables 5 and 6 present wage

differentials between government and private sector employees by education, marital status and their job characteristics.

Table 5. Hourly Average Wage by Education and Marital Status

Parameters	Average wage (in IDR)	
	Government Workers	Private Sector Workers
Education Level		
Elementary and Junior High School graduated	7,826.716	7,704.016
Senior High School graduated	16,923.94	10,989.75
College and University graduated	58,388.02	32,099.21
Marital Status		
Married	53,049.84	15,479.48
Not Married	13,151.18	10,853.74

Source: IFLS5, Author's calculation

The pattern for both sectors was similar in which people who held higher education were paid higher than those who had lower education levels. The higher the education was, the higher the gap. However, speaking of the wage differential between Indonesia's government and private workers, the highest one was experienced by college and university graduates (1.82), followed by senior high school (1.54) and lastly elementary and junior high school graduates (1.02). In addition, government workers who were married earned more than double compared to married private sector workers (3.43) while unmarried workers for two sectors gained almost similar average wage rates (1.21).

Table 6. Hourly Average Wage by Job's Characteristics

Job's Characteristics	Average wage (in IDR)	
	Government Workers	Private Workers
Physical effort		
requires physical effort	20,806.59	15,436.15
does not require physical effort	69,389.3	12,826.77
Lifting heavy loads		
requires lifting heavy loads	16,942.35	10,092.23
does not require lifting heavy loads	49,506.74	16,180.18
Stooping, kneeling, crouching		
requires stooping, kneeling, crouching	18,707.03	17,285.1
does not require stooping, kneeling, crouching	53,394.53	12,569.98
Good eye sight		
requires good eye sight	21,872.27	15,366.8
does not require good eye sight	11,0142.5	11,956.22
Intense concentration/attention		
requires intense concentration/attention	53,782.7	15,445.34
does not require intense concentration/attention	17,516.82	10,667.03
Skills in dealing with people		
requires skills in dealing with people	51,610.39	16,119.1
does not require skills in dealing with people	15,835.58	9,174.568
Computer work		
requires working with computers	23,065.78	17,954.43
does not require working with computers	70,542.24	13,488.19
A lot of stress		

Job's Characteristics	Average wage (in IDR)	
	Government Workers	Private Workers
involves a lot of stress	21,080.27	13,763.4
does not involve a lot of stress	51169.75	14498.6

Source: IFLS5, Author's calculation

The job's characteristics tell different approaches of these two sectors in terms of paying their employees. Indonesia's public sector pays lower for its workers whose job involves physical activities such as physical effort, lifting heavy loads, stooping, kneeling and crouching. It could be because usually in public services these jobs are done by low-talented people. On the other hand, the private sector provides higher wage rates for those kinds of forces. According to the hedonic theory of wages, this condition shows that the private sector pays more for jobs based on its working conditions or the job risks (Rosen, 1974). At the same time, both public and private sectors set higher wages for jobs which requires soft skills including intense concentration and skills in dealing with people.

4.1.1. Ordinary Least Squares (OLS) Estimates

Table 7 tells the public-private sectors wage differential based on OLS estimates by employing the public-private dummy variable.[4] It confirms that government workers earned a wage premium compared to their private counterparts.

The coefficient of interest showed by the OLS regression tells that a positive hourly earning differential between government and private workers existed in Indonesia. Everything being equal, government officials gained 21% higher wages compared to the private ones[5]. The education dummy variables exposed increasing wage differentials related to higher level of education. In addition, separating the observation along with their education levels gave specific results; government workers who were senior high school graduates received an 11% premium and those who held college and university degrees earned a 25% premium over those who had lower education degrees.

Table 7. OLS Estimates

Variables	All Salaried Employees		Senior High School graduates		College and University graduates	
	Coef.	Robust Standard Error	Coef.	Robust Standard Error	Coef.	Robust Standard Error
Government workers	.193***	.043	.108*	.070	.225***	.059
Senior High School graduates	.236***	.033	-	-	-	-
College and University graduates	.542***	.047	-	-	-	-

*, **, *** denote significance at 10% ,5% and 1%

Source: IFLS5, Author's calculation

[4] The complete version is presented in the appendix.

[5] In semi logarithm model, coefficient of dummy variable cannot be interpreted directly as the relative effect of the dependent variable. The relative effect is calculated as $\alpha = e^{\gamma} - 1$ (Filmer and Lindauer, 2001).

4.1.2. Heckman Correction Model Estimates

The Heckman correction method purposes to control the selection bias problem in which one would decide to work in a specific sector regarding its utility. The selection equation used included two variables that did not appear in the wage equation namely the public-sector growth rate and the unemployment rate from 1986 to 2014 in 23 of Indonesia's provinces as is required for model specification.

The table 8 presents the estimates of the Heckman correction for all observations and selected subsamples based on their education levels.[6] After controlling for individuals' and job's characteristics, other things being equal, there was a positive public-sector wage premium in Indonesia that is equal to 20% for all salaried employees; that was lower compared to the OLS estimates. Government employees with senior high school degrees received a 13% wage premium and those with college and university degrees earned a 26% wage premium.

Table 8. Heckman Correction Estimates

Variables	All Salaried Employees		Senior High School graduates		College and University graduates	
	Coef.	Standard Error	Coef.	Standard Error	Coef.	Standard Error
Government workers	.184***	.039	.120**	.058	.233***	.058
Senior High School graduates	.684***	.203	-	-	-	-
College and University graduates	1.345***	.360	-	-	-	-

*, **, *** denote significance at 10% ,5% and 1%

Source: IFLS5, Author's calculation

4.1.3. Quantile Regression Method Estimates

Instead of explaining the result in average base, the quantile wage regression method extends the analysis of the premium for the whole wage distribution. The main interest presented in the next table is only the parameter of public sector dummy which is divided into three kinds of selected samples for each decile of wage distribution.

All salaried workers showing a positive and significant public-sector wage premium began from 2nd decile up to 9th of the wage distribution. The premium kept increasing until the 6th decile before it started decreasing at 7th decile. The highest premium was 39% received by wage earners in 6th decile while the lowest one was 13% gained by workers at 2nd decile wage distribution. The wage premium for employees with a senior high school degree started at 13% at 4th decile, it kept increasing up to 32% at 7th decile and decreased to 23% at 8th decile. Furthermore, employees who were college and university graduates earned a 25% public wage premium at 2nd decile and varied until along the wage distribution.

Table 9. Quantile Regression Estimates

θ	All Salaried Employees	Senior High School graduates	College and University graduates
0.1	-.044	-.065	.073
	(.039)	(.127)	(.124)
0.2	.120**	.003	.226**

[6] The complete version is available in the appendix.

θ	All Salaried Employees	Senior High School graduates	College and University graduates
	(.203)	(.093)	(.103)
0.3	.228***	.075	.338***
	(.360)	(.080)	(.066)
0.4	.255***	.125*	.361***
	(.026)	(.069)	(.065)
0.5	.299***	.195***	.337***
	(.000)	(.062)	(.060)
0.6	.329***	.230***	.335***
	(.015)	(.060)	(.060)
0.7	.289***	.276***	.305***
	(.000)	(.067)	(062)
0.8	.267***	.203***	.231***
	(.030)	(.078)	(.073)
0.9	.231**	.276***	.218***
	(.089)	(.099)	(.074)

Standard errors are in parentheses
*, **, *** denote significance at 10% ,5% and 1%
Source: IFLS5, Author's calculation

4.1.4. Oaxaca-Blinder Decomposition Estimates

Similar with previous estimates in the quantile wage regression, the ultimate focus described in the table 10 is the parameter of public sector dummy categorized into three subsamples: all employees, employees with a senior high school degree and college and university degrees.[7]

Table 10. Oaxaca-Blinder Decomposition Estimates

(ln) Hourly Wage	All Salaried Employees	Senior High School graduates	College and University graduates
Private workers	9.003***	9.051***	9.397
	(.015)	(.020)	.038
Government	9.596***	9.343***	9.698
workers	(.038)	(.070)	(.046)
Difference	-.593***	-.293***	-.301
	(.041)	(.073)	(.060)
Endowments	-.533***	-.272***	-.203
	(.088)	(.076)	(.044)
Coefficients	-.267***	-.130*	-.343
	(.045)	(.073)	(.064)
Interaction	.207**	.109	.245
	(.089)	(.076)	(.051)

Standard errors are in parentheses; *, **, *** denote significance at 10% ,5% and 1%
Source: IFLS 5, Author's calculation

The wage gap among sectors is decomposed at its average predictions to the explained, unexplained and interaction parts. For the total selected sample, the mean of (ln) hourly wages was 9.003 for private workers and 9.596 for government employees yielding a gap as much as -0.593. If government officials had the same characteristics with the private workers, their average hourly wage would decrease -.533. Meanwhile if the coefficients of

[7] The complete result is available in the appendix

private workers were applied to their characteristics, the reduction in government workers' average hourly wage would be -.267. The interaction part was .207 which explained the effect of differences in both endowments and coefficients simultaneously.

For the senior high school graduates' samples, the average (ln) hourly wage for private and government employees were 9.051 and 9.343 respectively. The endowment effect was -.272 which showed the decrease of government workers' hourly wage if they had private workers' characteristics; additionally, the coefficient effect was -.130 which explained the reduction of government workers' average hourly wage if they used private workers' coefficients. The interaction of both effects was .109.

Different from previous results, for college and university graduates' workers, the wage gap was mainly showed by the differences in the coefficient namely -.343. It represented the decreasing of government workers' hourly wage if they applied the private employees' coefficient. In the meantime, if government workers had private workers' characteristics their mean hourly wage would lessen by -.203.

4.1.5. Wage Differential: in details

The results estimated by various methodologies showed that government officials in Indonesia did receive higher wages relative to private sector workers. Even though each method gave different rate of outcomes, in general they showed that wage premiums existed in the public sector in Indonesia. The OLS method showed that overall Indonesia's government workers gained 21% higher wages compared to private ones; while the premium decreased to 11% if the samples were limited for government workers with a senior high school degree and rose to 25% for samples with a university degree. With respect to gender, the highest wage premium was received by male government officials with a senior high school degree namely 53%. This premium was much higher compared to one that was gained by male government workers who held college or university degrees that was 29% and all male government workers that was 46%.

Meanwhile regarding to living area, in general government workers who lived in urban areas received wage premiums compared to ones living in rural areas. The civil servants with college and university degrees and lived in urban areas received the highest wage premium that was 34%, followed by all civil servants in urban areas that received 12% and those who were senior high school graduates that gained an 11% wage premium.

According to job characteristics, each type showed different results; however, only (a) stooping, kneeling and crouching; (b) dealing with people; (c) computer work and (d) a lot of stress showed statistically significant wage premium or penalty. Government workers who were required to do stooping, kneeling and crouching were burdened by an 11% wage penalty whilst those who were required to deal with people, do computer work and endure a lot of stress received 7%, 29% and 7% wage premiums respectively.

After adjusting self-selection problems, as shown in table 8, the Heckman Selection method gave a slightly lower premium gained by public sector employees that was 20% of all workers. Nevertheless, the size of wage premium for senior high and university graduates' samples were 13% and 26% respectively. It means, after considering the determinant factors of one's sector decision, people with tertiary education received the highest public-sector wage premium. In the meantime, government workers who lived in urban areas and were senior high school graduates endured the wage penalty as much as 30% while other subsamples did not give statistically significant results.

Moreover, the Heckman selection method described that government workers who were college and university graduates yet required to do physical jobs such as lifting heavy loads, stooping, kneeling and crouching endured the highest wage penalty as much as 25% and 24% respectively. As for wage premiums, the highest were received by government

officials who were senior high school graduates and required to do computer work namely 147%.

The following method called the Quantile Wage Regression explained that the premium varied along the wage distribution. For all samples, the premium appeared since 0.2 quantile and kept rising as the quantile increased; however, the highest one was received by government workers who were at 0.6 quantile that was 39%. In regard to sample with a senior high school degree, the premium began at 0.4 quantile and reached its peak at 0.7 quantile namely 32%. Furthermore, those who were college and university graduates received the premium from 0.2 quantile of wage distribution and the highest one was received by government workers who were at 0.4 quantile as much as 43%.

Another interesting thing to be explained from the quantile regression is whether the estimations were significantly different from the OLS regression or not. For all the salaried workers sample, the most appealing ones were the coefficients for males, urban and college and university graduates' government workers because at some quantiles their coefficients were significantly different from the OLS results (appendix 4). In the case of the senior high school graduates sample, most of the variables showed the effect on the high quantiles but no different effects on the lower quantiles (appendix 5). As for the college or university graduates selected sample only showed slightly different results compared to the OLS ones (appendix 6).

The wage premium of the public sector was also shown by the Oaxaca-Blinder Decomposition method. Overall, table 10 showed that the difference between (ln) hourly wage of government workers and private employees were .593; and the difference became .293 for government employees with senior high school degrees. Meanwhile, the public-private sectors' wage differential for those who were college or university graduates was not statistically significant; but the magnitude of the difference showed that public sector employees received .301 higher wages. However, the results of this method depended on the choice of the base category; meaning that the decomposition results could change if the base category changed. This study uses the wage of public sector employees as the baseline because according to previous studies, it was better to explain the wage differential as the public-sector premium rather than as private-sector discrimination.

Moreover, the gap came from three sources namely differences in endowment, coefficient and interaction among both. The endowment parts showed how much decrease in the civil servants' salary if they had the same endowments with the private workers such as for their marital status, gender, living area and education level. The rate of wage decrease was higher in all samples (-0.533) than that of the senior high school graduates' sample (-0.293) and it was not statistically significant in college and university graduate samples. The coefficient parts counted the decrease in the government workers' salary if they used the private workers' coefficients and the interaction portions measured the simultaneous effect of endowments and coefficients differential and it only significantly appeared in all salaried workers' samples.

4. 2. Discussion and Limitation

This study aims to examine the public-private sectors wage differential in Indonesia and found that government workers earned higher wage rate relative to the private workers. Compared to the previous one conducted by Filmer and Lindauer (2001), it has revealed different results. Specifically, the former study concluded that the government workers receiving the wage premium came from those with a high school education or less and it represented three-quarters of all Indonesia's civil servants. Meanwhile, the rest of them who

held a higher education level earned less than they would get if they were working in the private sector.

Obtained from the estimation, by dividing the samples into three categories namely all salaried workers, senior high school graduates and college and university graduates this study has found a premium for public sector employees in all subsamples. In other words, controlling the human capital and jobs' characteristics, the data showed that Indonesia's government workers were paid substantially more than the private workers. The Heckman correction method even suggested that the premium earned by government officials with college and university degrees subsamples (26%) was higher than that received by the ones with a lower education level (13%).

Systematic differences between the wage rate in public and private sectors regardless in which sector a person was employed could be interpreted as public-sector wage premium (Vinay, 2015). Notwithstanding, a higher wage for high educated Indonesia's government officials, to some extent, is required especially if considering the result of previous research followed by the general perception about low paid civil servants that has long existed in Indonesia. Low public service wage rates could reduce the eagerness of high skilled people to join the public-sector. Additionally, government officials who are high talented workers yet are paid less than they would earn in the private sectors would have increased willingness to leave the public-sector and choose private sector jobs. In turn, this would result in a lower quality of public service in Indonesia.

Moreover, the higher wage rate of public-sector employees found in this study could not be immediately considered as a premium. It is because the whole benefits offered by the public sector come along with the difficulties to become a civil servant. As explained before, there are many stages of assessments that must be passed by one who wants to enter the public sector in Indonesia. Not to mention the uncertain vacancies available every year; even sometimes, in particular years the Indonesian government does not provide any vacancies at all.

Furthermore, calculating the wage differential based on individuals' characteristics done in this study is known as the "people" approach (S. P. Smith, 1976). The crucial point in this approach is that, as emphasized, these two sectors are different regarding to their characteristics. The public sector counts heavily on human capital; meaning that it prefers to employ high talented workers which are associated to those with a higher education level and more experience. This limits the chance for everyone to compete; thus, a higher wage is acceptable since it is used to appreciate employees' skills associated with their high level of education.

From a literature perspective, some explanations related to this public-sector wage premium including political factors exist in which the government pays its employees in the same wage rate because of equality reasons (M. B. Gregory, 1990). Moreover, the government needs to maintain the employees' welfare since public-sector workers are the source of voters. Another reason argues that these two sectors have totally different approaches in wage determination. That is, the private sector depends on the business cycle and faces profit constraints while the public sector is not affected by the business cycle and has the national budget as its constraint (Gunderson, 1979). In Indonesia, like other countries, budget used for paying civil servants' wage and allowance as well as funding the activities comes from taxpayer money which is included in national budget. Civil servants then become rational economic agents who want to maximize their utility with respect to an available budget.

In addition, comparing the same level of employees regarding to their workload is notable in this kind of study. The "people" approach could be contrasted with another broad method called the "position" comparison (Bender & Heywood, 2010). However, this study uses dataset which does not explicitly mention the specific type of occupation for both

government and private sector employees so that the "position" approach could not be done. Thus, with some detail and additional information, this study could have been executed better.

The extra information could also be useful in another sophisticated method such as the PSM that needs complete variables regarding individuals' choice of work. Therefore, it would be reasonable for future studies to generate advanced research by using more detailed data which explores the exact workload of individuals in both sectors. In addition, examining the change in salary rate caused by the movement of employees from private to public sector would be interesting to be done.

5. CONCLUSION AND POLICY IMPLICATION

Providing the sufficient wage rate for civil servants determines the competence and the efficiency of public service performance and the most acceptable comparison for its wage level is the private sector (Bender & Heywood, 2010). This study suggests that Indonesian government workers earn a higher wage relative to their private counterparts. The results obtained from different methods might differ from previous study in terms of the influence of education levels. Specifically, this study argues that government workers holding college and university degrees gained a public-sector wage premium while the previous one showed the opposite. This premium is considerably acceptable since a relative compression of wages in the public sector would modify the decision of people for entering the job; therefore, gradually the public sector would have difficulty to attract high quality workers since they prefer the private sector than the public (Borjas, 2002).

The source of the public-sector wage is taxpayers' money; hence this issue becomes politically sensitive (Vinay, 2015). Indonesia's government should ensure that its personnel gives the best service and improve their performance over time. Moreover, the policymakers should pay clear attention to this issue since it relates to fiscal sustainability and taxpayers' burden. In 2015, 46 out of 181 municipalities in Indonesia allocated more than 50% of their budget for personnel expenditures (Ministry of Administrative and Bureaucratic Reform, 2018). Meanwhile in 2017, it is reported that 26.1% of national budget was spent for paying government officials' wages and allowance (Simorangkir, 2017). Therefore, related institutions and ministries such as the Ministry of Administrative and Bureaucratic Reform, the Indonesian State Administration Agency, the Ministry of Finance and the Ministry of Home Affairs should encourage both central and local governments to manage their budgets well by focusing on programs supporting growth instead of personnel expenditures.

Furthermore, there is an indication that the existence of a wage premium in public service could also cause a long queue for public sector jobs and in turn would create higher unemployment rates (Gindling, Hasnain, Newhouse, & Becerra, 2017). However, in Indonesia's case, this particular hypothesis should be tested further.

Equally important, understanding that the wage is not the only motivation in the working environment is vital for improving workers' productivities especially for government employees who are working in serving the community such as education, health care and public administration (Tonin, 2015). Referring to the results which tell that government officials in Indonesia enjoyed wage premium over the private counterparts, their self-interest might still motivate and make them prone to be corrupt. The Corruption Perception Index 2017 put Indonesia in rank 96 out of 180 countries around the world (Transparency International, 2018).[8] Hence policymakers need to consider that apart from a

[8] This makes Indonesia lies below some South-East Asia country including Singapore (6th), Brunei Darussalam (32th), Malaysia (62th) and Timor-Leste (91th).

high wage rate they have received, satisfaction of doing activities and jobs for a social cause could be a significant booster for employees' productivities and formulate appropriate policies to attract people with high public service motivation to enroll as civil servants.

ACKNOWLEDGEMENT

The author is a graduate student from the linkage program of PPIE-Universitas Indonesia and MPED-Ritsumeikan University. Author thanks to Prof. Kazumi Hori, Prof. Nobuki Sugita and Prof. Kei Sakata for excellent advices and research assistant, and seminar participants at Ritsumeikan University for their comments and suggestions. All remaining errors are the author's sole responsibility.

REFERENCES

Antón, J., & Bustillo, R. M. De. (2015). Public-private sector wage di ff erentials in Spain . An updated picture in the midst of the Great Recession. *Investigación Económica*, *74*(292), 115–157. https://doi.org/10.1016/j.inveco.2015.08.005

Becker, G. (1964). *Human Capital* (2nd editio). New York: Columbia University Press.

Bender, K. A. (1998). The Central Government-Private Sector Wage Differential. *Journal of Economics Surveys*, *12*(2), 177–220.

Bender, K. A., & Heywood, J. S. (2010). Out of Balance? Comparing Public and Private Sector Compensation over 20 Years. *Center for State & Local Government Excellence*, 1–27.

Borjas, G. J. (2002). *The Wage Structure and the Sorting of Workers into the Public Sector* (9313).

Cahuc, P., & Zylberberg, A. (2004). *Labor Economics*. London: Cambridge: The MIT Press.

Ehrenberg, R. G., & Schwarz, J. L. (1986). Public-sector Labor Market. In O. C. Ashenfelter & R. Layard (Eds.), *Handbook of Labor Economics* (pp. 1219–1260). Amsterdam: North-Holland.

Filmer, D., & Lindauer, D. L. (2001). Does Indonesia Have A "Low Pay" Civil Service? *Bulletin of Indonesian Economic Studies*, *37*(2), 189–205.

Gindling, T. ., Hasnain, Z., Newhouse, D., & Becerra, P. . (2017). *Public Sector Earnings Premium in Developing Economies*. IZA Workshop: Labor and Development.

Glinskaya, E., & Lokshin, M. (2007). Wage Differentials Between the Public and Private Sector in India. *Journal of International Development*, *19*(3), 333–355. https://doi.org/10.1002/jid

Gregory, M. B. (1990). Public-sector Pay. In M. . Gregory & A. W. . Thomson (Eds.), *A Portrait of Pay. 1970-1982: An Analysis of the New Earnings Survey* (pp. 172–205). Oxford: Clarendon Press.

Gregory, R. G., & Gerland, J. (1999). Recent Development in Public Sector Labor Markets. In O. C. Ashenfelter & D. Card (Eds.), *Handbook of Labor Economics* (pp. 3573–3630). Amsterdam: North-Holand.

Grotkowska, G., & Wincenciak, L. (2014). Public Sector Wage Premium in Poland: Can It Be Explained by Structural Differences in Employment. *Ekonomia*, *38*, 47–72.

Gunderson, M. (1979). Earnings Differential Between the Public and Private Sectors. *Canadian Journals of Economics*, *12*, 228–242.

Heckman, J. J. (1979). Sample Selection Bias as A Specification Error. *Econometrica*, *47*(1), 153–161.

Holmlund, B. (1993). Wage setting in private and public sectors in a model with endogenous government behavior. *European Journal of Political Economy*, *9*(2), 149–162.

Horhoruw, M., Karippacheril, T., Sutiyono, W., & Thomas, T. (2013). *Transforming the Public Sector in Indonesia: Delivering Total Reformasi*.

Jann, B. (2008). A Stata implementation of the Blinder-Oaxaca decomposition A. *The Stata Journal*, *8*(4), 453–479.

Lucifora, C., & Meurs, D. (2006). The public sector pay gap in france, great britain and italy. *Review of Income and Wealth*, *52*(1), 43–59.

Masayuki, M. (2014). *A Comparison of the Wage Structure between the Public and Private Sectors in Japan* (14-E-060).

OECD Economic Surveys Indonesia. (2016). Jakarta.

Praditya, I, I. (2017, September). Tembus 4.5 Juta Orang, Sudah Idealkah Jumlah PNS di RI? *Www.Liputan6.Com*. Retrieved from https://www.liputan6.com/bisnis/read/3084874/tembus-45-juta-orang-sudah-idealkah-jumlah-pns-di-ri

Rosen, S. (1974). Hedonic Price and Implicit Markets: Product Differentiation in Pure Competition. *Journal of Human Resources*, *16*, 167–185.

Simorangkir, E. (2017). Sri Mulyani: 1/4 Anggaran Pemerintah Habis Untuk Gaji PNS. *Detik*. Retrieved from https://finance.detik.com/berita-ekonomi-bisnis/d-3497598/sri-mulyani-14-anggaran-pemerintah-habis-untuk-bayar-gaji-pns

Smith, S. P. (1976). Government Wage Differentials by Sex. *Journal of Human Resources*, *11*(2), 185–199.

Smith, T. (1975). Stimulating Performance in the Indonesia Bureaucracy: Gaps in the Administrator's Tool Kit. *Economic Development and Cultural Change*, *XXXIII*(4), 719–738.

Solow, R. M. (1957). Technical Change and the Aggregate Production Function. *The Rewiew of Economics and Statistics*, *39*(3), 312–320.

Streiner, D. L., & Norman, G. R. (2012). The Pros and Cons of Propensity Scores. *CHEST*, *142*(6), 1380–1382. https://doi.org/10.1378/chest.12-1920

Tonin, M. (2015). *Are workers motivated by the greater good ?* https://doi.org/10.15185/izawol.138

Vinay, F. P. (2015). *Does it pay to be a public-sector employee ?* https://doi.org/10.15185/izawol.156

Regulation

Government Regulation of Republic of Indonesia No. 8 of 2009 about the Amendment of Government Regulation No. 7 of 1977 concerning Regulation of Civil Servant Salaries. Retrieved from www.sdm.depkeu.go.id

Law of Republic Indonesia No. 5 of 2014 concerning State Civil Apparatus. Retrieved from www.bkn.go.id

Regulation of Head of National Civil Service Agency No. 9 of 2012 concerning Operating Procedure of Civil Servants' Procurement. Retrieved from www.bkn.go.id

APPENDICES

Appendix 1. Independent Variables

Independent Variables	Definition
Public	1 if observation is government official; 0 otherwise
Education level	Elementary and Junior High School graduates (baseline)
	Senior High School graduates
	College and University graduates
Marital status	1 if observation is married; 0 otherwise
Residential	1 if observation lives in urban area; 0 otherwise
Gender	1 if observation is male; 0 otherwise
Age	Age 21-49 in 2014
Working years	0 – 35 years
Job Characteristics	1 if job requires physical effort; 0 otherwise
	1 if job requires lifting heavy loads; 0 otherwise
	1 if job requires stooping, kneeling, crouching; 0 otherwise
	1 if job requires good eye sight; 0 otherwise
	1 if job requires intense concentration/attention; 0 otherwise
	1 if job requires dealing with people; 0 otherwise
	1 if job requires computer work; 0 otherwise
	1 if job involves a lot of stress; 0 otherwise

Source: Author's compilation

Appendix 2. OLS Estimates

Variables	All Salaried Employees		Senior High School graduates		College and University graduates	
	Coef.	Robust Standard Error	Coef.	Robust Standard Error	Coef.	Robust Standard Error
Government workers	.193***	.043	.108*	.070	.225***	.059
Senior High School graduates	.236***	.033	-	-	-	-
College and University graduates	.542***	.047	-	-	-	-
Age	-.027	.021	.026	.026	.019	.050
Age-squared	.001*	.000	-.000	.000	.000	.001
Working years	.021***	.006	.034***	.009	-.006	.014
Working years-squared	-.000	.000	-.001*	.000	.000	.001
Male	.379***	.028	.428***	.043	.256***	.055
Urban	.116***	.031	.106**	.045	.292***	.064
Married	.689*	.037	.028	.048	-.002	.079
Physical effort	-.010	.030	-.035	.041	.024	.057
Lifting heavy loads	.019	.035	.016	.047	.025	.114
Stooping, kneeling, crouching	-.105***	.032	-.079**	.042	-.160**	.086
Good eye sight	.003	.034	.030	.045	-.022	.070
Intense	.058	.037	.037	.050	-.034	.087

Variables	All Salaried Employees		Senior High School graduates		College and University graduates	
	Coef.	Robust Standard Error	Coef.	Robust Standard Error	Coef.	Robust Standard Error
concentration/attention						
Dealing with people	.069**	.034	.100**	.049	.117	.075
Computer work	.254***	.035	.255***	.050	.256***	.059
A lot of stress	.067*	.038	.139***	.053	.050	.067

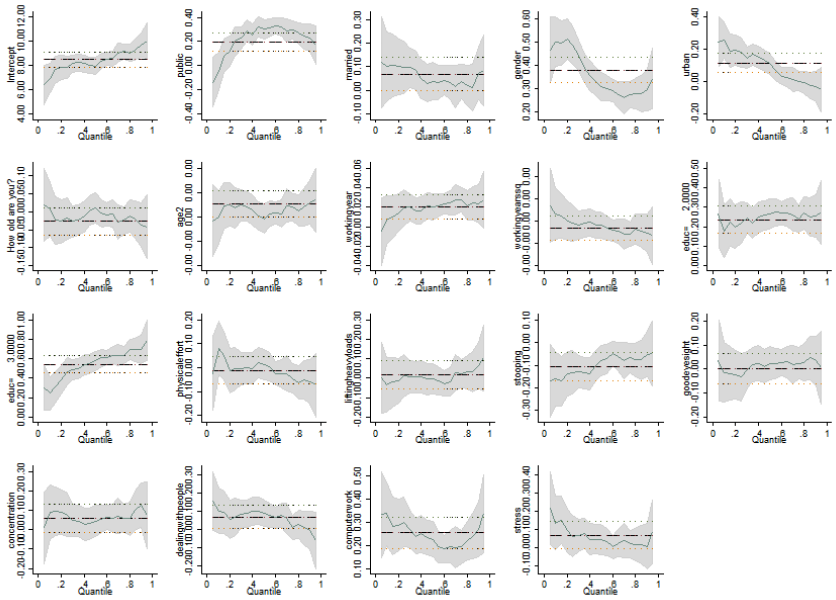
*, **, *** denote significance at 10% ,5% and 1%
Source: Author's compilation

Appendix 3. Heckman Correction Estimates

Variables	**All Salaried Employees**		**Senior High School graduates**		**College and University graduates**	
	Coef.	Standard Error	Coef.	Standard Error	Coef.	Standard Error
Government workers	.184***	.039	.120**	.058	.233***	.058
Senior High School graduates	.684***	.203	-	-	-	-
College and University graduates	1.345***	.360	-	-	-	-
Age	-.069***	.026	-.096***	.033	-.043	.050
Age-squared	.001***	.000	.002***	.001	.001*	.001
Working years	.051***	.015	.105***	.015	.043*	.024
Working years-squared	-.001**	.000	-.003***	.001	-.001	.001
Male	.354***	.030	.755***	.071	.044	.099
Urban	-.072	.089	-.355***	.093	-.016	.134
Married	.134***	.047	.289***	.066	.141	.096
Physical effort	-.010	.029	.023	.041	.001	.060
Lifting heavy loads	-.100	.065	-.214***	.063	-.285*	.169
Stooping, kneeling, crouching	-.150***	.037	-.183***	.045	-.276***	.091
Good eye sight	.010	.033	.084*	.044	-.048	.068
Intense concentration/attention	.039	.038	-.120**	.056	.042	.089
Dealing with people	.079**	.034	.129***	.045	.086	.097
Computer work	.360***	.059	.904***	.126	.281***	.059
A lot of stress	.029	.042	.139***	.051	-.088	.092
Selection coefficient	.531**	.237	1.159***	.208	1.23***	.474

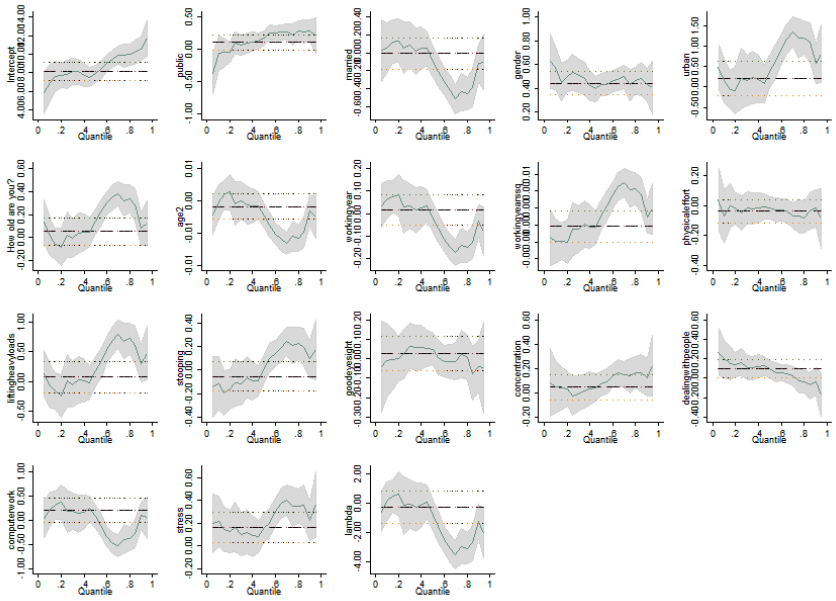
***, **, *** denote significance at 10% ,5% and 1%**
Source: Author's compilation

Appendix 4. Quantile Wage Regression for All Salaried Employees



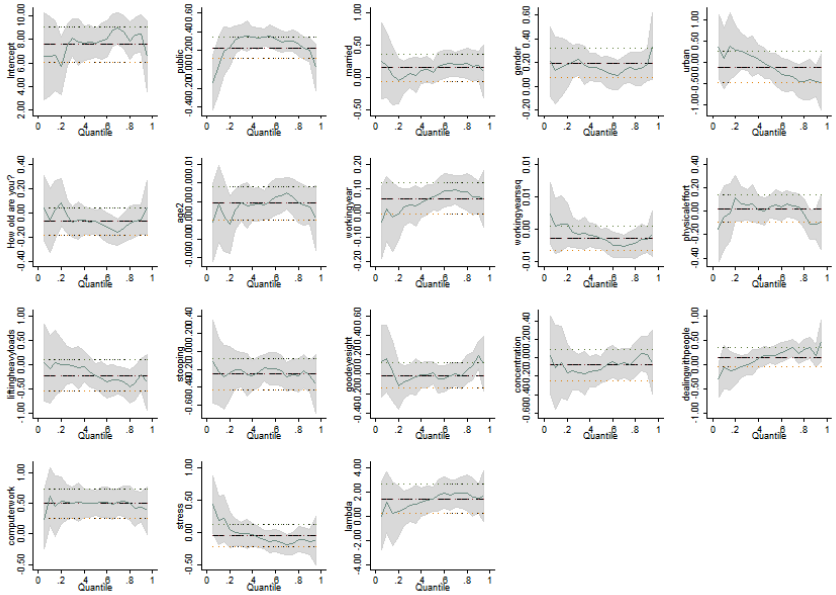
Source: Author's compilation

Appendix 5. Quantile Wage Regression for Senior High School Graduates



Source: Author's compilation

Appendix 6. Quantile Wage Regression for College and University Graduates



Source: Author's compilation

Appendix 7. Oaxaca-Blinder Decomposition Estimates

Variables	All Salaried Employees		Senior High School graduates		College and University graduates	
	Coef.	Standard Error	Coef.	Standard Error	Coef.	Standard Error
Overall						
Private workers	9.003***	.015	9.051***	.020	9.397	.038
Government workers	9.596***	.038	9.343***	.070	9.698	.046
Difference	-.593***	.041	-.293***	.073	-.301	.060
Endowments	-.533***	.088	-.272***	.076	-.203	.044
Coefficients	-.267***	.045	-.130*	.073	-.343	.064
Interaction	.207***	.089	.109	.076	.245	.051
Endowments						
Senior High School graduates	.045	.058	-	-	-	-
College and University graduates	-.335**	.138	-	-	-	-
Age	-.145	.215	-.292	.393	-.172	.276
Age-squared	-.035	.213	.156	.386	-.040	.269
Working years	-.064	.073	-.055	.130	-.027	.082
Working years-squared	.033	.054	.001	.099	.022	.064
Male	.025***	.009	-.071***	.028	.015	.010
Urban	.022***	.008	.044**	.022	.029	.013
Married	-.018*	.010	.020	.033	-.041**	.018
Physical effort	.009	.011	.002	.009	.002	.003
Lifting heavy loads	.003	.032	.005	.022	-.001	.011
Stooping, kneeling, crouching	-.011	.020	-.020	.020	.001	.006
Good eye sight	.000	.001	-.009	.012	-.000	.001
Intense	-.001	.004	-.004	.007	-.000	.002

Variables	All Salaried Employees		Senior High School graduates		College and University graduates	
	Coef.	Standard Error	Coef.	Standard Error	Coef.	Standard Error
concentration/attention						
Dealing with people	-.015	.014	-.005	.009	.000	.001
Computer work	-.046**	.021	-.043	.032	.008	.007
A lot of stress	-.000	.001	-.000	.001	.002	.008
Coefficients						
Senior High School graduates	.011	.066	-	-	-	-
College and University graduates	-.117	.196	-	-	-	-
Age	-.631	2.130	-.684	3.489	.668	3.363
Age-squared	-.571	1.126	-.465	1.876	-1.048	1.790
Working years	.084	.183	.306	.313	-.219	.299
Working years-squared	-.023	.110	-.171	.191	.150	.197
Male	.083**	.042	-.193	.134	.082*	.049
Urban	-.107**	.050	-.151*	.090	.082	.079
Married	-.140	.098	.149	.202	-.390***	.137
Physical effort	-.039	.037	-.033	.079	-.028	.051
Lifting heavy loads	.000	.010	-.004	.033	.005	.009
Stooping, kneeling, crouching	-.009	.018	.026	.043	-.039	.023
Good eye sight	-.037	.064	-.249**	.125	.033	.094
Intense concentration/attention	.020	.087	.192	.137	-.256*	.142
Dealing with people	-.051	.099	-.143	.141	.124	.174
Computer work	.080**	.040	.038	.057	.080	.062
A lot of stress	.013	.014	.023	.029	.008	.019
_cons	1.168	1.019	1.229	1.574	.405	1.527
Interaction						
Senior High School graduates	.010	.058	-	-	-	-
College and University graduates	.083	.140	-	-	-	-
Age	.068	.230	.080	.406	-.072	.361
Age-squared	.117	.231	.099	.402	.212	.363
Working years	-.036	.078	-.133	.137	.083	.114
Working years-squared	.013	.060	.095	.108	-.079	.103
Male	.016*	.009	.027	.020	.020	.013
Urban	-.015*	.008	-.034	.022	.017	.017
Married	.014	.010	-.025	.034	.058**	.023
Physical effort	-.012	.012	-.004	.010	-.001	.004
Lifting heavy loads	.000	.033	-.003	.023	.007	.013
Stooping, kneeling, crouching	-.011	.021	.012	.020	-.013	.010
Good eye sight	-.000	.001	.009	.013	.000	.001
Intense concentration/attention	-.001	.004	.005	.009	.001	.007

Variables	All Salaried Employees		Senior High School graduates		College and University graduates	
	Coef.	Standard Error	Coef.	Standard Error	Coef.	Standard Error
Dealing with people	.007	.014	.003	.007	.001	.003
Computer work	-.047*	.024	-.023	.034	.007	.007
A lot of stress	.001	.002	-.001	.005	.004	.011

*, **, *** denote significance at 10% ,5% and 1%

Source: Author's calculation