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PUBLIC-PRIVATE SECTOR WAGE DIFFERENTIALS FOR MALES AND FEMALES IN VIETNAM

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ABSTRACT

Public-Private Sector Wage Differentials for Males and Females in Vietnam*

This study examines public administration-private wage differentials and SOEs-private wage differentials for males and females. Based on data from Vietnam Living Standards Survey in 2002 (VLSS 2002), wage equations with and without selectivity correction are estimated by sector of employment for males and females. From these results, the study compares the wage structure by sector of work for males and females. Oaxaca-Blinder decomposition of the public administration-private sector wage differentials and the State-Owned Enterprises (SOEs)-private sector wage differentials are carried out. Results, which are controlled for observed characteristics and selection bias, indicate some main points. For men, public workers are paid lower than private workers. For women, public administration wages are lower than private wages. However, SOE wages are higher than private wages for women. The wage differential is mostly due to the differential in characteristics in which public workers have richer characteristics than private workers. In these worker characteristics, education is the most important element accounting for wage differentials. Besides, there are differences in returns to characteristics by sector of work for men and for women. Furthermore, the total unexplained differential has a large contribution of the wage differential in the constant term of public administration vs. private sector and SOE vs. private sector for men and women.

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1. INTRODUCTION

The Vietnamese labor market has many changes on the process of restructure economic system toward a market economy. Therefore, there are several considerations to examine public and private wage differentials.

The minimum monthly salary in the public sectors, which are paid from the state budget and it is only marginal effective given the apparent reluctance to enforce this or any other labor regulation (Moock et al, 2003), increased two times, in 2000 and in 2001 (from VND 144,000 to VND 180,000 and to VND 210,000). The share of Wages & Salaries (including government pensions) in total expenditure fluctuated between 27 and 33 per cent of total expenditure (43 and 48 per cent of recurrent expenditure), between 1997 and 2002 (World Bank, 2005). It is interesting to examine the size of the public-private wage differentials.

In Vietnam, there is a development of multi-sector in economy and public sector downsizing. Particularly, there is an expansion of the private sector and reallocation of labor from the public sectors to the private sector (Rama, 2001). In addition, state-owned enterprises (SOEs) are on the privatized or reformed process. In this process, many workers lose job or take early retirement (Rama, 2001). Evidence suggests that women are more likely to leave the state sector than men (Rama, 2001). Thus, information of public-private wage gap is important to implement SOEs reform. This information will provide a guide in wage payment for workers.

The wage differentials may have significant consequences. According to Adamchik and Bedi (2000), if the public sectors underpaid in comparison with the private sectors, particularly, wage differentials are large. The wage differentials may lead to inefficiency in the public sectors such as moonlighting activities. Furthermore, the wage gap makes difficult for the public sector to retain and attract workers. Particularly, young men and women to avoid occupations concentrated in the public sector such as medical doctors, teachers and researchers (Lokshin and Jovanovic, 2003). However, higher private sector wages might have spillovers effects on the public sector wage with negative consequences on its fiscal position (Adamchik and Bedi, 2000).

There are some papers to examine public-private sectors wage differentials in Vietnam. Wage differentials exist between the public and private sectors. However, these previous evidence on public-private wage differentials is not in comparison of private sector to public administration and to state-owned enterprises (SOEs) for males and females.

This paper will examine public administration-private sector wage differentials and SOEs-private sector wage differentials for males and females from Vietnam Living Standards Survey in 2002 (VLSS 2002), which conducted by World Bank (WB) and the General Statistic Office (GSO) of Vietnam. The survey provides detailed information about employment, income, education, and demographic characteristics of household members. The sample of this analysis is confined to wage earners who worked in the 12 months prior to the survey and in labor force, that employees are aged between 15 and 60 years. The wage earners are in three sectors, the public administration, the SOEs, and the private sector.

The paper includes four main works. Firstly, it is to introduce a general framework of public-private wage differentials that bases on theoretical considerations and a brief of relevant literatures on public-private sector wage differentials for males and females. Secondly, it is to provide an overview public-private sectors wage comparisons in Vietnam. Thirdly, it is to estimate wage equations, which include with and without using results of a multinomial sector of work choice model, for males and females by sector of work (public administration, SOEs and private sector), focusing on differences in returns to worker's characteristics. Then, I decompose the wage differentials, which are the private sector to compare with the SOE sector or public administration sector, in order to measure the relative contribution of worker's characteristics to the wage differentials for sector of work by gender. From decomposition results, I have contribution of components in the observed wage differentials. Finally, the paper provides policy implications to reduce wage differentials.

The paper is to address main question are as follow. Are public workers, who work in the public administration or the SOEs, underpaid in comparison with their private sector counterparts for males and females? These sub-questions include as what determines individuals' choice among sectors of work (public administration, SOEs and private sector)? Are there any differences in relationship wage and wage determining factors by sectors of work for males? Are there any differences in relationship wage and wage determining factors by sectors of work for females? What factors contribute to the public-private wage differentials for males and females? Which policies should be recommended in order to reduce wage differentials between the public and private sectors?

The paper is organized as follow: section 2 introduces theoretical considerations and a brief of relevant literatures on public-private sector wage differentials for males and females; section 3 provides methodological framework; section 4 provides an overview

public-private sector wage comparisons in Vietnam; section 5 presents estimation results of wage equations for sector of work and by gender. Then, wage differentials, which are the private sector to compare with the SOEs or the public administration sector, decompose into relevant factors; section 6 gives conclusions and policy implications of the results.

2. THEORETICAL REVIEW AND LITERATURE REVIEW

In explanation for wage differentials, the study has Adam Smith's view on equalizing differences and basic human capital theory, which explains wage differentials as a result of difference in schooling and on the job training. Besides, we have institutional views on wage differentials.

In the human capital theory, wage determination has based on the marginal productivity theory of which labor capital theory is an extension. The marginal productivity of a worker is determined by her/his human capital. Under competitive condition and perfect labor movement, wage differentials come from differences in human capital such as education, on the job training. It is noted that more human capital will increase marginal product of a worker or, on other hand, higher productivity, and then higher wages.

However, the institutional economists argue that one's productivity and wage depend on many factors such as unions and collective bargaining rendered orthodox wage theory unrealistic.

Many empirical studies have used the human capital framework to analyze the wage between public and private sectors for male and female workers. In developed countries, some papers have been done in Canada (Gunderson, 1979), in Spain (Lassibille, 1998), and in Scotland (Heitmueller, 2004). Recently, this issue has been done in developing countries, in Haiti (Terrell, 1993), in Turkey (Tansel, 2004), and in India (Glinskaya and Lokshin, 2005). Particularly, some studies addressed for some transition economies. They are in Poland (Adamchik and Bedi, 2000), in Yugoslavia (Lokshin and Jovanovic, 2003) and in Bulgaria (Falaris, 2004). In Vietnam, a study based on Vietnam Living Standards Survey 1997-1998 to analyze wage differentials between the public and private sectors by Ha (2000). From these empirical results, there are wage differentials between the public sectors and the private sectors. Moreover, the public-private sector wage differentials for men and women are different. In some countries, the public and private wage differentials for men are larger than for women. Conversely, in some countries, the public and private wage differentials are smaller for men. In Vietnam, the public wages are 44 and 19 per cent lower than private wages (taking public and private wage structure, respectively). In addition,

Neumark decomposition estimates that public workers earn 32 per cent less that private workers do.

3. METHODOLOGICAL FRAMEWORK

Wage equations

Wage regression models are estimated as augmented Mincerian earnings equations controlling for human capital and various other characteristics.

$$LnW_j = \beta_{0j} + \beta_j X_j + u_j \tag{3.1}$$

where:

LnW_j is the natural logarithm of hourly wage, β_0 is the intercept term, β is a parameter vector, X is a vector of individual characteristics including education, potential labor experience and can be extended with other exogenous variables measuring personal characteristics, and (u) is a random disturbance term. It assumed that (u) is normally distributed with constant variance and its mean equals zero. j stands for public administration, the SOEs, or private sector. The wage equations are estimated for the public administration, the SOEs, and the private sector.

To correct for selectivity bias, which ordinary least square (OLS) may not be consistent because of non-randomness of the sample, we deal with by using the two-stage approach of Hay (1980). This two-stage approach is a generalization of Heckman's two-stage approach (1979) (Hill, 1983; Liu, 2001).

In the first stage, we estimate the sector of employment choice model by the logit maximum likelihood method. From this multinomial logit model, we have the predicted probability of individual i being in one sector j, P_{ij}, for calculating correction term, *lambda*, λ_{ij}. In the second stage, the correction term, *lambda*, is added into wage equation as a regressor.

Wage equations with selectivity correction estimate by OLS:

$$LnW_j = \beta_{0j} + \beta_j X_j + \theta_j \lambda_j + v_j \tag{3.2}$$

In the employment sector choice model, an individual's choice of sector of employment is commonly presented in terms of utility maximization and human capital (Linskaya and Lokshin, 2005). To choose between the sectors, an individual compares expected net benefit in each sector and selects the job that best rewards his individual set of characteristics. After deciding the sector which to seek a job, the probability of worker are selected in the sector that depends on the individual's characteristics. Worker's tastes and preferences as well as human capital and other characteristics will determine the sectoral

choice (Tansel, 2004). In the sectoral choice model, the study assumes that any individual faces three mutually exclusive choices: public administration wage employment (j=1), SOE wage employment (j=2), private sector wage employment (j=3). The private sector employment (j=3) is taken as the base category and other two sets are estimated relative to this base category in multinomial logit model.

Decomposition of public and private wage differentials

I apply a Blinder (1973), Oaxaca (1973), and Idson and Feaster (1990)[1] wage decomposition to the public-private wage differentials for men and women. This wage decomposition includes difference due to selectivity bias. This decomposition has been used in some studies of pubic-private sector wage differentials for men and women (e.g. Terrell (1993) for Haiti; Gerard Lassibille (1998) for Spain; Tansel (2004) for Turkey).

Comparisons of wages between the public administration and the private sector may be decomposed as:

$$\overline{\ln W_1} - \overline{\ln W_3} = (\beta_{01} - \beta_{03}) + 0.5(\beta_1 + \beta_3)(\overline{X_1} - \overline{X_3}) + 0.5(\overline{X_1} + \overline{X_3})(\beta_1 - \beta_3) + (\theta_1 \overline{\lambda_1} - \theta_3 \overline{\lambda_3})$$

(3.3a)

Decomposition of wage between the SOEs and the private sector follows as:

$$\overline{\ln W_2} - \overline{\ln W_3} = (\beta_{02} - \beta_{03}) + 0.5(\beta_2 + \beta_3)(\overline{X_2} - \overline{X_3}) + 0.5(\overline{X_2} + \overline{X_3})(\beta_2 - \beta_3) + (\theta_2 \overline{\lambda_2} - \theta_3 \overline{\lambda_3})$$

(3.3b)

where $\overline{\ln W}$ refers to the mean LnW, the mean of the natural logarithm of hourly wage ; X vectors are mean values over the individuals in a particular sector of employment, β are coefficients of X, $\overline{\lambda}$ denotes the mean of λ, selection term, θ are the coefficients of the selection terms in the wage equations, the subscript (3) refers to the private sector, the subscript (1) refers to the public administration, the subscript (2) refers to the SOE sector.

This decomposition shows four sources of the wage differentials in the mean of Ln (wage) in the private sector to compare with the state-owned enterprise sector or public administration sector. The four sources are (a) differences in constant terms, (b) differences in endowments of workers, (c) differences in the coefficients, and (d) selectivity bias. In this decomposition, the non-discriminatory wage structure lies midway between public wage structure and private wage structure or equal weights are assigned to the public and private sectors.

The first component ($(\beta_{01} - \beta_{03})$; $(\beta_{02} - \beta_{03})$) is the differences in the constant terms. This differential can be interpreted as a premium or pure rent from being in a given sector

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[1] Idson and Feaster (1990) for a decomposition of wage differentials by employer size that account for selectivity bias.

(Terrell, 1993). The second component ($0.5(\beta_1 + \beta_3)(\overline{X_1} - \overline{X_3})$; $0.5(\beta_2 + \beta_3)(\overline{X_2} - \overline{X_3})$) is due to the differences in endowments of the workers (X). The third component ($0.5(\overline{X_1} + \overline{X_3})(\beta_1 - \beta_3)$; $0.5(\overline{X_2} + \overline{X_3})(\beta_2 - \beta_3)$) is due to the differences in the coefficients or due to differences in the pay structure to the endowments. The fourth component ($(\theta_1\overline{\lambda_1} - \theta_3\overline{\lambda_3})$; $(\theta_2\overline{\lambda_2} - \theta_3\overline{\lambda_3})$) is due to the differences in the selection terms. The first and the third components are often referred to as the unexplained differentials.

4. DATA

This study is based on Vietnam Living Standards Survey (VLSS) carried out by General Statistic Office (GSO) in 2002.

This analysis is confined to who were in labor force, that employees are age between 15 and 60 years[2]. The sample is further limited to wage earners who have a wage-earning job as their main activity during the past twelve months.

The final data sample has 19156 wage earners in three sectors, the public administration, the SOEs, and the private sector. This sample has 11813 men, which are 2208 in the public administration, 1407 in the SOEs, and 8198 in the private sector, and 7343 women, which are 1920 in the public administration, 1139 in the SOEs, and 4284 in the private sector. In the labor market of Vietnam, wage employment made up 30 per cent[3] of total employment in 2002. Thus, the paper relates to about a quarter of the labor force.

Table 1: Mean characteristics of wage earners in Vietnam, 2002

Characteristics	Men			Women		
	Public Administration	SOEs	Private Sector	Public Administration	SOEs	Private Sector
Number of observations	2,208	1,407	8,198	1,920	1,139	4,284
Hourly wage rates (1000 VND)	5.63 (5.51)	6.29 (6.61)	4.05 (9.23)	6.14 (20.08)	4.94 (5.15)	3.11 (4.38)
Age	39.04 (9.59)	36.53 (9.90)	30.92 (10.23)	36.35 (9.44)	33.53 (10.25)	29.64 (10.56)
Experience (in years)	19.40 (9.89)	17.86 (9.92)	15.29 (10.23)	16.26 (9.83)	15.56 (9.87)	14.01 (10.67)
Years of schooling	13.19 (4.06)	11.98 (4.26)	6.16 (4.46)	13.82 (3.46)	10.81 (4.68)	5.32 (4.72)
Workers in urban (%)	49.73	64.11	26.46	53.7	57.42	29.08

NOTE: Standard errors are in parentheses
Source: Author's calculations based on VLSS 2002

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[2] Sixty years of age is chosen as the cut off point for the sample. In Vietnam, the legal retirement age is 60 years for males and 55 years for females. The legal retirement age may not be effectively implemented especially in the private sector.
[3] Source: World Bank (2003), *"Vietnam Development Report 2004: Poverty"*, Report No. 27130-VN

There are some characteristics of wage earners in three sectors of employment. Workers in the private sector are less educated, less experienced background as compared to workers in the public sector. Moreover, public administration workers have higher schooling years and experience than SOE workers. Table 1 displays the summary statistics of workers in three sectors. Mean of hourly wage rate in both public administration and SOEs are higher than in private sector. For men, mean of hourly wage of workers in the SOEs are the highest (6.29) and the second mean of hourly wage is in the public administration. For women, workers in the public administration receive the highest average hourly wage rate, 6.14. 4.05 and 3.11 are the average hourly wage rates for workers in the private sector, respectively. According to the sample, mean age in both public administration and SOEs has higher than in private sector. Mean age in the private sector is about 30 years for men and women. In the SOEs, mean age is 36 years for men and 33 years for women. In the public administration, mean age is 39 years for men and 36 years for women. For men and women, workers in the private sector have lowest mean of experience in three sectors, 15.29 for men and 14.01 for women in the private sector. Moreover, SOE workers are lower mean of experience than public administration workers. The wage earners are well educated, especially for a low-income country. Much of empirical work in Vietnam agrees with this result (e.g. Moock et al, 2003). The average numbers of schooling years converted from the educational attainment. For men and women, average of schooling years is above 5 years. Mean schooling years in both the public administration and the SOEs are higher than in the private sector. 6.16 for men and 5.32 for women are mean schooling years in the private sector. In the public administration, mean schooling years is 13.19 for men and 13.82 for women. Moreover, mean schooling years in the SOEs is lower than in the public administration, 11.98 for men and 10.81 for women in the SOEs. For men and women in the public administration, there is a balance of proportion of workers in urban and in rural. In the SOEs, proportion of workers in urban are higher than in rural, 64.11 per cent for urban men and 57.42 per cent for urban women. In the contrary, about 70 per cent of workers in the private sector are in rural. Thus, workers in the private sector are less educated, less experienced background as compared to workers in the public sector. Moreover, public administration workers have higher schooling years and experience than SOE workers.

5. RESULTS

Estimates of selection equations

Table 2: Maximum likelihood multinomial logit estimates of employment sector choice for men and women, Vietnam, 2002

	Men				Women			
	Public Administration		State Owned Enterprises		Public Administration		State Owned Enterprises	
Variable	Coef.	P-value	Coef	P-value	Coef.	P-value	Coef	P-value
Experience	0.0939	0.000	0.0643	0.000	0.0840	0.000	0.0847	0.000
	(0.0084)		(0.0048)		(0.0090)		(0.0103)	
Experience Square (/1000)	-0.6720	0.013	-0.6644	0.024	-0.5971	0.097	-1.4662	0.000
	(-0.0577)		(-0.0529)		(-0.0368)		(-0.2052)	
Education levels								
Primary	1.3807	0.000	0.8903	0.000	1.2474	0.000	1.1437	0.000
	(0.1557)		(0.0670)		(0.1469)		(0.1382)	
Lower secondary	2.3233	0.000	1.4174	0.000	2.8068	0.000	1.5570	0.000
	(0.2971)		(0.0949)		(0.4431)		(0.0672)	
Upper secondary	3.8602	0.000	2.4062	0.000	4.1260	0.000	2.1909	0.000
	(0.5942)		(0.0899)		(0.6499)		(-0.0038)	
Vocational/Technical	5.0973	0.000	3.6049	0.000	6.1478	0.000	3.4373	0.000
	(0.6885)		(0.1102)		(0.8016)		(-0.0369)	
College and higher	6.5254	0.000	4.1490	0.000	6.7807	0.000	3.5691	0.000
	(0.8233)		(0.0254)		(0.8420)		(-0.0811)	
Urban location	0.0975	0.174	0.9003	0.000	-0.2472	0.005	0.4454	0.000
	(-0.0019)		(0.0904)		(-0.0472)		(0.0779)	
Regions								
Northeast	1.0105	0.000	0.6710	0.000	1.3275	0.000	0.3856	0.004
	(0.1148)		(0.0522)		(0.2230)		(-0.0026)	
Northwest	2.7105	0.000	0.3733	0.254	2.8898	0.000	-0.4262	0.414
	(0.5207)		(-0.0425)		(0.6276)		(-0.1563)	
North Central Coast	0.7464	0.000	0.0564	0.666	0.9423	0.000	0.2684	0.093
	(0.0906)		(-0.0056)		(0.1524)		(0.0005)	
South Central Coast	0.4620	0.000	0.0639	0.586	0.7247	0.000	0.0871	0.528
	(0.0504)		(-0.0001)		(0.1164)		(-0.0148)	
Central Highlands	1.0101	0.000	0.4088	0.034	0.9927	0.000	-0.1383	0.544
	(0.1295)		(0.0218)		(0.1868)		(-0.0574)	
Southeast	0.2974	0.008	0.1711	0.100	0.2060	0.098	-0.2528	0.023
	(0.0287)		(0.0124)		(0.0376)		(-0.0430)	
Mekong Delta	1.2688	0.000	-0.2924	0.021	0.8290	0.000	-0.6341	0.000
	(0.1634)		(-0.0407)		(0.1514)		(-0.1119)	
Land area (/1000)	0.0599	0.000	0.0349	0.000	0.0395	0.000	0.0391	0.000
	(0.0054)		(0.0025)		(0.0042)		(0.0047)	
Non labor income (/1000)	0.0076	0.048	0.0088	0.020	-0.0074	0.123	-0.0025	0.583
	(0.0006)		(0.0007)		(-0.0009)		(-0.0002)	
Constant	-6.7781	0.000	-5.0476	0.000	-6.0570	0.000	-3.8530	0.000
	Outcome Private sector==0 is the comparison group							
Log-likelihood	-6632.8				Log-likelihood	-4692.7		
LR chi2(34)	6117.62				LR chi2(34)	4627.8		
Pseudo R2	0.3156				Pseudo R2	0.3302		
Number of observation	11813				Number of obs	7343		

NOTE: Marginal effect is in parentheses; See appendix for description of variables.

Source: Author's calculations based on the VLSS 2002

Multinomial logit estimates of sector choice for men and women are shown in Table 2. The logit coefficients and marginal effect are reported for public administration and SOEs. The marginal effects, which are in parentheses, of each variable on the probability of joining a particular sector calculated at the mean values of the variables.

For men and women, experience significantly increases the probability of employment in all of the two sectors at a decreasing rate as compared to the private sector, holding all else constant. However, experience has a different effect across genders. For men, experience increases their probability of being employed in the public administration that exceeds their probability of being employed in the SOEs; for women, this difference is not much.

Considering the level of education, all levels of educational attainment are statistically significant and increase the probability of joining public administration, and SOEs for men and women. The higher the educational level, the higher its contribution to the participation in the public administration and in the SOEs. For men and women, the probability of being employed in the public administration increases with higher levels of education. With college and higher degree, the probability of being employed in the public administration increases 82.3 per cent for men and 84.2 per cent for women, holding all else constant. While, a worker in possession of a primary education degree has a 15.5 per cent and 6.7 per cent higher probability of working in the public administration for men and women, respectively. Holding everything else constant, the probability of being employed in the SOEs also increase with higher levels of education for men, however, this probability decrease for women in the level of education such as college and higher degree and vocational/technical. With vocational/technical degree, the probability of being employed in the SOEs increases 11 per cent for men and decrease 3.6 per cent for women. In addition, in all levels of education, a worker with a level of education has a probability of being employed in the public administration that exceeds their probability of being employed in the SOEs for men and women. Thus, workers with higher experience and education would prefer to work in or are more likely to be selected in the public sectors.

For men, coefficients of the non-labor income are positive and statistically significant at the five per cent significance level. It means that non-labor income increases the probability of participation in the public sectors. For women, coefficients of the non-labor income are statistically insignificant. For men and women, the area of land owned significantly increases the probability of participation in the public sectors.

In addition, individuals living in urban location are more likely to be employed in the SOEs for men and women. Other things being equal, urban location decreases the probability of working in the public administration for women.

As for regional factor, for men and women, the probabilities of working in the public administration are higher in all regions as compared to the Red River Delta. However, the probabilities of working in the SOEs of some regions are lower as compared to the Red River Delta. The probability of working in the SOEs in Mekong Delta is lower than in Red River Delta for men. Besides, for women, the probabilities of working in the SOEs in Northwest, Central Highlands, Southeast, and Mekong Delta are lower than Red River Delta.

Estimates of wage equation

I have results of a series of Chow test[4] on the equality of the slope coefficients in the private sector and the public administration, in the private sector and the SOEs, and the public administration and the SOEs for men and women, indicating that the underlying wage determination process is different in these two sectors.

Results of wage equation without and with selectivity correction are optimum regressions that have been used by the top-down approach[5] to drop out insignificant variables at 10 per cent level of significance. Besides, White's standard errors are used to provide asymptotically consistent values in the empirical work for wage equations with and without selectivity correction.

From results of wage equations, as the wage model is semi logarithmic, the effect of a dummy variable is measured calculating [exp(b)-1], where b is the corresponding regression coefficient (Wooldridge, 2003, p.226). This study interprets these coefficients in terms of percentage difference.

Public and private wage equations for men

Wage equations without and with selectivity correction for men in Table 3, respectively. The wage equations of both the public administration and the private sector,

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[4] Chow test on equality of the slope coefficients in the wage functions: there is not equality of the slope coefficients in the wage function for **men** and for **women**, $F_{computed}= 24.339109>F_{critical} =F_{0.01}(25, 19106)= 1.773553$; For men, there is not a Chow test on equality of the slope coefficients in **the private sector** and **the public administration,** in **the private sector** and **the SOEs** and in **the public administration** and **the SOEs**, $F_{computed}=11.05774905>F_{critical} =F_{0.01}(25,10356)= 1.7743886$, $F_{computed}= 5.6127307>F_{critical} =F_{0.01}(24,9557)= 1.7927919$, and $F_{computed}= 8.093703962>F_{critical} = F_{0.01} (25,3565)= 1.7778656$, respectively. For women, there is not a Chow test on equality of the slope coefficients in **the private sector** and **the public administration,** in **the private sector** and **the SOEs** and in **the public administration** and **the SOEs,** $F_{computed}= 9.536567289>F_{critical} = F_{0.01} (25,6154)=1.7756347$, $F_{computed}= 5.6819969>F_{critical} = F_{0.01} (24,5375)= 1.794322$, and $F_{computed}= 4.068899902>F_{critical} = F_{0.01} (25,3009)= 1.7788457$, respectively.
[5] Gujarati, D.N. (1995) *Basic Econometrics*, 3rd edition, Mc Graw Hill, Inn; The results of optimum wage equations are estimated by stepwise method in the Stata software.

which have selection term is statistically insignificant, have not change coefficients in comparison with the wage equations without selection term. Coefficient estimate of the selection term in the SOEs is statistically significant.

Table 3: Wage equations of men, Vietnam, 2002

| | Not corrected for selection | | | | | | Corrected for selection | |
| | Public Administration | | State Owned Enterprises | | Private sector | | State Owned Enterprises | |
Variable	Coef.	Per cent	Coef.	Per cent	Coef.	Per cent	Coef.	Per cent
Experience	0.0437	4.4	0.0318	3.2	0.0298	3.0	0.0324	3.2
Experience Square (/1000)	-0.8163	-81.6	-0.5744	-57.4	-0.6364	-63.6	-0.5771	-57.7
Education levels								
Primary					0.1145	12.1		
Lower secondary			0.1240	13.2	0.1216	12.9	0.1616	17.5
Upper secondary	0.2736	31.5	0.1943	21.4	0.2573	29.3	0.2649	30.3
Vocational/Technical	0.3405	40.6	0.3067	35.9	0.3292	39.0	0.4128	51.1
College and higher	0.5924	80.8	0.6006	82.3	0.7652	114.9	0.6816	97.7
Urban location	0.1493	16.1	0.2104	23.4	0.1032	10.9	0.2643	30.2
Regions								
Northeast	-0.0567	-5.5			-0.0751	-7.2		
Northwest			-0.2760	-24.1	-0.5251	-40.8	-0.3502	-29.5
North Central Coast			-0.1766	-16.2			-0.1944	-17.7
South Central Coast					0.1575	17.1		
Central Highlands	0.1116	11.8	-0.1710	-15.7			-0.1837	-16.8
Southeast			0.2931	34.1	0.2653	30.4	0.2901	33.7
Mekong Delta			0.2412	27.3	0.2516	28.6	0.1840	20.2
Professions								
Professionals/technical	0.2911	33.8			0.3797	46.2		
Clerical and related					0.1586	17.2		
Sales and service workers	-0.3538	-29.8	-0.3201	-27.4	-0.1181	-11.1	-0.3185	-27.3
Agriculture			-0.2529	-22.3	-0.1492	-13.9	-0.2571	-22.7
Craft workers	0.2028	22.5	-0.1038	-9.9			-0.1045	-9.9
Operators	0.4849	62.4	0.1396	15.0	0.2337	26.3	0.1405	15.1
Armed forces	0.3432	40.9						
Unclassified			-0.1942	-17.7	-0.1289	-12.1	-0.1942	-17.7
Selection term							-0.1709	
Constant	0.4375		0.9019		0.7005		0.6417	
R-squared	0.3017		0.3206		0.1934		0.3222	
F-statistics	77.6		38.56		87.74		36.65	
Number of observations	2208		1407		8198		1407	

Source: Author's calculations based on the VLSS 2002

Linear and quadratic terms in experience have the expected positive and negative signs respectively in three sectors for men. The estimates of return to education are positive. The wage return to education increases with higher level of education. In the

SOEs, returns to education in the wage equation with selectivity correction are higher than one in the wage equation without selectivity correction. Workers in urban area are advantage in three sectors. The largest advantage is in the SOEs. Some regional wage differentials are in both the SOEs and the private sector but not for male workers in the public administration. The SOEs and the private sector pay workers in Red River Delta lower than workers with the same qualifications in Southeast and Mekong Delta. In general, managers receive higher in wage than other professions. Coefficient of selection term is negative for men in the SOEs. This means that there is a negative correlation between the unobserved factors in the sector selection and wages in each sector. In other words, unobserved characteristics that increase the probability of SOE employment also have a negative impact on SOE wage for men.

Public and private wage equations for women

Wage equations without and with selectivity correction for women in Table 5.3, respectively. As we can see, the coefficient estimates of the selection term in the private sector are statistically significant. The wage equations of both the public administration and the SOEs, which have selection term is statistically insignificant, have not change coefficients in comparison with the wage equations without selection term. Table 5.3 shows that linear and quadratic terms in experience have the expected positive and negative signs respectively in three sectors for women. The estimates of return to education are positive. The wage return to education increases with higher level of education. In the private sector, return to education in the wage equation with selectivity correction is higher than one in the wage equation without selectivity correction. Similar to men, female workers in urban area are advantage in three sectors. Workers in North regions (Red River Delta, Northeast, Northwest, and North Central Coast) receive lower wages than ones in South regions (Mekong Delta and Southeast). The wage returns to region are different in each of sector. In the private sector, managers receive the highest wages. Coefficient of selection term is positive for women in the private sector. This implies that, there is a positive correlation between the unobserved factors in the sector selection and wages in each sector. In other words, for women, unobserved characteristics that increase probability of private sector employment have a positive impact on private sector wages.

Table 4: Wage equations of women, Vietnam, 2002

| | Not corrected for selection | | | | | | Corrected for selection | |
| | Public Administration | | State Owned Enterprises | | Private Sector | | Private Sector | |
Variable	Coef.	Per cent	Coef.	Per cent	Coef.	Per cent	Coef.	Per cent
Experience	0.0459	4.6	0.0142	1.4	0.0180	1.8	0.0210	2.1
Experience Square (/1000)	-0.7560	-75.6			-0.4399	-44.0	-0.4859	-48.6
Education level								
Primary			0.1408	15.1	0.0720	7.5	0.0993	10.4
Lower secondary			0.2995	34.9	0.1177	12.5	0.1774	19.4
Upper secondary	0.1312	14.0	0.3513	42.1	0.3535	42.4	0.4615	58.6
Vocational/Technical	0.2990	34.9	0.5370	71.1	0.2629	30.1	0.5260	69.2
College and higher	0.5265	69.3	0.9417	156.4	0.8146	125.8	1.0794	194.3
Urban location	0.0792	8.2	0.0726	7.5	0.1236	13.2	0.1258	13.4
Regions								
Northeast								
Northwest					-0.3813	-31.7	-0.3088	-26.6
North Central Coast			-0.1706	-15.7				
South Central Coast	0.0930	9.7	0.1126	11.9	0.2369	26.7	0.2371	26.8
Central Highlands	0.1904	21.0	0.2588	29.5	0.1816	19.9	0.1877	20.6
Southeast	0.1573	17.0	0.2821	32.6	0.3863	47.1	0.3742	45.4
Mekong Delta	0.1301	13.9	0.3724	45.1	0.3366	40.0	0.3269	38.7
Professions								
Professionals/technical	0.2752	31.7						
Clerical and related		0.0						
Sales and service workers	-0.3218	-27.5			-0.2246	-20.1	-0.2285	-20.4
Agriculture					-0.2524	-22.3	-0.2471	-21.9
Craft workers			-0.1357	-12.7	-0.2865	-24.9	-0.2854	-24.8
Operators			0.2260	25.4				
Armed forces	0.4914	63.5						
Unclassified	-0.1519	-14.1	-0.1775	-16.3	-0.3447	-29.2	-0.3415	-28.9
Selection term							0.2605	
Constant	0.4067		0.6318		0.7017		0.6913	
R-squared	0.2465		0.3187		0.1813		0.1823	
F-statistics	44.52		41.59		41.38		39.67	
Number of observations	1920		1139		4284		4284	

Source: Author's calculations based on the VLSS 2002

Comparisons of returns to characteristics across wage equations

Based on the results of wage equation with selectivity correction, I have some comparisons of returns to characteristics on sectoral wage structures for men and women.

Comparisons of public administration-private returns for men

Returns to experience in the public administration are higher than the private sector. The wage returns to education in the public administration are higher than in the private sector, except level of college and higher degree. Holding other things constant, urban

workers in the public administration receive higher wages than ones in the private sector. In returns to profession, some professions in the public administration have lower wage returns than in the private sector such as Professionals/technical and related and Sales and service workers.

Comparisons of SOEs-private returns for men

The wage returns to education in the SOEs are higher than the private sector, except college and higher degree. Similar to urban workers in the public administration, return to urban workers is 30.2 per cent in the SOEs that is higher than in the private sector, 10.9 per cent, other things being equal. In the worker's residence, workers in Southern regions (Southeast and Mekong Delta) are high returns in both the SOEs and the private sector. Manager is reference profession and holding other things constant, returns to profession are lower in the SOEs than the private sector.

Comparisons of public administration-private returns for women

Return to experience is higher in the public administration than the private sector. The wage returns to education are lower in the public administration than the private sector. Holding other thing constant, urban women in the public administration receive lower return than in the private sector. Public administration workers in Southern regions (South Central Coast, Southeast and Mekong Delta) have lower wage returns than in the private sector. Sales and service workers in the public administration receive lower return than in the private sector.

Comparisons of SOEs-private returns for women

Return to experience is lower in the SOEs than in the private sector. Besides, returns to upper secondary and college and higher degree in the SOEs are lower than the private sector. Holding other thing constant, return to urban area in the SOEs is lower than the private sector. Workers in Southern regions (South Central Coast, Southeast and Mekong Delta) are high favorable in both the SOEs and the private sector. South Central Coast and Southeast are lower returns in the SOEs than the private sector.

Decomposition of public-private wage differentials

We have results of wage decomposition for men and women, which are public administration-private wage differentials and SOEs-private wage differentials. The coefficient estimates of the selection term in the SOEs for men and in the private sector for women are statistically significant.

Decomposition of wage gaps for men

Table 5: Decomposition of sector wage gaps with selectivity correction for men, Vietnam, 2002

	Wage differentials between **public administration** and **private sector** workers		Wage differentials between **state owned enterprises** and **private sector** workers	
	Gap value	% of total gap	Gap value	% of total gap
Characteristics gap	**0.5171**	163	**0.3925**	85
Experience	0.0524	16	0.0320	7
Education	0.2882	91	0.2243	48
Urban location	0.0294	9	0.0692	15
Region	-0.0378	-12	-0.0465	-10
Profession	0.1849	58	0.1136	24
Return gap	**0.0471**	15	**-0.0274**	-6
Experience	0.1688	53	0.0661	14
Education	-0.0770	-24	-0.0102	-2
Urban location	0.0175	6	0.0729	16
Region	-0.0992	-31	-0.0346	-7
Profession	0.0369	12	-0.1216	-26
Environment gap	**-0.2630**	-83	**-0.0587**	-13
Selectivity			0.1571	
Total unexplained differential	**-0.2159**		**-0.0861**	
Total wage gap	**0.3174**	**100**	**0.4635**	**100**

NOTE: Total unexplained differential is the sum of return gap and environment gap;

Total wage gap is sum of characteristic gap, return gap, and environment gap

Source: Author's calculations based on VLSS 2002

Wage decomposition between public administration and private sectors for men

In the results of decomposition of ***public administration-private wage differentials for men*** in Table 5, the study estimates an unexplained difference of 24 per cent. In other words, public administration wages are 24 per cent lower than private wages. Besides, wage differential is mostly due to the differential in characteristics, which is 163 per cent to the total gap. It can be said that on average male workers in the public administration have richer characteristics than ones in the private sector. Education is the most important element accounting for wage differentials because the differential in education is large in the differential in characteristics.

Furthermore, for men, differential in the characteristic indicate higher returns to worker characteristics in the public administration than in the private sector. Indeed, the

wage returns to education in the public administration are higher than the private sector, except level of college and higher degree. Returns to experience in the public administration are higher than the private sector. Urban workers in the public administration receive higher return than ones in the private sector, holding other things constant. In returns to profession, some professions in the public administration have lower wage returns than in the private sector such as Professionals/technical and related and Sales and service workers.

Wage decomposition between SOEs and private sectors for men

In the results of decomposition of ***SOEs-private wage differentials for men*** in Table 5*,* the study estimates an unexplained difference of 9 per cent. In other words, SOE wages are 9 per cent lower than private wages. Besides, wage differential is mostly due to the differential in characteristics, which is 85 per cent to the total gap. It can be said that on average male workers in the SOEs have richer characteristics than ones in the private sector. In the differential in characteristics, education is the most important element accounting for wage differentials.

For men, differential in the characteristic indicate higher returns to worker characteristics in the SOEs than in the private sector. In particularly, returns to experience in the SOEs are higher wages than the private sector. The wage returns to education in the SOEs are higher than in the private sector, except college and higher degree. In addition, the wage return to urban area in the SOEs is higher than in the private sector.

Decomposition of sector wage gaps for women

Table 6: Decomposition of sector wage gaps with selectivity correction for women, Vietnam, 2002

	Wage differentials between **public administration** and **private sector** workers		Wage differentials between **state owned enterprises** and **private sector** workers	
	Gap value	% of total gap	Gap value	% of total gap
Characteristics gap	**0.6405**	113	**0.3079**	68
Experience	0.0437	8	0.0201	4
Education	0.3780	67	0.2573	56
Urban location	0.0252	4	0.0281	6
Region	-0.0858	-15	-0.0974	-21
Profession	0.2794	49	0.0998	22
Return gap	**0.1535**	27	**0.1481**	33
Experience	0.2868	50	0.0577	13
Education	-0.2257	-40	0.0095	2
Urban location	-0.0193	-3	-0.0230	-5
Region	-0.0995	-18	-0.0314	-7
Profession	0.2113	37	0.1353	30
Environment gap	**-0.2846**	-50	**-0.0595**	-13
Selectivity	**0.0590**		**0.0590**	
Total unexplained differential	**-0.1311**		**0.0887**	
Total wage gap	**0.5683**	**100**	**0.4555**	**100**

NOTE: Total unexplained differential is the sum of return gap and environment gap;

Total wage gap is sum of characteristic gap, return gap, and environment gap

Source: Author's calculations based on VLSS 2002

Wage decomposition between public administration and private sectors for women

In the results of decomposition of ***public administration-private wage differentials for women*** in Table 6, the study estimates an unexplained difference of 14 per cent. In other words, public administration wages are 14 per cent lower than private wages. Besides, wage differential is mostly due to the differential in characteristics, which is 113 per cent to the total gap. It can be said that on average female workers in the public administration have richer characteristics than ones in the private sector. In the differential in characteristics, education is the most important element accounting for wage differentials.

Particularly, for women, return to experience is higher in the public administration than the private sector. However, the wage returns to education are lower in the public

administration than the private sector. Holding other thing constant, urban women in the public administration receive lower return than in the private sector.

Wage decomposition between SOEs and private sectors for women

In the results of decomposition of ***SOEs-private wage differentials for women*** in Table 6, unexplained difference is positive, 9.2 per cent. In other words, SOE wages are 9.2 per cent higher than private wages. Besides, wage differential is mostly due to the differential in characteristics, which is 68 per cent to the total gap. It can be said that on average female workers in the SOEs have richer characteristics than ones in the private sector. In the differential in characteristics, education is the most important element accounting for wage differentials.

Particularly, for women, the wage return to experience in the SOEs is lower than the private sector and the wage returns to education in the SOEs are higher than the private sector, except levels of upper secondary and college and higher degree. Return to urban area in the SOEs is lower wage than the private sector.

From results of wage decomposition of men and women in Table 5 and in Table 6, the differential in the constant term (environment gap) has large portion in the total unexplained differential of public administration vs. private sector and SOEs vs. private sector. The constant term reflects the economic rent or premium (surplus) that workers receive in the public sectors (Lindauer and Sabot, 1983; Terrell, 1993). Negative premium gives that the public sectors paying lower wages than the private sector. Particularly, the differential of constant term (environment gap) of public administration vs. private sector is larger than the differential of constant term of SOE vs. private sector for men and women.

6. CONCLUSION AND POLICY IMPLICATIONS

There are some conclusions follow as:

For men, public workers are paid lower than private workers because public administration wages are 24 per cent lower than private wages and SOE wages are 9 per cent lower than private wages. For women, public administration wages are 14 per cent lower than private wages. However, SOE wages are 9.2 per cent higher than private wages for women.

For men and women, public-private wage differential is mostly due to the differential in characteristics. Public workers have richer characteristics than private workers. In these worker characteristics, education is the most important element accounting for wage differentials.

There are differences in returns to characteristics by sector of work for men and for women. For men, the differential in the characteristic indicate higher returns to worker characteristics in the public sectors (public administration and SOEs) than in the private sector. Indeed, the wage returns to education in the public sectors are higher than the private sector, except level of college and higher degree. Returns to experience in the public administration are higher than the private sector. In addition, the wage returns to urban area in the public sectors are higher than in the private sector. For women, the wage returns to education are lower in the public administration than the private sector and the wage returns to education are higher in the SOEs than the private sector, except levels of upper secondary and college and higher degree. Difference to men, the wage return to urban area in the public sectors is lower than the private sector.

The total unexplained differential has a large contribution of the differential in the constant term of public administration vs. private sector and SOE vs. private sector for men and women. Negative premium gives that the public sectors paying lower wages than the private sector. Particularly, for men and women, the differentials of constant term (environment gaps) of public administration vs. private sector are larger than the differentials of constant term of SOE vs. private sector.

According to the conclusion of analyses of public-private wage differentials, main policy implications are as follow:

The government should consider an assistance strategy about training for workers in the private sector. These training programs have to actually improve the skills of workers for the needs of labor market. Moreover, productivity of workers, who have training programs, has to improve. According to this study, workers in the private sector are lower proportion of workers at high education than in the public sectors for men and women and the difference in education is one important factor in accounting for public-private wage differentials.

The government can be considered to the current payment system for wage returns to education. For men and women at college and higher degree, public wages are lower than private wages. The public sector may have difficulty to retain and attract workers at college and higher degree. The government should pay higher wages to male workers and female workers at college and higher degree in both the public administration and the SOEs to motivate high working capacity. Besides, for women, wages for educated workers in the public administration should be increased. Paying higher wages will increase the wage bill and strain the fiscal position of the public sector. To satisfy public sector efficiency and

ease the fiscal strain, the government reduces the public sector employment that can be continued by the public sector downsizing program such as the privatized or reformed process of State-Owned Enterprises.

Higher return to urban and the Southern regions (Mekong Delta, Southeast) would motivate workers to migrate to urban and to the South regions. The government should consider wage policy to attract public workers to work in rural and mountainous areas in the North (Northeast, Northwest).

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APPENDIX: DESCRIPTION OF VARIABLES

The dependent variable

The dependent variable is the natural log of hourly wage rate, which are regionally adjusted by Consumers' Price Index (CPI).

Experience

The years of work experience variable is computed as age minus the number of years of schooling minus age of starting school (Experience = age – years of schooling – age of starting-school) (Mincer, 1974). Years of schooling minus six are relevant in Vietnam, since school starts at the age of six.

In this study, work experience has been estimated as the smaller of the above expression and (age - 15), years out of school before the age of 15 not being counted (Dougherty et al, 1991). This study set the value[6], 15, as the years that one begins his career if he has not yet finished the lower secondary school.

Education

Education variable is represented by binary variables measuring the completion of some or all of the indicated levels of education. Education is classified into six levels that are below primary, primary, lower secondary, upper secondary, vocational/ technical, and college and higher degree. Below primary, which are included no education, is treated as the reference group. College and above includes college diploma, bachelors, masters, and candidate doctor. Technical is professional secondary school and vocational is technical workers. It is expected that higher levels of education will have bigger returns.

Job characteristics

Professional variable is represented by binary variables to reflect job characteristics difference in wage. 8 dummy variables are used for 9 professions which are Managers, Professionals/technical and related, Clerical and related, Sales and service workers, Agriculture, Craft workers, Operators, Armed forces, and Unclassified. The managerial category is as a reference group.

Geographical characteristics

Dummy variables for regions of residence are included to control for differentials in cost of living and the labor market opportunities (Tansel, 2004). *Region variable* is represented by binary variables. 8 regions of Vietnam are consisted Red River Delta, Northeast, Northwest, North Central Coast, South Central Coast, Central Highlands, Southeast, and Mekong Delta. The Red River Delta is as a reference group. *Urban location*

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[6] The working age starts from 15 as the definition of Vietnamese General Statistic Office

variable is a dummy variable, which equals 1 if a worker is living in urban, it equals 0 if otherwise.

In addition, this study introduces some variables in the multinomial logit equation that influence the sector choice but do not influence wages. These variables are: land area variable (Falaris, 2004; Tansel, 2004; Linskaya and Lokshin, 2005) and non-labor income variable (Appleton et al, 1999; Liu, 2001).

Land area variable: Land area variable is total land area of household, which are managed and used. The land variable is as an exogenous instrument that belongs in the sector of employment equation but not in the wage equations. Such an asset increases the potential income of a household exogenously so that it affects the kind of work, this individual will do but not the wages earned.

Non-labor income[7]: According to data in VLSS 2002, we have non-labor income of household, which is available for income effect on household desire to work. Non-labor income of household is corrected for cross-region price index.

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[7] Non labor income: includes remittance and value of in kind presents from overseas; domestic remittance and value of in-kind presents; pension, sickness and one-time job loss allowance; social insurance allowance; other income from social insurance; interest of savings, shares, coupon, loans; income from workshop, machinery, assets, tool...leasing; others (lottery, charity and support from other organizations…).