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Gender Wage Inequality in Thailand[1]

Theepakorn Jithitikulchai

World Bank Group, Bangkok, Thailand

Abstract

Using the national representative Labor Force Surveys, this paper examines trends and heterogeneity in hourly earnings on gender pay gaps of wage workers in Thailand. The decomposition explains the declined gender wage gap from heterogeneity in characteristics of wage workers and from unequal wage structures. The key findings are as follows. First, the empirical evidence shows that female continue to earn less than male. Second, female in particular groups such as those with higher education, holding positions in small firms, or having more years of work experience are paid substantially less than male. Third, while the inequality persists, the overall gap has narrowed down in recent years.

Keywords: Wage Gaps, Wage Distribution, Wage Decomposition, Gender Inequality

JEL Classification: J71, J31, D22

[1]Correspondence address: World Bank Group, 30th Floor, Siam Tower 989 Rama 1 Road, Pathumwan Bangkok 10330, Thailand.
E-mail: theepakorn@worldbank.org

Introduction

The possible reasons that have been found to be associated to gender earnings disparities are sectorial segregation to lower wage sectors against female (Tzannatos, 1999), lower female supply along with wage structure (Blau and Kahn,2001), labor market institution and liberalization (Weichselbaumer et al., 2007; Blau and Kahn, 2001; Cornish, 2007 and Tzannatos, 1999), and reduction on observed gender differences in characteristics such as education, experience, and geographical location (Son, 2007) among others. Education also plays an important role in explaining wage differentials (Ñopo et al., 2011).

In Thailand, it has been confirmed from a number of studies (Nakavachara, 2010; Khorpetch and Kulkolkarn, 2011; and Bui and Permpoonwiwat, 2015) that the wage gaps between male and female have been narrowed over the last decades and primarily due to the improvement in education achievement of Thai female. Nakavachara (2010) studied gender wage differences from 1985 to 2005 and found that increases in female education and modernization were the main factors in reducing the gender wage gap. Nakavachara (2010) also showed that higher levels of education among females did not translate into their higher earnings than males in Thailand. After taking into account superior female education, male's earnings, however, are still higher than female's due to unexplained factors. According to Khorpetch and Kulkolkarn (2011), the female workers were shown to be more productive than the male, generally, but they received lower wages than male workers because of gender disparity.

This paper presents a complementary approach by examining gender differences in wages across some important worker characteristics to explain wage disparities using individual labor data. This enables analysis of gender differences in education level, work experience, employment sector, firm size, and occupation, among other characteristics.

For country context, gender inequality of opportunity in Thai labor market remains in terms of female labor force participation. As reported in Sondergaard et al. (2016), female's participation rates are 16 percentage points below than males (71 percent versus 87 percent in 2013). In addition, the author estimated from the LFS data and found that the participation rates and gap are quite steady since 2006, which implies that additional jobs have been created for the increasing population at the same growth rates. In 2013, female are accounted for 51 percent of the labor force, and they hold 46 percent of jobs.

However, the lower female participation rate is likely related to the less promising employment prospects for female. The LFS data shows that female are more likely to be unpaid family workers (30 percent for females versus 16 percent for males) than employees for private enterprises (33 percent for females versus 36 percent for males). Unfortunately, most of positions for female are in the low occupation levels (68 percent for female versus 61 percent for male) such as low-level service and sales workers; agricultural, forestry, and fishery workers; or other elementary occupations.

In recent years, female workers increased their educational attainment. In particular, the proportion of female workers with more than twelve years of education increased significantly. According to the author's

estimation, the education level of young female workers is higher than young male workers, but the quality of the jobs for female is lower, such as unpaid family workers or lower occupations in low-level service or sales workers and in elementary occupations. In 2013, young female wage workers (aged 15-24) have significantly higher proportions of upper secondary or university graduated than male wage workers within the same age cohort. Overall, female workers aged 15-64 already have achieved greater levels of schooling (from an average of 4.9 years in 1986 to 8.6 years in 2013), exceeding male wage workers (from an average of 5.4 years of schooling in 1986 to 8.4 years in 2013).

This paper finds evidence that, after controlling for socioeconomic and demographic characteristics, female continue to earn less than male by approximately 16 percent in 2013. The faster growth in hourly wage of female workers has contributed to convergence in female and male wages, thus shrinking gap, and this could be related to the increase in higher education and skill levels of female.

The standard quantile regression analysis highlights important gender earnings gap across the wage distribution of wage workers. The results show that at the lower and upper ends of the wage distribution, the gender attribute is associated with larger gap in average wages. In other words, gender pay gap is highly differentiated at the top- and bottom-paid positions. This finding is consistent with findings from other literature in the area.

This paper identifies several situations in which some female are paid substantially below male. These are female with a higher education, female working in small firms, and female with lots of experience. However, the paper also finds that the overall gap has narrowed down in recent years, with the primary driver of this gap being the improvement in education of female. In addition, optimistically the gap has disappeared in some areas such as large firms appear to have a gender balanced employment structure – and the wage gap is smaller.

The remainder of the paper is organized as follows. The next section presents the empirical methodology. Section 3 discusses the data. The main results are presented in section 4, which mainly provides analytical findings from heterogeneity in socioeconomic and geographic attributes of female and male wage workers across the wage distribution. A final section concludes the key results.

Methodological Identification

This paper uses OLS method to estimate the difference in various segmentations from labor force characteristics on the gender wage gap. This method estimates the trends of average wages separately for female and male wage workers in each year. The dependent variable is the logarithm of the hourly earnings. The gender-specific coefficients from each annual model are used in evaluating the conditional wage averages with the average wage worker characteristics given in a particular year. This study controls for gender heterogeneity differences, the average characteristics of all wage workers, and then evaluates the average characteristics with coefficients from gender regression models. The variable selection is based on statistical

significance and policy implication ability with the pooled OLS regression on wager worker characteristics controlled for temporal and spatial heterogeneities.

In addition of estimating conditional means of wage, this paper also uses quantile regression techniques (Koenker and Bassett, 1978) to estimate returns to gender characteristic along the conditional wage distribution. The quantile regression provides an analytical framework on how being female contributes to differentials on the earning distribution. The estimated coefficients are obtained by characterization of the conditional distribution by estimating a set of "representative" quantiles, i.e., the 25th, 50th, and 75th. We say that a worker receives wage at the τ^{th}quantile of the wage distribution, of the reference group of wage workers, if she receives *higher* than the proportion τ, and *less* than the proportion (1-τ). More formally, the hourly wage Y can be characterized by its distribution function, $F(Y) = \text{Prob}(Y \leq y)$ while for any 0< τ <1, $Q(\tau) = \inf\{y: F(y) \geq \tau\}$ is called the τ^{th}quantile of Y. Therefore, we can split the wage distribution into proportions τ below and (1-τ) above, such that $F(Y_\tau) = \tau$ and $Y_\tau = F^{-1}(\tau)$. The quantile regression estimator for quantileτ minimizes the objective function:

$$Q(\beta_\tau) = \sum_{i:Y_i \geq X_i'\beta}^{N} \tau|Y_i - X_i'\beta_\tau| + \sum_{i:Y_i < X_i'\beta}^{N} (1-\tau)|Y_i - X_i'\beta_\tau|$$

Generally, the quantile regression method is especially useful when the effect of the covariates on the wage variable differ for different conditional quantiles of the wage distribution. These different responses may be interpreted as differences in the response of the dependent variable to changes in the regressors at various points in the conditional distribution of the wage variable. Intuitively, these regression quantile estimates can convey information on wage differentials arising from non-observable characteristics among female who are otherwise observationally equivalent to male. Therefore, by using quantile regression, we can determine if female that rank in different positions across the conditional wage distribution (i.e., female that have higher and lower wages than predicted by observable characteristics) experience wage inequality.

This study also applies a decomposition proposed by Blinder (1973) and Oaxaca (1973) to decompose differences in mean wage μ across two gender groups.The decompositions provide explanations accounting for pay differences between male and female. The wage setting model is assumed to be linear and separable in observable and unobservable characteristics:

$$Y_g = X\beta_g + \varepsilon_g, \text{ for} g = A, B$$

where $\mathbb{E}[\varepsilon_g|X] = 0$. Letting $I_B = 1$ be an indicator of group B affiliation, and taking the conditional expectations over X, the overall mean wage gap $\triangle_o^\mu$ can be written as

$$\begin{aligned}\triangle_o^\mu &= \mathbb{E}[Y_B|I_B = 1] - \mathbb{E}[Y_A|I_B = 0] \\ &= \mathbb{E}[\mathbb{E}(Y_B|I_B = 1)|I_B = 1] - \mathbb{E}[\mathbb{E}(Y_A|I_B = 0\,)|I_B = 0] \\ &= (\mathbb{E}[X|I_B = 1]\beta_B + \mathbb{E}[\varepsilon_B|I_B = 1]) - (\mathbb{E}[X|I_B = 0]\beta_A + \mathbb{E}[\varepsilon_A|I_B = 0])\end{aligned}$$

where $\mathbb{E}[\varepsilon_A|I_B = 0] = \mathbb{E}[\varepsilon_B|I_B = 1] = 0$. Adding and subtracting the average counterfactual wage that group B workers would earn under the wage structure of group A, $\mathbb{E}[X|I_B = 1]\beta_A$, the expression becomes

$$\triangle_o^\mu = \mathbb{E}[X|I_B = 1]\beta_B - \mathbb{E}[X|I_B = 1]\beta_A + \mathbb{E}[X|I_B = 1]\beta_A - \mathbb{E}[X|I_B = 0]\beta_A$$

$$= \mathbb{E}[X|I_B = 1](\beta_B - \beta_A) + (\mathbb{E}[X|I_B = 1] - \mathbb{E}[X|I_B = 0])\beta_A$$

$$= \quad \triangle_S^{\mu} \quad + \quad \triangle_X^{\mu}.$$

Replacing the expected value of the covariates $\mathbb{E}[X|I_B = d]$ for $d = 0,1$ by the sample averages $\bar{X}_g$, the decomposition is estimated as

$$\hat{\triangle}_o^{\mu} = \bar{X}_B(\hat{\beta}_B - \hat{\beta}_A) + (\bar{X}_B - \bar{X}_A)\hat{\beta}_A$$

$$= \quad \hat{\triangle}_S^{\mu} \quad + \quad \hat{\triangle}_X^{\mu}$$

The first term in the last equation is the wage structure effect, while the second term is the composition effect. In the case that group affiliation is linked to some incontrovertible characteristics such as gender, the wage structure is called the "unexplained" part of the wage differentials or the part due to "gender inequality" when we consider the two groups as female and male. For example, we can decompose the difference between the male and female wage means to wage structure and composition differentials attributable to a variety of characteristics such as work experience, education, industrial sectors, and others. Therefore, we can breakdown the average wage gap between female and male into wage structure or inequality components.

Data

This study conducts the estimation using individual data from multiple waves of the Labor Force Survey (LFS) collected by the National Statistics Office of Thailand. The LFS contains detailed data on individuals over a nearly three-decade time horizon. Individual data include information on wages, employment, education, demographics, and other characteristics. Only the Q3 LFS data are utilized, because Q3 is the only quarter that is available in every year from 1986-2013. The study is limited to wage worker aged between 15 and 65. This study excludes those who reported themselves to be employers, self-employed, or unpaid family workers.

In the LFS data, there are different types of reported earnings such as monthly, weekly, daily, and hourly. The number of actual worked hours is used to convert different compensation types into hourly wage. The hourly earnings are in real 2011 terms which are temporally and spatially adjusted. The sample weight is the individual weight multiplied with the number of hours worked. The LFS 1986-2013 are used for annual gender-specific regression models to describe gender disparity in female and male earnings evaluated at average characteristics of all wage workers in each year. So we can observe the three-decade trends of earnings and gender gap. The LFS 2002-2013 are used to evaluate the association of gender on earnings distribution after the Asian economic crisis and its respective slump years. Therefore, we can decompose the differences in mean wages attributable to observable and unobservable characteristics, without worrying about irregular patterns between and after the economic crisis. Furthermore, the LFS 2002-2013 are also used to study the effects of female attribute across the conditional wage distribution with the quantile regression model.

The reported wage gaps in a variety of characteristics are based on the LFS 2013, which was the most recent LFS data that the author used to research on labor market, structural transformation, regional disparities, and economic growth for Sondergaard et al. (2016). So the LFS 2013 reported the estimated associations of main characteristics of wage workers such as education level, years of experience, occupation, firm size, and employment sector on the wage inequality.

Results

Although Thai economy has been well-developed and structurally transformed over the last three decades, the gender wage gap is not adequately improved, because female still continue to earn less than male. An econometric examination by annual gender-specific OLS models evaluated at average characteristics of all wage workers in each year shows that female lag behind male in terms of female are paid 16 percent less than male in 2013, unimpressively felling from 25 percent earnings gap in 1986, as in Table 1. The average characteristics of all wage workers in each year are education levels, years of experience, sectors, firm sizes, and geographical controls of urban or rural areas and provinces. Using averages of all covariates within a year with the gender-specific regression coefficients, we can evaluate wage differentials between female and male. Without controlling for individual heterogeneity, the raw hourly wage differential was almost zero in 2013, but after controlling for socioeconomic and demographic characteristics, we can observe the remaining wage disparity.

Table 1: Descriptive Statistics

	Wage employees			
	1986	1996	2002	2013
Average (log) real hourly wage: female workers [a]	3.089	3.703	3.608	3.907
Standard deviations	(0.9219)	(0.8508)	(0.8696)	(0.7547)
N	5206	15246	21174	23191
Average (log) real hourly wage: male workers [a]	3.406	3.834	3.712	3.915
Standard deviations	(0.8457)	(0.8069)	(0.8399)	(0.7117)
N	6751	19648	24571	26874
Raw (log) real hourly wage differential [b]	0.317***	0.132***	0.105***	0.009*
Standard errors	(0.0162)	(0.0089)	(0.0080)	(0.0066)
Conditional (log) real hourly wage differential [c]	0.249	0.243	0.203	0.165

Note: [a] Hourly wages are in 2011 THB.

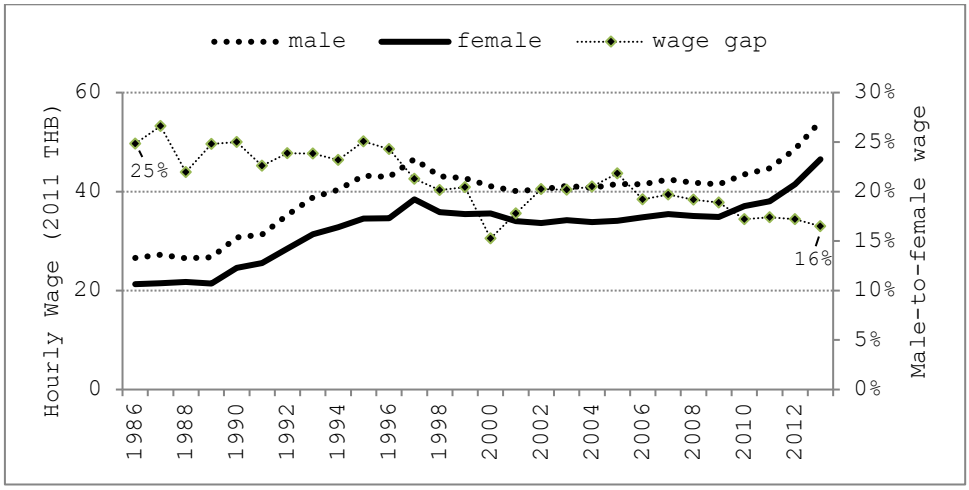
[b] The raw (log) real hourly wage differential is the difference between the average (log) real hourly wages for male and female (* $p<0.05$, ** $p<0.01$, *** $p<0.001$).

[c] The conditional (log) real hourly wage differentials is the difference between two data points of average conditional (log) real hourly wages for male and female evaluated at average characteristics of all wage workers using the gender-specific regression coefficients.

Source: Labor Force Surveys 1986, 1996, 2002 and 2013.

The three-decade trends of gender-specific hourly wages and wage gap are illustrated in Figure 1. The faster wage growth for female workers could be contributed to some convergence in wages, and this could be related to the increase in their skill level. But this does not translate into equal earnings per hour. It is noticeable that there is irregularly lower gap trend around the post-crisis period as shown in Figure 1.

Figure 1: Trends of conditional hourly wage and wage gap in 1986-2013

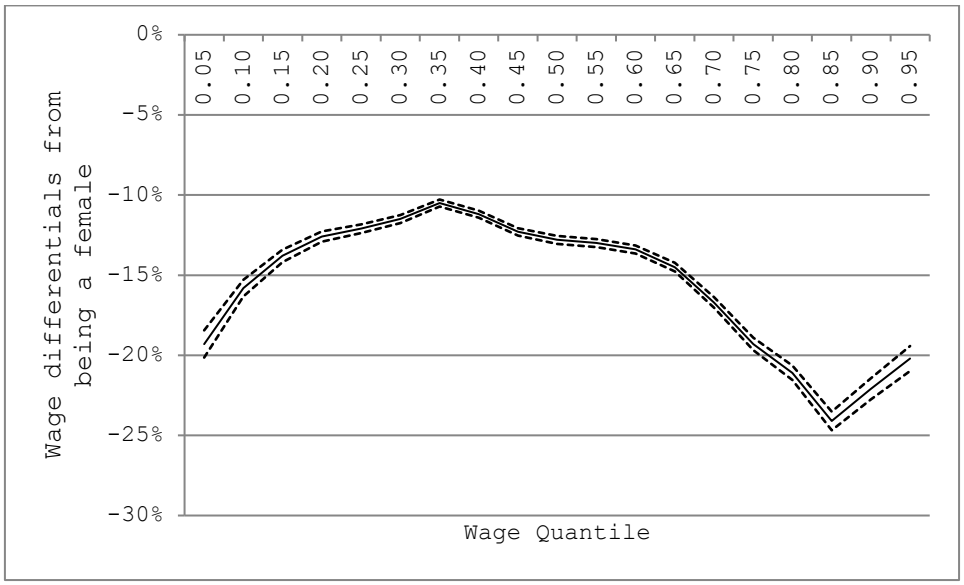


Note: Conditional wages from regressions of Mincer earning function by gender are evaluated using average characteristics of all wage workers in each year. An example of female and male regression results using the LFS 2013 is shown in Table A2.

Source: Labor Force Surveys 1986-2013

After the 1997 economic crisis and thereafter, female are paid less than male everywhere on the wage distribution and the gap is higher at the lower and top ends of the distribution as in Figure 2. Using quantile regressions for the LFS 2002-2013 to evaluate impacts of explanatory variables at every 5thquantile of the log hourly earnings, the gender gaps on wage exist across wage distribution. This finding of distributional differentials is robust across a variety of explanatory variable selections, and it is consistent with other related aspects such as education level, work experience, sectors, and types of occupations which will be reported further in this study about their wage premium. The high inequality at the lowest deciles possibly shows that workers with lower human capital are in the smaller enterprises which have no standard remuneration or promotion system. On the other hand, the highest inequality occurs at the highest deciles reflect that female have less chance, involuntarily or voluntarily, of working at the top level positions. The full results are based on the model setting as in Table A1 of the Appendix.

Figure 2: Associations of being a female on hourly wage across wage distributional quantiles



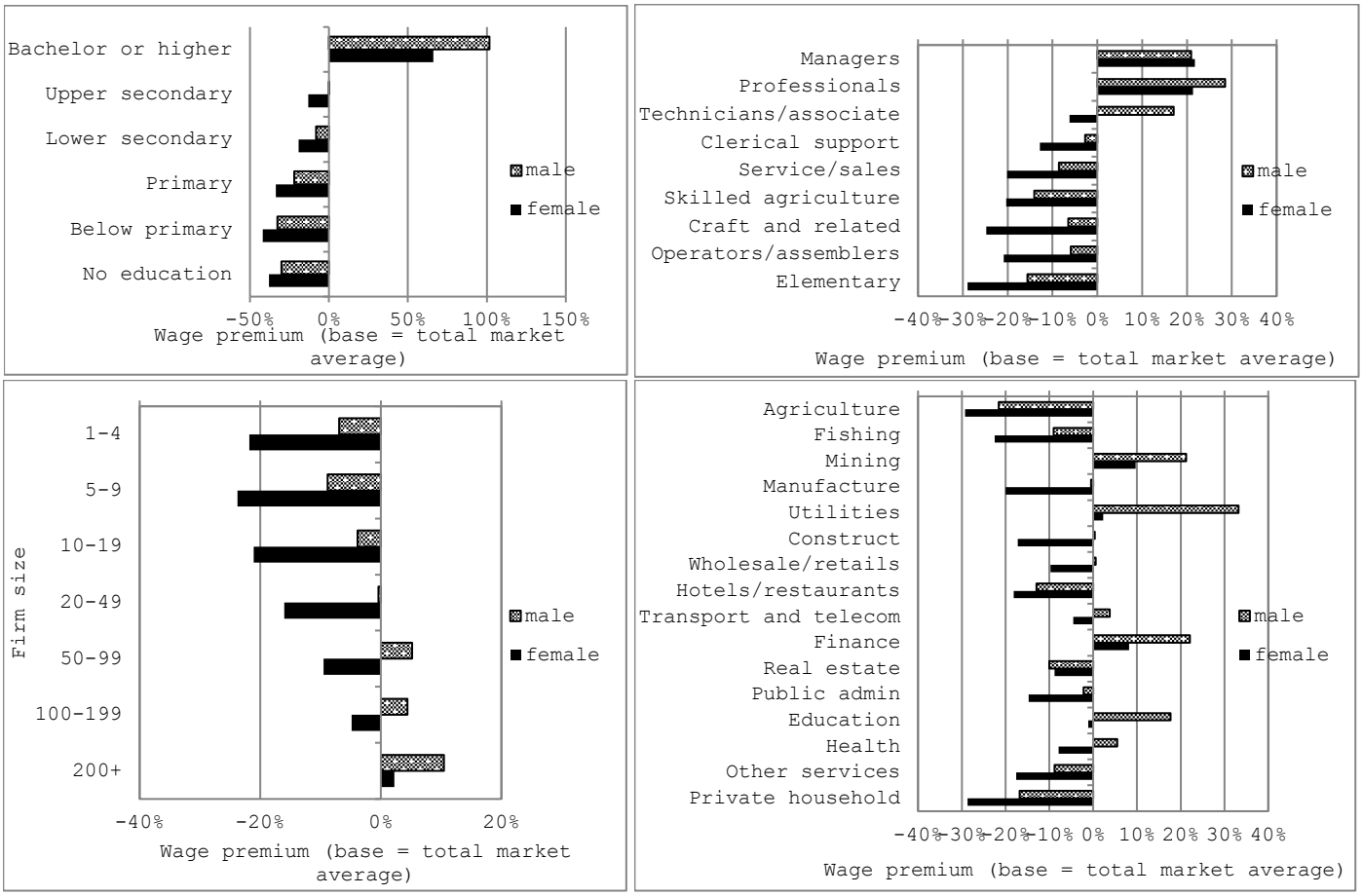
Note: Pooled quantile regression's estimated coefficients (solid lines) and their associated 95% confidence intervals (dotted lines) at every 5 percentiles are plotted. The full models for the quantile regression for the 0.25^{th}, 0.50^{th}, and 0.75^{th}quantiles are reported in Table A1.

Source: Labor Force Surveys 2002-2013

Figure 3 shows wage premium by education level, occupation, firm size, and employment sector. Using LFS 2013 for gender-specific regressions evaluated at the average characteristics of all wage workers, female wage workers have lower hourly earnings across all educational levels. Highest wage inequality occurs at top educational level positions, even though the LFS 2013 indicates that there are more female wage workers than male among wage workers with higher education.

High wage inequality among the high education graduated is not a surprise because of their subject areas. The author found from the LFS 2013 that many female workers studied social science and business which tend to have lower return from education. For example, 55 percent of female workers with college or higher education studied social science and business but only 2 percent studied engineer, production, or construction. In contrast, 43 percent of male workers graduated with major degrees in engineer, production, or construction.

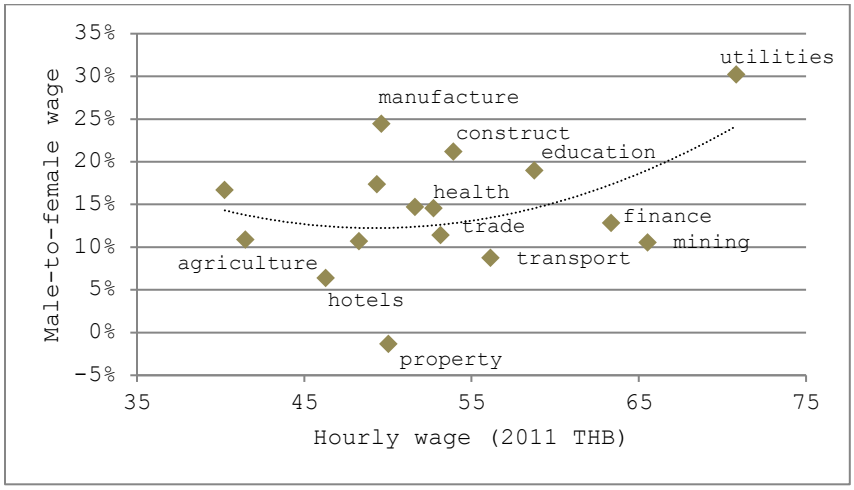
Figure 3: Wage premium by education level, occupation, firm size, and employment sector



Note: Conditional wage regressions by gender using average characteristics of all wage workers. The full models are reported in Table A2. The figure of wage premium by education is reproduced from Sondergaard et al. (2016).

Source: Labor Force Survey 2013

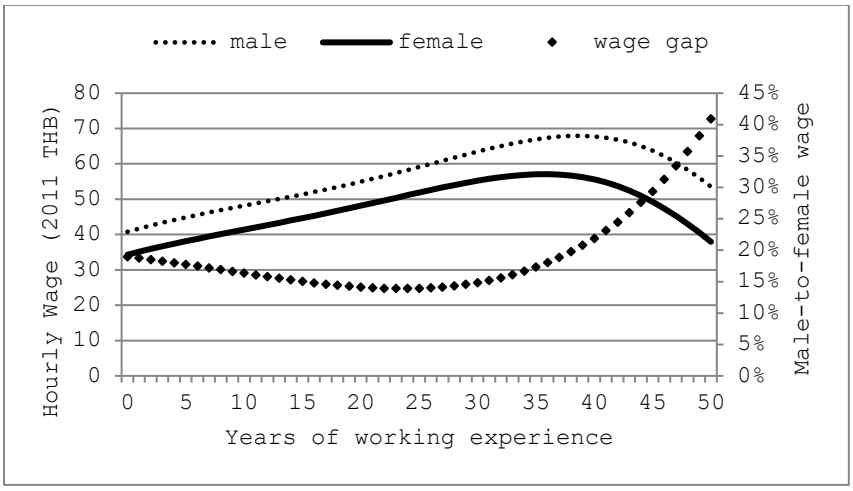
Figure 4: Wage gap and conditional hourly wage by sector



Note: Conditional wage regressions by gender using average characteristics of all wage workers. The averages are aggregated by sector. The full models are reported in Table A2.

Source: Labor Force Survey 2013.

Figure 5: Conditional hourly wage and wage gap by experience



Note: Conditional wage regressions by gender using average characteristics of all wage workers. The averages are aggregated by experience year. The full models are reported in Table A2. This figure is reproduced from Sondergaard et al. (2016).

Source: Labor Force Survey 2013

Occupation also contributes to gender wage inequality. Female with lower-skilled occupations face high gender wage inequality. In addition, female have lower wage for the quality occupations such as professionals or technicians/associate professionals too. Even earnings are almost the same for female and male with managerial occupations; female are underrepresented in these higher paid positions. The author found from the LFS 2013 that 68 percent of female wage workers have low-skilled occupations compared to 61 percent of male.

In Figure 3, wage inequality is lower in large firms which tend to have better standard approaches on remuneration and job promotion. Unfortunately, most wage workers are in smaller enterprises with less than 20 employees, which tend to have high gender wage gaps. In particular, the author found from the LFS data that 57 percent of female wage workers are in enterprises with sizes from 1 to 49 workers. On average, the female employed in these smaller firms received wage less than male by about 15 percent.

Female are also underrepresented in modern sectors that tend to have high gender wage inequality. From Figure 4, female wage workers received lower earnings than male in the high-paid sectors such as utilities, manufacturing, construction, and education sectors. Other things being equal, female have lower earnings than male at all levels of experience as shown in Figure 5.The gender wage gap is getting worse for the higher years of work experience which could be the inequality in career development, graduated areas of study, or motherhood contribution.

Wage decomposition: decreased wage gap mostly associated with the composition differentials

The Blinder-Oaxaca decomposition provides explanations on declined gender wage gap, especially with respect to work experience and education. Specifically, there is an increased role of education attributed to the composition differentials on the gender wage gap between 2002 and 2013.The *unconditional* wage difference between female and male in wage employment was declined from 0.114 log points (or 12 percent) to statistically insignificant 0.0027 log points (or almost zero percent). The decomposition of this gap reveals that the declined gap was entirely due to composition differentials attributable to education. This reflects the previously discussed findings on higher educational attainment of female wage workers.

Table 2: Oaxaca-Blinder Decomposition for Gender Wage Gap, 2002 and 2013

	2002		2013	
Unadjusted change	0.114***	(12.77)	0.0027	(0.34)
Composition differentials attributable to				
Work experience	0.0275***	(13.09)	0.0103***	(7.72)
Education	-0.0518***	(-12.85)	-0.106***	(-29.25)
Job (part/full time, private/public, firm size)	-0.0223***	(-9.69)	-0.0217***	(-14.40)
Industrial sectors	0.0189***	(7.03)	-0.00160	(-0.72)
Geographical location	-0.0190***	(-10.10)	-0.0202***	(-11.49)
Total explained by model	-0.0468***	(-7.16)	-0.139***	(-26.48)
Wage structure differentials attributable to				
Work experience	0.0591*	(2.09)	-0.0219	(-0.68)
Education	0.0230	(0.50)	0.0357	(1.33)
Job (part/full time, private/public, firm size)	0.0436	(1.43)	0.0485*	(2.11)
Industrial sectors	0.108***	(4.82)	0.0442	(1.91)
Geographical location	-0.0355*	(-2.17)	-0.0175	(-0.94)
Constant	-0.0374	(-0.54)	0.0523	(0.88)
Total wage structure - unexplained log wage gap	0.161***	(23.14)	0.141***	(21.63)
Observations	45,745		50,065	

Source: Labor Force Surveys 2002 and 2013

Note: Basic Oaxaca-Blinder Decomposition with standard errors in parentheses. Significant levels are based on the coefficient's *p*-value (* $p<0.05$, ** $p<0.01$, *** $p<0.001$).

It is difficult to determine attributes of the inequality components. Nevertheless, the main contribution in the wage structure differentials used to be industrial sectors and geographical location in 2002. It is possible that the minimum wage rate uniformly enacted in 2012 could partially reduce gender-based wage differentials.

Conclusion

This study addresses gender wage gap issues using the Thailand LFS data. First, this paper finds clear evidence that female continue to earn less than male on average, by 16%.The faster wage growth for female workers contributed to some convergence in wages, and this could be related to the increase in their skill level. For example, female employees have achieved greater levels of schooling (from an average of six years in 1986 to ten years in 2011), exceeding male employees (from an average of seven years of schooling in 1986 to nine years in 2011). However, female still earn less than male, even after controlling for socioeconomic and demographic characteristics.

Second, some female are worse off than others in terms of being paid less. This paper identifies several situations in which female are paid substantially below male. These are because of: (a)female with a higher education seem to suffer the larger gap: the gap is much larger on average, (b) female working in small firms face the larger gap, (c) Female with lots of experience also suffer a large gap.

Third, the paper also finds several reasons to be optimistic: (a) the overall gap has narrowed in recent years, with the primary driver of this gap being the improvements in education of female, (b) the gap has disappeared in some areas: e.g. large firms appear to have a gender balanced employment structure – and the wage gap is very small.

This study shows that improving in education for female is necessary but not sufficient to promote gender wage equality. The form of inequality still exists across labor market in different aspects.

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APPENDIX

Table A1. OLS and conditional quantile regression, 2002-2013

Dependent variable: natural log of hourly wage	OLS	Q(.25)	Q(.5)	Q(.75)
Female (relative to male)	-0.163***	-0.121***	-0.128***	-0.193***
	(-76.15)	(-44.30)	(-51.62)	(-49.96)
Year of work experience	0.0342***	0.0488***	0.0492***	0.0382***
	(24.56)	(24.29)	(30.16)	(15.78)
Year of work experience^2	-0.00122***	-0.00335***	-0.00256***	-0.000190
	(-10.02)	(-19.92)	(-18.58)	(-0.93)
Year of work experience^3	0.0000437***	0.0000969***	0.0000654***	-0.000000482
	(10.95)	(18.19)	(15.04)	(-0.07)
Year of work experience^4	-0.000000612***	-0.000000987***	-0.000000630***	-8.93e-08
	(-14.28)	(-17.64)	(-13.83)	(-1.31)
Primary education (relative to no education or some primary)	0.206***	0.0966***	0.0810***	0.219***
	(56.65)	(18.72)	(19.76)	(41.26)
Lower secondary education (relative to no education or some primary)	0.373***	0.182***	0.232***	0.464***
	(91.57)	(32.55)	(48.91)	(68.70)
Upper secondary education (relative to no education or some primary)	0.460***	0.253***	0.352***	0.586***
	(103.34)	(42.98)	(66.29)	(72.89)
Some college (relative to no education or some primary)	0.672***	0.335***	0.553***	0.979***
	(102.81)	(45.51)	(72.45)	(68.32)
College (relative to no education or some primary)	1.224***	0.382***	0.775***	2.078***
	(238.70)	(69.19)	(152.90)	(227.34)
Vocational (relative to basic educational programs)	0.109***	0.0670***	0.123***	0.269***
	(25.32)	(14.42)	(23.01)	(25.90)
Part-time (relative to full-time)	0.335***	0.239***	0.291***	0.466***
	(98.56)	(65.38)	(89.45)	(76.99)
Private employee (relative to Public employee)	-0.417***	-0.352***	-0.277***	-0.444***
	(-70.37)	(-50.80)	(-44.21)	(-40.90)
Fishing (relative to agricultural sector)	0.0742***	-0.00613	-0.0460***	-0.00692
	(5.89)	(-0.33)	(-3.81)	(-0.40)
Mining and quarrying (relative to agricultural sector)	0.396***	0.364***	0.191***	0.158***
	(19.58)	(14.56)	(8.62)	(4.33)
Manufacturing (relative to agricultural sector)	0.229***	0.348***	0.0975***	-0.0373***
	(47.59)	(54.45)	(20.97)	(-6.00)
Utilities (relative to agricultural sector)	0.473***	0.341***	0.176***	0.243***
	(32.29)	(29.30)	(13.74)	(9.34)
Construction (relative to agricultural sector)	0.283***	0.432***	0.110***	-0.0467***
	(59.35)	(62.40)	(22.95)	(-8.37)

Dependent variable: natural log of hourly wage	OLS	Q(.25)	Q(.5)	Q(.75)
Wholesale and retail trade (relative to agricultural sector)	0.268***	0.399***	0.138***	-0.0353***
	(53.79)	(59.46)	(28.11)	(-5.30)
Hotels and restaurants (relative to agricultural sector)	0.148***	0.191***	-0.0137*	-0.122***
	(24.03)	(21.38)	(-2.05)	(-13.20)
Transport, storage and communications (relative to agricultural sector)	0.325***	0.344***	0.222***	0.193***
	(41.73)	(39.90)	(28.57)	(14.22)
Financial intermediation (relative to agricultural sector)	0.495***	0.414***	0.251***	0.382***
	(55.86)	(53.55)	(34.45)	(23.96)
Real estate and renting (relative to agricultural sector)	0.194***	0.335***	0.0379***	-0.106***
	(25.98)	(35.56)	(4.64)	(-8.92)
Public administration (relative to agricultural sector)	0.0700***	0.291***	0.139***	-0.0675***
	(9.53)	(35.60)	(18.88)	(-4.96)
Education (relative to agricultural sector)	0.284***	0.399***	0.199***	0.0595***
	(40.81)	(51.73)	(28.83)	(4.43)
Health and social work (relative to agricultural sector)	0.222***	0.434***	0.248***	0.0166
	(26.57)	(49.89)	(30.65)	(1.10)
Other service activities (relative to agricultural sector)	0.154***	0.292***	0.0614***	-0.120***
	(19.60)	(27.10)	(6.78)	(-8.98)
Private households (relative to agricultural sector)	0.0634***	0.0508***	-0.0830***	-0.134***
	(7.50)	(3.49)	(-9.35)	(-12.34)
Firm size 5-9 (relative to 1-4)	0.00869*	0.0287***	0.0237***	-0.00556
	(2.14)	(4.78)	(5.57)	(-1.05)
Firm size 10-19 (relative to 1-4)	0.0551***	0.105***	0.0883***	0.0334***
	(12.52)	(16.37)	(18.54)	(5.48)
Firm size 20-49 (relative to 1-4)	0.133***	0.212***	0.178***	0.123***
	(27.46)	(31.57)	(32.24)	(15.42)
Firm size 50-99 (relative to 1-4)	0.187***	0.274***	0.193***	0.154***
	(34.46)	(37.92)	(28.80)	(14.91)
Firm size 100-199 (relative to 1-4)	0.197***	0.293***	0.188***	0.136***
	(36.63)	(40.61)	(28.93)	(14.71)
Firm size 200+ (relative to 1-4)	0.274***	0.341***	0.248***	0.236***
	(61.32)	(56.02)	(47.26)	(31.80)
Year 2003 (relative to 2002)	-0.00282	-0.00195	0.00108	-0.0251**
	(-0.58)	(-0.30)	(0.18)	(-2.92)
Year 2004 (relative to 2002)	-0.00352	-0.0146*	-0.00572	-0.0250**
	(-0.69)	(-2.16)	(-0.95)	(-2.80)
Year 2005 (relative to 2002)	-0.0266***	-0.0176**	-0.0250***	-0.0519***
	(-5.39)	(-2.74)	(-4.38)	(-6.18)
Year 2006 (relative to 2002)	-0.0361***	-0.00617	-0.0127*	-0.0636***

Dependent variable: natural log of hourly wage	OLS	Q(.25)	Q(.5)	Q(.75)
	(-7.60)	(-0.98)	(-2.24)	(-7.54)
Year 2007 (relative to 2002)	-0.0297***	0.00789	-0.0125*	-0.0863***
	(-6.18)	(1.23)	(-2.18)	(-10.17)
Year 2008 (relative to 2002)	-0.0486***	-0.00733	-0.0159**	-0.107***
	(-9.93)	(-1.12)	(-2.78)	(-12.57)
Year 2009 (relative to 2002)	-0.0511***	-0.00310	-0.0276***	-0.134***
	(-10.70)	(-0.48)	(-4.83)	(-15.77)
Year 2010 (relative to 2002)	-0.0331***	0.0231**	-0.0155*	-0.143***
	(-6.17)	(3.24)	(-2.46)	(-14.90)
Year 2011 (relative to 2002)	-0.0142**	0.0734***	0.0132*	-0.143***
	(-2.88)	(11.24)	(2.25)	(-16.08)
Year 2012 (relative to 2002)	0.0769***	0.153***	0.162***	-0.0443***
	(17.03)	(25.76)	(29.02)	(-5.18)
Year 2013 (relative to 2002)	0.147***	0.250***	0.308***	0.0351***
	(30.44)	(43.18)	(52.93)	(3.84)
Urban (relative to rural)	0.00731***	-0.0140***	0.00289	0.0238***
	(3.83)	(-5.68)	(1.19)	(5.91)
Central (relative to Bangkok)	-0.234***	-0.151***	-0.256***	-0.418***
	(-30.61)	(-15.87)	(-28.02)	(-36.23)
North (relative to Bangkok)	-0.377***	-0.434***	-0.396***	-0.411***
	(-42.09)	(-29.62)	(-36.80)	(-26.99)
Northeast (relative to Bangkok)	-0.635***	-0.604***	-0.491***	-0.508***
	(-35.21)	(-30.56)	(-39.23)	(-25.08)
South (relative to Bangkok)	-0.193***	-0.375***	-0.315***	-0.320***
	(-22.12)	(-23.35)	(-25.99)	(-18.30)
Constant	-0.1000***	0.166***	0.0194	-0.141***
	(-8.33)	(8.04)	(1.23)	(-6.52)
Number of observations	584,401	584,401	584,401	584,401
R-squared	0.623	0.347	0.430	0.504

Table A2. Gender-specific models of log wage regression in 2013

Dependent variable: natural log of hourly wage	Female	Male
Year of work experience	0.0250***	0.0233***
	(0.00691)	(0.00614)
Year of work experience^2	-0.000946	-0.00102
	(0.000569)	(0.000545)
Year of work experience^3	0.0000389*	0.0000415*
	(0.0000179)	(0.0000174)
Year of work experience^4	-0.000000584**	-0.000000564**
	(0.000000189)	(0.000000182)
Some primary education (relative to no education)	-0.0660**	-0.0375
	(0.0249)	(0.0238)
Primary education (relative to no education)	0.0676**	0.108***
	(0.0208)	(0.0212)
Lower secondary education (relative to no education)	0.265***	0.271***
	(0.0225)	(0.0209)
Upper secondary education (relative to no education)	0.338***	0.359***
	(0.0247)	(0.0217)
College (relative to no education)	0.987***	1.058***
	(0.0244)	(0.0240)
Vocational (relative to basic educational programs)	0.124***	0.142***
	(0.0146)	(0.0147)
Part-time (relative to full-time)	0.288***	0.353***
	(0.0151)	(0.0146)
Private employee (relative to public-employee)	-0.178***	-0.0955***
	(0.0212)	(0.0206)
Fishing (relative to agricultural sector)	0.0914	0.148***
	(0.0632)	(0.0383)
Mining and quarrying (relative to agricultural sector)	0.439***	0.436***
	(0.0925)	(0.0682)
Manufacturing (relative to agricultural sector)	0.123***	0.238***
	(0.0208)	(0.0205)
Utilities (relative to agricultural sector)	0.369***	0.530***
	(0.0624)	(0.0421)
Construction (relative to agricultural sector)	0.158***	0.247***
	(0.0298)	(0.0183)
Wholesale and retail trade (relative to agricultural sector)	0.244***	0.249***
	(0.0249)	(0.0260)
Hotels and restaurants (relative to agricultural sector)	0.146***	0.105***

Dependent variable: natural log of hourly wage	Female	Male
	(0.0230)	(0.0305)
Transport, storage and communications (relative to agricultural sector)	0.300***	0.280***
	(0.0344)	(0.0398)
Financial intermediation (relative to agricultural sector)	0.425***	0.442***
	(0.0325)	(0.0389)
Real estate and renting (relative to agricultural sector)	0.254***	0.138***
	(0.0292)	(0.0284)
Public administration (relative to agricultural sector)	0.187***	0.221***
	(0.0285)	(0.0262)
Education (relative to agricultural sector)	0.335***	0.406***
	(0.0259)	(0.0310)
Health and social work (relative to agricultural sector)	0.264***	0.296***
	(0.0287)	(0.0362)
Other service activities (relative to agricultural sector)	0.153***	0.151***
	(0.0447)	(0.0300)
Private households (relative to agricultural sector)	0.00778	0.0589
	(0.0291)	(0.0890)
Firm size 5-9 (relative to 1-4)	-0.0251	-0.0204
	(0.0197)	(0.0175)
Firm size 10-19 (relative to 1-4)	0.00950	0.0324
	(0.0233)	(0.0225)
Firm size 20-49 (relative to 1-4)	0.0719**	0.0681**
	(0.0219)	(0.0224)
Firm size 50-99 (relative to 1-4)	0.146***	0.122***
	(0.0234)	(0.0265)
Firm size 100-199 (relative to 1-4)	0.197***	0.115***
	(0.0209)	(0.0231)
Firm size 200+ (relative to 1-4)	0.268***	0.171***
	(0.0191)	(0.0200)
Urban (relative to rural)	0.0349***	0.0473***
	(0.00806)	(0.00868)
Constant	3.159***	3.211***
	(0.0441)	(0.0405)
Number of observations	23,191	26,874
R-squared	0.622	0.564

Note: Standard errors are in parentheses with * $p<0.05$, ** $p<0.01$, *** $p<0.001$. The provincial variables are not reported.