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Analysis of Glass Ceiling and Sticky Floor Effects for Gender Wage Gap in Malaysian Labour Market

(Analisis Kesan Kekangan di atas dan Kesan Kekangan di bawah bagi Jurang Upah Jantina dalam Pasaran Buruh di Malaysia)

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ABSTRACT

Most past studies of gender wage differentials estimate wage models using the entire sample for different gender groups. The estimated coefficients are then used in wage decomposition formula to identify the contribution of variables to the wage gap. However, quantile regression is preferred nowadays as it allows the regressors to be associated with the shape of wage distribution, whereby the glass ceiling and sticky floor effects can be identified. This paper attempts to examine the extent to which the glass ceiling and sticky floor effects exist across wage distribution in the Malaysian labour market. The analysis is based on 1263 workers data in the services and manufacturing sectors surveyed in 2015. The results demonstrate that the gender wage gaps are larger towards the lowest wage distribution, a finding that is consistent with the existence of sticky floor effect. Besides, the gender earnings gap is lower between 25th and 50th percentiles, but increases at the 75th percentile and reaches the highest at the 90th percentile reflecting the existence of glass ceiling effect.

Keywords: Glass ceiling; sticky floor; gender wage gap; wage distribution; quantile regression

ABSTRAK

Kebanyakan kajian lepas tentang perbezaan upah jantina menganggar model upah dengan menggunakan keseluruhan sampel bagi jantina yang berbeza. Nilai koefisien yang dianggar ini kemudiannya digunakan dalam formula penguraian upah bagi mengenalpasti sumbangan pemboleh ubah terhadap perbezaan upah. Walau bagaimanapun, kini kaedah regresi kuantil lebih diutamakan kerana penganggar-penganggarnya diukur mengikut bentuk agihan upah, di mana kesan kekangan di atas dan kesan kekangan di bawah dapat dikenalpasti. Kajian ini bertujuan untuk mengenalpasti tahap kewujudan kesan kekangan di atas dan kesan kekangan di bawah merentasi agihan upah dalam pasaran buruh di Malaysia. Analisis dilakukan berdasarkan kepada data 1263 pekerja dalam sektor perkhidmatan dan sektor pembuatan yang telah dikutip pada 2015. Kajian mendapati bahawa jurang upah jantina adalah lebih besar di bahagian terbawah agihan upah, dan ianya selari dengan kewujudan kesan kekangan di bawah. Selain itu, jurang upah jantina adalah lebih kecil di antara persentil ke-25 dan ke-50, tetapi meningkat pada persentil ke-75 dan seterusnya mencapai tahap tertinggi pada persentil ke-90 yang menggambarkan kewujudan kesan kekangan di atas.

Kata Kunci : Kekangan di atas; kekangan di bawah; jurang upah jantina; agihan upah; regresi kuantil

INTRODUCTION

Over the last few decades, rapid economic transition has led to an increase in the participation of women in economic activity. This phenomenon also gives significant impact on the labour market as both men and women have an equal opportunity to enter the labour market. Although the ability and the participation of women are acknowledged, the issues of gender wage gap still remain to be of interest among scholars all around the world. To analyse the issue of gender wage differentials, one should employ the approach from the perspective of income distribution since the disadvantaged women may be largely crowded into the lower quantile of income distribution due to their greater role in performing household responsibility, and their association with the workplace at which they are segregated into lower-pay occupation following job market discrimination. On the same ground of reasoning, female workers may be granted the access to high-pay occupational category following their increasing level of educational attainment, and the declining discrimination effect practised on them when they manage to secure a stereotypically female-suited job dominated by females. Such a speculation renders rationale for analysing gender wage gap along income distribution. Meanwhile, Smith (2012) examined a wide range of theories about glass ceilings and found that the the majority of explanations for glass ceilings cite

stereotypes and discrimination against women. Quantile regression allows researchers to examine the gender wage gap across the wage distribution and hence, the wage gap could be analysed at selected points of the conditional wage distribution.

The gender wage gap shows a glass ceiling effect and sticky floor effect in different countries with different economic systems, occupations and enterprise ownership. For example, Newell and Reilly (2001) discovered that the gender pay gap has risen across the wage distribution in former communist countries of Eastern Europe and the Soviet Union. Similarly, Albrecht et al. (2003) showed that in Sweden, the gender wage gap increased across the wage distribution and was larger in the upper tail of the distribution. This can be explained as the glass ceiling effect. Machado and Mata (2001) found that the gender wage gap was wider for high-paid jobs in the Portugese labour market. Albrecht et al. (2003) showed that strong glass ceiling effect existed in the Swedish labour market. Hiau (2006) compared the gender wage gap within public and private sectors in Australia and he detected strong glass ceiling effect only in the private sector. Besides that, Arulampalam et al. (2007) also found that for most countries in Europe, glass ceiling effect was more prevalent than sticky floors in explaining the gender wage gap.

In the developing countries, there are studies that deal with the gender wage gap and find mixed results. For example, Hyder and Reily (2005) found that in the Pakistan labour market the private sector had a larger gender wage gap than the public sector. Meanwhile, study in Sri Lanka by Gunawardena (2006) showed the existence of a sticky floor effect in both private and public sectors. This finding is supported by a study by Sabir and Aftab (2007) showing the existence of sticky floor effect in the Pakistan labour market, whereby the gender wage gaps were observed at the lower wage distribution. Other studies also provide evidence of sticky floor effect in their respected countries, such as Sakellariou (2004), Gunawardena (2006) and Fang and Sakellariou (2011) for Singapore, Sri Lanka and Thailand, respectively.

In Malaysia, statistics from the Ministry of Human Resources [MOHR] (2016) show that the proportions of females (i.e. 27.2 percent) employed in the high-pay skilled occupational category as managers, professionals, technicians and associate professionals, are slightly higher than that of the males (i.e. 24.4 percent). This scenario is somewhat consistent with the females' outperformance in terms of highest educational qualification attainment over the males. There are 34.4 percent of female workers who have possessed at least the STPM or A-level equivalence certificates, while only 22.6 percent of male workers have possessed these qualifications.

However, higher proportions of female (i.e. 46.1 percent) have also been crowded into the lower-pay semi-skilled occupational category as clerical support workers, and service and sales workers, compared to only 22.5 percent of males holding these positions. This scenario is somewhat inconsistent with females' educational outperformance over the males, and it gives rise to the concern if females had been adequately rewarded according to their educational attainment. Perhaps, it is the females' choice for entering these jobs since they are mainly feminine in nature and more female-suited. In a nutshell, whether the over representation of female (male) workers in the female (male)-dominated feminine (masculine) jobs in Malaysia is a matter of personal choice or job market discrimination, it is certainly explicit that gender occupational segregation does exist in Malaysian labour market. This scenario may create anxiety over the possibility of inflicting gender wage differentials.

The existence of sticky floor or glass ceiling phenomenon may affect income distribution as a whole. For example, female workers in Malaysia are still unfairly treated, causing them to earn less than their male counterparts. Salaries and wages survey report from the Department of Statistics [DOS] (2016) further shows that the mean monthly salaries in 2015 for male workers (i.e. MYR2,345) are still higher than female workers (i.e. MYR2,254), despite the fact that higher annual growth rate in salaries is registered among the females (i.e. 5.9%) than it is among the males (i.e. 4.9%). The gender wage gap may influence income inequality in Malaysia which shows an unstable trend. For example, the Gini coefficient fluctuated between 1970 and 2014. Even though Malaysia experienced a drop in Gini coefficient from 0.513 in 1970 to 0.401 in 2014, it is still considered high.

In Malaysia many previous studies prove that women consistently earn less than men (see Chua 1984; Chapman & Harding 1986; Lee & Nagaraj 1995; Low & Goy 2006 & Fernandez 2006; Rahmah & Idris 2012). However, these studies adopt wage decomposition method in looking at determinants of gender wage differentials including discrimination. Studies looking at the gender wage gap using quantile regression are rarely found in Malaysia, with the exception for Wan Liyana et al. (2016). Their findings show the existence of the sticky floor and glass ceiling effects in the Malaysian labour market. However, their analysis was based on the labour market scenario in 2009 and 2012 before the compliance with the Minimum Wages Order 2012 was officially made legitimate starting from Jan 1, 2014. Gender wage gap could have been narrowed since then. Therefore, this study tries to fill up the gap in the literature by looking at gender wage ga using quantile regression based on the labour market outcomes in 2015.

This paper attempts to analyse the extent to which the gender wage differentials exists in Malaysia and the extent to which the sticky floor and glass ceiling effects influence the differences. The paper is organised into five

sections. The next section discusses the literature review followed by the methodology in the subsequent section. The last two sections include the discussion on the results and the conclusion.

LITERATURE REVIEW

Basically, Becker (1971) taste of discrimination and Mincer (1974) human capital model have been used as benchmark for researchers to study the gender wage differentials. Most of the past studies used Ordinary Least Square (OLS) procedure to run regression models to analyse the gap. However, recent development on these issues have used quantile regression approach developed by Koenker and Bassett (1978). Following these studies, it is noticed that an enormous number of literature has adopted quantile regression methodology and extended the discussion of the glass ceiling and sticky floor effects for various countries. For instance, studies by Buchinsky (1998, 2001) have proven the relevance and appropriateness of using the quantile regression method to study various issues of the labour market in the United States. Meanwhile, de la Rica et al. (2008) also found the occurrence of sticky floor effect in the less educated group, while the glass ceiling effect was more prevalent at tertiary education level. This is consistent with the wage distribution whereby the less educated workers are more likely to be at the lower wage distribution and the more educated group will be earning at the upper wage distribution. Beside the cross section studies, there have been studies that investigate the wage distribution across time. Amongst those studies are Nestic (2007) and Chi and Li (2008). Based on 1987, 1996 and 2004 data, it has been shown that the gender pay gap in Chinese labour market has increased along the wage distribution over time and the increase was greater at the lower quantiles, reflecting the sticky floor effect (Chi & Li 2008).

Fang and Sakellariou (2015) investigated the pattern of gender wage differentials in Asian and Latin American countries. They found that in Latin American countries glass ceilings are prevalent, but no clear evidence of glass ceilings has been found in the group of Asian countries where, generally, sticky floors or a mixed pattern are the norm. The findings are robust with as well as without occupation controls. In addition, analysis by sector points to glass ceilings in the public sector in most countries, while in the private sector the patterns vary. A study in a less developed country was conducted by Thundrayan and Pydayya (2015) in the Mauritian labour market. The results revealed that sticky floors were more pronounced than glass ceilings over the years 2006-2013. Further, for the years 2008, 2010 and 2012, it is noted that at the 75th quantiles, the gender wage differentials started to rise showing glass ceiling effects.

Based on the responses from working women in different industries of Riyadh, Saudi Arabia, Abdulrahman (2016) examined if organisational injustice and work/life balance issues considerably affect career advancement among women in the form of glass ceiling effect. Besides, he also studied if both organisational injustice and work/life balance issues lead to an increase in the turnover intention among women due to managerial pressure for the specific job tasks in the form of glass cliff. The results of binary-logit regression for glass cliff effect confirmed that work/life balance issues, marital status, women job experience, and income are the main contributing factors that affect career advancement among women.

In the Malaysian context, the existing literature about the gender earnings differentials are quite limited. A pioneer study examining this issue is by Chua (1984) in which the findings suggested the existence of discrimination against Malay and non-Malay female workers in rural areas. However, Chapman and Harding (1985) failed to investigate the existence of discrimination within the gender wage gap, although they found that women earned considerably less than men due to differences in skills, causing women to be usually employed in low-paying occupations. Other studies which found the existence of discrimination are Lee and Nagaraj (1995), Latifah (1998, 2000), Rahmah and Idris (2012), and Seshan (2013). On the contrary, Rahmah and Zulridah (2005) concluded that, instead of discrimination, demographic factors and human capital variables were the main causes of gender wage differentials in the manufacturing sector in Malaysia. In the case of Malaysia, Nagaraj et al. (2002) reported that the full-time employed male workers earned 1.3 times higher than their female counterparts.

The existence of glass ceiling effect and sticky floor effect in Malaysia has also been debated among researchers. However, most of the studies provide evidence from the management perspective only. For example, Norma et al. (1991), Koshal et al. (1998), Zubaidah et al. (2009), and Dimovski et al. (2010) concluded that women managers in Malaysia experienced glass ceiling effect in their working environment as they faced difficulties to be promoted to the upper level. They also concluded that, gender discrimination, lack of recognition, insufficient organisational support (networking and mentoring) and limited opportunities were the major determinants which triggered the glass ceiling effect. Subsequently, Wan Liyana et al. (2016) also found both glass ceiling and sticky floor effects in the Malaysian labour market. However, the impact of sticky floor was said to be greater than the glass ceiling. In addition, Sieh and Ong (1995) stated that quality differences between men and women should be fairly recognised to increase the organisation productivity and they also concluded that organisational supports were indeed important for women to advance themselves towards higher positions.

METHODOLOGY

In achieving the objective of this paper, two underlying theoretical frameworks are employed; statistical discrimination theory (Phelps 1972; Arrow 1973) and taste-based discrimination theory (Becker 1971). The statistical discrimination theory postulates that employers are unable to observe workers' real productivity due to insufficient information. Hence, they are paid according to the conditional expectation on certain observable characteristics, such as gender, race and so on. It depicts that, regardless of men and women, they experience similar distribution of productive characteristics. Nonetheless, skilled men would earn more than identically skilled women due to discrimination.

On the other hand, taste-based discrimination signifies the employer's distaste for the minority workers, causing them to receive lower wage for an equivalent productivity (Becker 1971). Therefore, the greater the employers' distaste for female workers, the wider will be the wage gap. This could lead to prejudice to exist during hiring process and promotion procedures (Baron & Cobb-Clark 2011; Booth et al. 2003). Sticky floor exists at the hiring process when women receive relatively low starting wage as compared to men. It is defined as a situation where women workers remain at the low-level positions without adequate wages (Nestic 2007). On the other hand, the glass ceiling occurs at the promotion procedures whereby men are likely to secure a high-paid job as compared to women (Fang 2012). Both situations are related to discrimination theory.

The estimation model used in this study is based on quantile regression technique. Let (y_i, x_i), $i = 1, 2, \ldots, n$ is the population sample, whereby y_i is the dependent variable. Meanwhile, x_i is a kx1 vector of regressors, for the θ-th quantile of y_i conditional on the regressor vector x_i. Thus, the relation is written as:

$$y_i = x_i'\beta_\theta + \mu_{\theta i} \text{ with } Quant_\theta\left(\frac{y_\theta}{x_i} = x_i'\beta_\theta\right) \quad (1)$$

$\mu_{\theta i}$ denotes an unknown independent and identical distributed error term. According to the classical linear regression model, the normal distribution of the unknown error is specified. Nonetheless, within this particular context, the error term $\mu_{\theta i}$ is left unspecified. Therefore, the only requirement is to satisfy the constraint of:

$$Quant_\theta\left(\frac{y_\theta}{x_i} = x_i'\beta_\theta\right) = 0 \quad (2)$$

It is assumed that no other distributional assumption is to be incorporated in this model. Hence, the estimator for β_θ of the θ-th quantile regression, is formed by solving:

$$\hat{\beta}_\theta = \underset{\beta_\theta}{\text{argmin}} \left[\sum_{i:y_i > x_i'\beta_\theta} \theta / y_i - x_i'\beta_\theta + \sum_{i:y_i < x_i'\beta_\theta} (1-\theta) / yi - x_i'\beta_\theta \right] \quad (3)$$

It is noted that $0 < \theta < 1$, whilst β_θ which minimises the sum of weighted residuals is chosen to obtain the estimator for the θ-th quantile. For a negative residual, the weight is $(1 - \theta)$, in contrast, for a positive residual, the weight is θ. An advantage of quantile regression technique is that it enables the estimation of the marginal effect of a covariate on log earnings at various points in the distribution, not limited to the mean level. Therefore, this technique enables estimation of the effect of gender, education, occupation, industry and all other controlled variables on log wage – for instance at 90th percentile, 50th percentile and 10th percentile. The coefficient β_θ denotes the estimated returns to individual characteristics at the θ-th quantile of the log wage distribution. Henceforth, if the wage gap is wider at the upper end of earnings distribution, it shows the glass ceiling effect. In contrast, earnings gap which is wider at the bottom end of the distribution suggests a sticky floor effect (Nestic 2007).

MODEL SPECIFICATION

The Mincer earnings model (1974) is used as a basic model for the analysis in this paper. Most studies in the past have two separate wage models for males and females. But in this analysis, the dummy variable for gender is incorporated into the wage model as one of the independent variables to capture its coefficient for gender wage differentials. The estimation model is written as follows:

$$\begin{aligned} \ln W_i = {} & \beta_0 + \beta_1 EDU_i + \beta_2 EXP_i + \beta_3 EXP_i^2 + \beta_4 JS_i \\ & + \beta_5 JM_i + \beta_6 SEC_i + \beta_7 GEN_i + \beta_8 TECHTRN_i \\ & + \beta_9 MANTRAN_i + \beta_{10} KRKTRN_i + \beta_{11} SEL_i \\ & + \beta_{12} JOR_i + \beta_{13} MEL_i + \beta_{14} PHG_i + \beta_{15} PRK_i \\ & + \beta_{16} KL_i + \beta_{17} PP_i + \mu \end{aligned} \quad (4)$$

Where lnW is logarithm of monthly wage rate, EDU is years of schooling, EXP is years of working experience, EXP^2 is years of working experience squared, JS is the dummy variable for job status (permenant=1, contract=0), JM is the dummy variable for job mode (full-time=1, part time=0), SEC is the dummy variable for sector (service=1, manufacturing=0), GEN is the dummy variable for gender (males=1, females=0), TECHTRN is the dummy variable for technical training attendance (attended technical training=1, otherwise=0), MANTRN is the dummy variable for management training attendance (attended management training=1, otherwise=0), MRKTRN is the dummy variable for marketing training attendance (attended marketing training=1, otherwise=0). In this study otherwise training is production training and other kinds of training. SEL is the dummy variable for Selangor state (Selangor=1, otherwise=0), JOR is the dummy variable for Johor state (Johor=1, otherwise=0), MEL is the dummy variable for Melaka state (Melaka=1, otherwise=0), PHG is the dummy variable for Pahang state (Pahang=1, otherwise=0), PRK is the dummy variable for Perak state

(Perak=1, otherwise=0), KL is the dummy variable for Federal Territory of Kuala Lumpur (Federal Territory of Kuala Lumpur=1, otherwise=0), PP is dummy variable for Penang state (Penang=1, otherwise=0). In this study the otherwise state is Terengganu. i is the i^{th} individual.

SOURCE OF DATA

The analysis in this paper is based on the data obtained from a field survey using a set of structured questionnaire. In choosing the minimum sample size, method introduced by Israel (1992) was utilised. The information on the sampling frame was provided by the Labour Force Survey Report, Department of Statistics Malaysia, 2013. The respondents were chosen using proportionate stratified sampling technique. The study covers eight states in Peninsular Malaysia; North (Penang and Perak), East (Pahang and Terengganu), West (Selangor, Federal Territory of Kuala Lumpur and Melaka) and South (Johor). The reasons for choosing these states are based on the notion where their households percapita income are quite similar that they represent variations in four zones, which is commonly used in other studies in Malaysia. The study covers only two sectors – services and manufacturing sectors. These sectors are chosen based on their high contribution towards generating Malaysian national income and creating employment. Only five prominent services subsectors were chosen, which are education, information and communication technology (ICT), tourism, finance and health. The sample covers 612 workers in the services sector, which comprise of 116 in education, 124 in health, 108 in finance, 78 in ICT and 186 in tourism; while 651 workers were sourced from the manufacturing sector. Data collection was carried out from February to June 2015 with the help of enumerators. A pilot test on 20 respondents in Selangor and Federal Territory of Kuala Lumpur was performed to test the validity of instrument used in the study. Based on the results of reliability test, the Cronbach's Alpha for all constructs are at least 0.7, which reflect that instruments used in the questionnaire have high value of reliability and are fit to be used in the study.

RESULTS

PROFILE OF RESPONDENTS

Table 1 presents profile of respondents. The distribution of respondents by gender is almost the same and majority of them have tertiary level of education. The state of Selangor consists of the highest percentage of respondents, followed by Johor, Perak and Pulau Pinang. Even though respondents with tertiary level of education are at highest percentage, majority of

TABLE 1. Profile of Respondent

Profile	Frequency	Percent(%)
Gender		
Male	570	45.1
Female	693	54.9
Total	1263	100.0
Level education		
Primary	11	1.1
Secondary	412	32.6
Tertiary	837	66.3
Total	1263	100.0
State		
Selangor	335	26.5
Pulau Pinang	164	13.0
Johor	278	22.0
Federal Territory of Kuala Lumpur	54	4.3
Perak	208	16.5
Terengganu	42	3.3
Melaka	118	9.3
Pahang	64	5.1
Total	1263	100.0
Monthly salary		
Below 1000	244	19.3
1001 – 2000	562	44.5
2001 – 3000	238	18.8
3001 – 4000	98	7.8
4001 – 5000	54	4.3
5001 – 6000	19	1.5
6000 an above	48	3.8
Total	1263	100.0
Work experience		
< 5 years	628	49.7
6 – 10 years	323	25.6
11 – 15 years	143	11.3
16 – 20 years	84	6.6
21 – 25 years	44	3.5
26 – 30 years	21	1.7
31 – 35 years	12	0.9
35 years and above	9	0.7
Total	1263	100
Job status		
Permanent	1094	86.6
Contract	169	13.4
Total	1263	100
Job Mode		
Full time	1216	96.3
Partime	47	3.7
Total	1263	100
Sector		
Services:		
Education	116	9.2
Communication	78	6.2
Health	124	9.8
Finance	108	8.6
Tourism	186	14.7
Manufacturing	651	51.5
Total	1263	100
Attended Training*		
Technical	351	37.1
Production	72	7.6
Marketing	159	16.8
Management	365	38.5
Total	947	100

Source: Field Survey 2015

*Note:** the total represents number of respondents who had ever attended training and types of training is the first training attended.

them receive monthly wage of less than RM3000. Less than 20 percent receive more than RM3000 per month. Therefore by definition, most of them receive wage level resembling that earned by the bottom 40 percent (B40) household in Malaysia (B40 household earns RM3800 and below according to EPU, 2014). This scenario may be associated with their lacking in working experience, where half of them have working experience of less than 5 years. Most of them work as permanent and full-time workers and about 51 percent are in the manufacturing sector. The management and technical trainings are shown to be more frequently attended by the respondents compared to the production and marketing trainings.

It has always been perceived that wage received by workers is closely associated with their level of education and occupational categories, which is supported by the human capital theory (Shultz, 1963; Becker, 1964). Thus, wage distribution by these two characteristics is worth studied. In Table 2, it is shown that the percentage of females with tertiary level of education is slightly higher than the males. In contrast, the percentages of females with secondary and primary level of education are lower than the males. In Table 3, the percentage of females holding the managerial and professional jobs is also higher than the males. However, the percentage is lower at the technical and supervisory jobs for females. Based on these two tables, we do perceive that the females will receive higher wages than the males. However, our data shows that, on average, males receive higher monthly wage compared to females (RM2,495 compared to RM 2,347). This implies the existence of discrimination in the wage paid.

Table 4 shows descriptive statistics of the variables used in the model. On average, the respondents have 13.6 years of schooling and 7 years of working experience. About 87 percent of the respondents are permanent workers and 96 percent work as full timer. About 48 percent are involved in the services sector and the remaining 52 percent are in the manufacturing sector. About 45 percent of them are males and 55 percent are females. Majority of the respondents (75 percent) had attended training that consists of various types, such as technical, production, marketing and management. About 26.6 percent of the respondents reside in Selangor, 22 percent in Johor, 9.6 percent in Melaka, 4.8 percent in Pahang, 16.5 percent in Perak, 4.2 percent in Wilayah Persekutuan Kuala Lumpur and 13.0 percent in Penang, the remaining 3.3 percent live in Terengganu.

TABLE 2. Education Attainment by Gender

Level of Education	Gender	
	Male	Female
Primary	25 (4.4)	21 (3.0)
Secondary	238 (41.9)	267 (38.4)
Tertiary	305 (53.7)	407 (58.6)
Total	568 (100.0)	695 (100.0)

Source: Field Survey 2015

TABLE 3. Occupational Category by Gender

Occupational Category	Gender	
	Male	Female
Manager And Professional	151 (26.6)	222 (31.9)
Technical And Supervisory	265 (46.7)	191 (27.6)
Clerical Support Workers	99 (17.4)	197 (28.3)
Service And Sales Workers	53 (9.3)	85 (12.2)
Total	568 (100.0)	695 (100.0)

Source: Field Survey 2015
Note: Job category based on Malaysia Standard Classification on Occupation, MSCO 2008

TABLE 4. Descriptive Statistic

Variable	N	Mean	Std. Deviation
Sch	1263	13.591	2.477
Exp	1263	7.997	7.151
Exp2	1263	115.050	215.315
JS	1263	0.867	0.340
JM	1263	0.964	0.185
Sec	1263	0.484	0.500
Gen	1263	0.450	0.498
TechTran	1263	0.370	0.483
MarkTran	1263	0.168	0.374
MangTran	1263	0.385	0.486
SEL	1263	0.266	0.442
JOR	1263	0.220	0.414
MEL	1263	0.096	0.294
PHG	1263	0.048	0.214
PRK	1263	0.165	0.371
KL	1263	0.042	0.200
PP	1263	0.130	0.336
lnW	1263	7.540	0.600

Source: Field Survey 2015

ESTIMATION RESULTS

Table 5 presents the estimation results. As a benchmark for our quantile regression results, an OLS estimation has also been presented. The effects of all covariates on wage distribution are assumed to have only location shifts when the wage model is estimated using OLS, while quantile regression assumes location shifts as well as the change in scale and shape of the conditional wage distribution (Liew & Zulridah 2015). The Pseudo R^2 are around 0.235

TABLE 5. Result for OLS and Quantiles Regression Estimates

Variable	OLS Estimates	VIF test	Quantiles Regression Estimates				
			0.1	0.25	0.5	0.75	0.9
Constant	4.509 (36.84)***		4.632 (35.51)***	4.548 (56.54)***	4.767 (46.01)***	4.674 (34.81)***	5.108 (18.04)***
EDU	0.139 (24.87)***	1.44	0.098 (16.13)***	0.122 (30.90)***	0.139 (29.37)***	0.151 (23.76)***	0.147 (10.31)***
EXP	0.047 (10.12)***	8.15	0.037 (6.07)***	0.037 (11.30)***	0.038 (7.78)***	0.054 (11.23)***	0.067 (6.27)***
EXP2	-0.0056 (-3.64)***	8.18	-0.0004 (-2.69)***	-0.0004 (-4.06)***	-0.00027 (-1.74)*	-0.0006 (-3.93)***	-0.0009 (-2.62)**
JS	0.042 (1.12)	1.19	0.003 (0.01)	0.023 (0.85)	0.096 (2.54)***	0.094 (2.46)**	0-0.031 (-0.41)
JM	0.356 (5.34)***	1.13	0.327 (3.72)***	0.296 (6.13)***	0.225 (3.31)***	0.233 (3.47)***	0.232 (1.98)**
SEC	0.079 (2.95)***	1.41	0.001 (0.01)	0.056 (2.89)***	0.111 (4.02)***	0.140 (4.76)***	0.157 (2.67)***
GEN	0.102 (4.16)***	1.12	0.127 (3.86)***	0.103 (5.65)***	0.078 (3.10)***	0.094 (3.60)***	0.133 (2.55)**
TECHTRAN	0.058 (2.29)**	1.13	0.063 (1.78)*	0.078 (4.11)***	0.065 (2.52)***	0.051 (1.90)*	0.010 (1.87)*
MANGTRAN	0.094 (3.53)***	1.25	0.065 (1.95)**	0.102 (5.06)***	0.120 (4.41)***	0.093 (3.32)***	0.135 (2.30)**
MARKTRAN	0.092 (2.82)**	1.12	0.021 (0.54)	0.062 (2.58)**	0.067 (2.00)**	0.110 (3.01)***	0.070 (0.99)
SEL	0.363 (5.19)***	7.16	0.551 (6.20)***	0.456 (8.99)***	0.163 (2.28)***	0.267 (3.56)***	0.091 (0.64)***
JOR	0.190 (2.63)***	6.43	0.454 (4.94)***	0.349 (6.70)***	0.025 (0.35)	0.052 (0.70)	-0.120 (-0.82)
MEL	0.514 (6.54)***	4.01	0.394 (3.85)***	0.418 (7.24)***	0.265 (3.30)***	0.470 (5.61)***	0.727 (4.48)***
PHG	0.501 (5.87)***	2.51	0.568 (5.00)***	0.529 (8.46)***	0.327 (3.75)***	0.433 (4.93)***	0.333 (2.06**
PRK	0.130 (1.81)**	5.35	0.282 (2.99)***	0.179 (3.32)***	-0.067 (-0.92)	0.062 (0.83)	-0.010 (-0.07)
KL	0.325 (3.75)***	2.27	0.627 (5.99)***	0.432 (6.71)***	0.121 (1.36)	0.101 (1.13)	-0.026 (-0.14)
PP	0.302 (4.11)***	4.58	0.588 (6.11)***	0.466 (8.58)***	0.151 (2.02)**	0.150 (1.92)**	-0.016 (-0.11)
R^2	0.5330						
Pseudo R^2			0.235	0.326	0.376	0.388	0.380
Heteroscedasticity White test	43.80011						
Prob. Chi-Square	0.6455						
N	1263		1263	1263	1263	1263	1263

Note: ***, **, and * denote significance at 1% , 5%, and 10% level. Upper value is the coefficient value, while the value in bracket is the t-statistics. Interpretation of the coefficients takes the exponential values of coefficients since the model is in semilog. The formula used is written as where β is the coefficient.

to 0.388 for the quantile regression estimation and 0.533 for the OLS estimation, which imply a good fit for the cross section data. The values of *Variance Inflation Factor* (VIF) test are less than 10 which indicate the non-existence of multicolinearity problem. The White-test is used to check for heteroscedasticity problem. The statistically insignificant Chi-square implies non-existence of heteroscedasticity problem.

OLS ESTIMATIONS

The second column of Table 5 reports the least-squares estimates of monthly wage. We find that all variables except job status are significant at 1% and 5% significance levels. The OLS estimations show that years of schooling affects the monthly wages positively and significantly. This reflects that an increase in years of schooling, *ceteris paribus*, will increase monthly wages for about 14.9 percent. Years of working experience is also a significant determinant for monthly wage but the monthly wage will increase at a decreasing rate as shown by the negative sign of experience squared, Exp^2.

Comparing between two categories of job mode, it is noticed that a full-time worker receives higher wages than a part-time worker. Analysis by job sectors shows that the wages of workers in services sector, i.e, education, communication, health, finance and tourism, are significantly higher compared to the manufacturing sector. Moreover, the significance of the coefficient for gender dummy also shows that monthly wages of male workers are always higher than female workers by 10.7 percent. This finding gives view that wage discrimination against female workers may exist in Malaysia. On the other hand, workers who attended technical training, management training and marketing training seem to receive higher wages for about 6.0 percent, 9.8 percent and 9.6 percent respectively compared to workers who attended production training and others. This reflects that production training is a less important determinant of workers wage. However, the insignificant coefficient for job mode indicates that, regardless of whether the job is permanent or contract, it simply does not significantly affect the monthly wages received by the workers. Furthermore, the results also show that workers in Terengganu receive a significantly lower wage compared to those who work in other states covered under study.

Although most of the estimated coefficients are highly significant following the expected signs, the results only provide an estimate of the monthly wage at the mean value which may not be representative of the entire distribution. Hence, quantile regression is more appropriate in analysing the conditional distribution of the dependent variable and therefore, further information about the wage equation in all different levels of wage groups can be determined.

QUANTILE REGRESSION ESTIMATIONS

Table 5 also presents the regression estimates for five different quantiles, which are 0.10, 0.25, 0.50, 0.75 and 0.90, of the monthly wage distributions. As stated earlier, the purpose of this study is to investigate gender wage gap across the conditional wage distribution. From Table 5, we can observe that the coefficients for gender variable are significant across the distribution, which show that the male workers receive a higher wage than female workers. In other word, female workers are at the disadvantaged position as compared to their male counterpart across the five quantiles. The results also show that male workers in the lower income group (0.10) receive 13.5 percent higher wages than the female workers. The gender wage gap are larger at the lowest quantile and at the highest quantile of wage distribution compared to the middle quantiles. In other word, there exists the sticky floor and glass ceiling effects. In fact, the glass ceiling effect is slightly higher than the sticky floor effect.

Our findings are consistent with Wan Liyana et al. (2016), who also found the existence of sticky floor and glass celing effects in the Malaysian labour market in 2009 and 2012. Concurrently, the wage gap seems to be decreasing starting from 0.25 to 0.5 quantile. This could be due to lower extent of discrimination occurred at the middle level of education, while workers are facing quite similar job characteristics. Nevertheless, the gender wage gap starts to increase from the 0.75 quantile and reaches its highest at the 0.9 quantile. This may be due to different treatment by gender at the upper level of skills and level of education. For example, females are less preferred to be promoted or holding higher level posts. Subsequently, this also could be due to a large wage increase when males have been promoted.

On the whole, all the variables seem to have significant impact on determining wage level across the distribution, which is also consistent with the OLS results obtained earlier. However, job status is not considered as an important factor in determining the wage except for the middle quantiles of 0.5 and 0.75 whereby workers who work as permanent staff receive higher wage than those who work on contract basis. Meanwhile, for job mode, the full-time workers receive higher wages at each quantile compared to part-time workers. Workers in the services sector receive a higher wage than workers in manufacturing sectors except for the lowest quantile. Workers who attended technical training, management training and marketing training also receive a higher wage compared to those who attended production training and others. Furthermore, analysis by states shows that for the lower quantiles of 0.1 and 0.25, all states pay their workers a significantly higher wage than Terengganu. However, for the other wage quantiles, the wage effect of states are rather mixed and some of them are not significant. For example, for 0.5 and 0.75 quantiles, workers in Johor, Kuala Lumpur and Perak do not receive

a significantly different wage compared to workers in Terengganu. For the highest quantile, most states do not pay a significantly higher wage than Terengganu except for Melaka, Pahang and Selangor. These results imply that wages received by workers do not depend on the status of the states – whether they are less developed or more developed. Rather, they depend on competition in getting jobs in line with the supply and demand factors for each job characteristics in each wage distribution.

CONCLUSION

Findings in this paper show that gender wage gap does exist in the Malaysian labour market as males receive higher monthly wage compared to females. Analysis by wage quantile supports the OLS estimation and signifies that the wage gap occurs more obviously at the lower and upper quantiles compared to the middle quantiles of the wage distribution. This finding supports the existence of sticky floor and glass ceiling effects of the gender wage gap that may be due to overcrowding of the female workers at the lower job rank and more prevalent discrimination practised against the female workers among the employers at the upper job rank. The difficulty in getting promotion at the higher job rank is one of the reasons for glass ceiling effect.

The results from the study is related to the income distribution scenario facing Malaysia. The Gini coefficient in Malaysia is still considered higher even though it follows a decreasing trend from 1970-2014. In 1970 the Gini coefficient was 0.466 and reduced to 0.401 in 2014. A very small reduction in the Gini coefficient reflects a sticky income distribution, where gender wage gap may contribute to this scenario. Apart from discrimination against women, government policy that benefits the high-income population more, for example, those with higher endowment and who work in the private sector, is also a relevant factor that contributes to the pattern of income inequality in Malaysia.

The results from this analysis can be associated with several policy implications. First, the issue of discrimination still prevails in the Malaysian labour market and is supported by many past studies. Nonetheless, it is clearly shown by this study that a more serious gender wage gap occurs at the lower and upper quantiles of wage distribution. Therefore, after identifying the root of the problem, policy makers have to give greater attention to this segment of the labour market. For example, when dealing with employers discrimination, the law and regulation must address this group and be clearly stated in the wage policy. As the private sector covers a large portion of the Malaysian labour market, the wage setting policy in this sector must be transparent and recognised by the government. There must be a clear and standard salary and promotion scheme for both male and female workers.

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