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A Counterfactual Decomposition Analysis of Immigrants-natives Earnings in Malaysia

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Abstract Economics of discrimination has been the topic of interest of many in the last decade or two. Human capital theory describes wage determination as a function of labour human capital and should be determined based on marginal productivity theorem of labour economics. Islamic theology also dictates paying labour well in time and equal to their productivity not based on his colour, race, gender, nationality health status and other non-economic factors. The current study analyses the immigrants-natives wage gap to find the extent of potential discrimination against the immigrants. Using employees' level data from the Enterprise Surveys by the World Bank in 2007, standard Oaxaca–Blinder technique and Machado–Mata counterfactual decomposition is applied. Findings indicate an existence of earning's differential in favour of natives or the Malaysian citizens and immigrants have a disadvantage. On the other hand, the differential increases until the middle of income distribution and the start declining. It suggests higher-income groups have a low level of discriminatory disadvantage. Labour market productivity could be increased if this differential is reduced, which motivates the employees.

JEL J, J1, J3, J7

Keywords Labour market discrimination; Oaxaca–Blinder decomposition; Machado–Mata decomposition; quantile regression; earnings differential; enterprise survey; World Bank; Malaysia

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1. Introduction

In 1970, main exports from Malaysia were from agriculture and mining industry in the form of the raw material, contributing above 45% towards total Gross Domestic Product (GDP), while manufacturing has contributed by 13% towards GDP. By 90s, the economy started the transformation towards the knowledge-based economy mainly due to major investments in information and communications technology (ICT) by many organizations. Malaysian economy has transformed from agricultural to the industrial and the services economy by the year 2000, whereby services contributed above 58% towards GDP, followed by up to 32% share of the manufacturing sector. Malaysia has achieved these targets through implementation of various economic reforms, including performance-based wage systems and through huge investment in education and information and communications technology. New business models were introduced and developed and, now Malaysia stands among the modern world economies with an Islamic ideology of social life (Seang, 2011 and Joseph, 2011).

Malaysian labour force growth is not uniform across the main ethnic groups. In particular, the New Economic Policy favours Malays (the Bumiputera) in employment based on the 1971 the famous Bumiputera Policy, as a result the Malay labour force growth being the fastest rate of the increase. During the decade 1970–1980, the growth of the Malay labour force was 47.8%, compared to 40.8% for Indians and 34.1% for Chinese (Swee-Hock, 1988). The rapid growth is due to betterment in educational attainment of women, the more positive attitude toward female employment, the lowering of male immigrant labour, and better jobs opportunities in the rapidly growing sectors of the economy (Schafgans, 2000).

A large amount of research publications appeared during the time period of 1957 to 1987, analysing wage decompositions for male and female employees. Various econometric techniques, including parametric and semi-parametric techniques are utilized to identify these differentials. Analysis of wage differential for Malaysian citizens and non-Malaysian citizens is rare in the available literature, and to the best of authors' knowledge the current study pioneers the discussion on earning's differential between immigrants and natives in Malaysia. The data is taken from the Enterprise Surveys, 2007 from the Microdata unit of World Bank.

Economic studies of human capital and human resource management, suggest that individuals with higher investments in their human capital should be rewarded higher returns than those who have invested lower than others. The hypothesis is tested by estimating and decomposing wages of the immigrants and natives using extension of the standard Oaxaca-

Blinder Decomposition techniques to accommodate differential across the earning's function across the income distribution. The paper used Machado & Mata (2001) and Blaise (2005) counterfactual decomposition using their promoted Stata routine, the –rqdeco- and –cedco-. The objective is to estimate the wages of immigrants and the natives to estimate the gap between the wages of the two groups across the earning's distribution. The paper investigates if the returns in the Malaysian labour market are different for immigrants and natives, (where an immigrant is defined in terms of citizenship, which in the current study is the only available definition for immigrant). Further it will then be helpful in identification of any disadvantages in earnings to the status of being an immigrant as compared to the status of being a native. The objective of this analysis is to estimate if the wage differential narrows down across the earning's distribution by using recent data.

2. Literature Review

The native-immigrant wage differential analysis stands among the major research areas in the field of labour economics and economics of discrimination. Until recently, there is no research piece analysing the labour market discrimination against the immigrants in the Malaysia. It is only in the last decade or more, that analysis of immigrant-native wage, employment and occupational attainment received much attention in the literature (Sriskandarajah et al, 2007). The Economics of discrimination provides some basic understanding on why immigrants might have lower wages than the natives, even if they had higher human capital formation. The literature on the analysis is huge and some of the important findings on the economics of discrimination against the immigrants are summarized in the current section.

Gary Becker (1957) formulated Neo-classical model of employers' taste for discrimination based on utility functions, including profitability based on microeconomic principles of utility maximization. The classical theory of wage determination in a perfect competitive labour market by Adam Smith and his followers was criticized by Johan Stuart Mill (1885) on the basis that classical theory cannot be applied to analyze a system of labour market with distinct parts/sectors as classical theory assumes a uniform market. Against the classical theory of uniformed wages across the market, segmented market theory is put forward to analyze functioning of simultaneous distinct sectors and different wage rates for different groups from these sectors. Another approach to the segmented market theory is the job crowding hypothesis, which generalizes that some agents are over supplied into one or the other occupations, and they are receiving lower wages in these sectors when compared to their wages in the other sectors and this type of occupational setting is not free from discrimination as if some individuals or groups are finding it hard to get a job, otherwise they can do equivalently to those who are currently working in that sector but due to crowding into some other sector, they cannot find the job (Pike, 1984).

Similarly if agents in the same labour markets behave like they are erections against the entry of other agents, there would be a wage differential in that market due to economic inequality instead of differentials in the earnings due to different abilities and efficiencies (Darity & Williams, 1985). But empirical studies showing movements of labour from the secondary job markets to the primary markets which counter the basic segmented labour market theory (Rosenberg, 1980 and Mayhew & Roswell, 1979). While analyzing earnings in the labour market there arise issues of what factors contribute to the determination of wages and what are the factors affecting phenomena that two similar agents in all aspects but from different sexes, races or from different communities receive different rewards for their human capital even if they have the same abilities and productivities. Theory of Human Capital answers these and similar other questions. According to the theory two similar agents could have different wages due to differences in their age, level of education, experience, skills and training (Harmon et al (2001) and Harmon & Walker (2001)) and if still there remains any gaps, then it might be due to discrimination.

A Mincerian earning's function is most commonly applied to determine the rates of return to the human capital showing their impact on the wages while determining the decomposition of wages across groups (Mincer, 1974). Investment in human capital determines the wages in terms of returns to long-term investment of the labour in education, training, new skill development like computer knowledge and information technology and its utilization, which contribute in the productive capabilities of labour, hence these factors are important for determination of the wages and also for differential analysis. Empirical research finds out that education, experience, training and skill levels are the most considered human capital determinants.

Assimilation has been in contrast to the decomposition analysis of wages of immigrants and natives. As immigrants had to integrate in a new economic society in their host country, and the host country might be in a very different state of demand for the human capital endowments of these immigrants. It is evident that over the time, the assimilation would induce immigrants to stock with skills specific to and human capital requirements of their host-country Nielsen et al (2004). Borjas (1987) and others have summarized that there are initial wage differences between the immigrants and natives but these differences decline over time as immigrants stay and participate in the labour market in their host countries. The hypothesis mostly rejected but widely applied is that immigrants assimilate to the host-country population over time. Immigrants are in competition with the natives in the labour markets in their host countries, and they are disadvantaged at least in the initial years of their immigration into the host country because of non-specific human capital factors to host economies and it will take time to the acquisition of minimum level of these skills and human capital specific to host countries (Chiswick (1978, 1980).

Similarly, Licht and Steiner (1994) tested the hypothesis of assimilation versus naturalization for permanent and temporary immigrants in Germany and found that natives are highly paid as compared to the immigrants in the German labour market and the hypothesis of immigrants' assimilation could not be established. Naturalization is highly influenced by assimilation as compared to the decision of the immigrants to remain permanently in their host country (Aldashev et al, 2008). Hence immigrants would be compensating for their initial lower earnings due to their steeper earning's profiles reflecting their intensive investment in human capital as compared to temporary immigrants. It also suggests temporary immigrants will invest less in their human capital specific to their host country (Dustmann, 1993). Immigrants close to the natives, have the advantage in adjusting to their host-country conditions and reaping the benefits of similarities (Chiswick, 1978). In case of discrimination, the wage rates of these immigrants will not be close to the wage rates of natives, even if they have least differences in conditions compared to those who have more differences with natives and more visible gaps in wage rates (LaLonde & Topel, 1997).

Using data from the Spanish labour market and applying quantile regression technique, Domínguez & Gutiérrez (2008) also showed that those immigrants who have the higher human capital are well off as compared to their native counterparts, concluding that discrimination is impossible against these immigrants as they have the higher human capital than natives. Literature is rich in techniques applied to the analysis of wage s between individuals from different sexes, races and from different other groups in the labour market. The study is based on findings from some important model specifications, which are common in the literature to identify any discrimination in the labour market. Oaxaca and Ransom (1994) have summarized five similar approaches most frequently found in the literature to estimate wage differentials. Their finding is that one econometric model could produce smallest standard errors but still results of all approaches could be varying.

Blinder-Oaxaca (1973) approach is commonly applied statistical technique for decomposing wages of two groups into a part explained by the differences in endowments and a part which remains unexplained. In the literature on the native-immigrant wage gap analysis, native group is widely used as the non-discriminatory group, lacking any specific reason as to select the reference group as non-discriminatory while average coefficients on the two groups can be used as reference groups (Cotton, 1988 and Reimers, 1983). Neumark (1988) have suggested using pooled sample across the two groups as the reference group and coefficients from the pooled model as weights. Oaxaca and Ransom (1994) have suggested alternative approach similar to Neumark (1988). The approach of using pooled model has an issue as documented by Jann (2008) that it transfers a portion of the unexplained part of the decomposition to the explained part, but it is not well documented in the literature with an exception to Fortin (2006).

The approach to identify discrimination is extended to the quantile regression models to capture differences in earnings of the immigrants and natives across the wage distribution. The method has the quality to estimate the detailed decomposition across the wage distribution to check if it happens only against the low-paid workers or has been similar across the whole distribution. The current paper analyzes the wage gap using quantile regression and the decomposition based on extended Oaxaca-Blinder Decomposition technique by Machado & Mata (2000, 2001) and Blaise (2005). The study uses the Blaise (2005) suggestion to extend the analysis to estimate the wage gap across the wage distribution in the paper.

3. Econometric Methodology

3.1. Decomposition Analysis

The decomposition technique of Blinder (1973) and Oaxaca (1973) is applied to estimate the gap between wages of the immigrants and natives and extended to the quantile regression to capture the differences across the wage distribution among natives and immigrants in Malaysia. The approach is based on estimation of two separate equations for each group to determine the relationship between group specific characteristics and their wages. The two equations are used to estimate the gap due to differences in characteristics called as the explained part of the gap. The unexplained part or discrimination includes the gap due to unobserved characteristics.

In the current study, a twofold decomposition approach is used to estimate the differential following Hunt (2008). The decomposition is estimated using coefficients of pooled, immigrants and native models as weights suggested by Oaxaca & Ransom (1994) and Neumark (1988)). The inclusion of factors affecting productivity in the estimation of wage gaps is an important determinant of the estimation between natives and immigrants as employers consider motivational, attitudinal and social skills (Green et al, 1998) while Bauder (2006) mentions that these determinants have an ethnic dimension and there exists clear differences in the determinants between countries. The pooled model is estimated using the equation;

$$lnwage_i = a_{oi} + \beta_i x_i + \mu_i \qquad i = 1,2,3, \dots, n \qquad (1)$$

Here, i denote the number of observations, $\boldsymbol{\alpha}$ and $\boldsymbol{\beta}$ are the intercepts and coefficients respectively of the statistical model and $\boldsymbol{\mu}$ is the error term of the model. The model includes all variables capturing the human capital including education, experience and training, marital status, a dummy for immigrant status, dummy variables for categories of industry sectors and regions of workplace. The estimation of the native and pooled models is similar and is given as:

$$lnwage_{in} = a_{oin} + \beta_{in} x_{in} + \mu_{in} \qquad i = 1,2,3, \dots, n \qquad (2)$$

Here i denote the number of observations, n denotes native, lnwage is the natural logarithm of hourly wage rate, α and β are the intercepts and coefficients respectively of the statistical model relating the determinants and wages of the natives, μ is the error term of the model. Native function includes all the standard variables. The immigrant wages are determined by the following function;

$$lnwage_{im} = \alpha_{oim} + \beta_{im} x_{im} + \mu_{im} \quad i = 1,2,3, \dots, n \qquad (3)$$

Here m denotes immigrant and other terms are similar to previous notations. Literature reveals that the equation of immigrants should be controlled for the variables specific only to immigrants and significantly affecting earnings. The important variables are time in the host country after immigration, experience from the source country, language ability and communication skills, and any qualification from their host country before they enter the labour market. These variables affect wages of immigrants as highly experienced employees will be better on the ladder on the earning's profiles. The literature shows that host country labour market characteristics are usually different hence experiences gained from source countries is normally less rewarding in the initial stages of employment. Adjusting immigrant model for such variables' results make the comparison and differential comparable across the groups, so the study is limited to only those variables which were available from the survey data. Controlling the immigrants' equation for such factors and using the adjusted parameters in differential estimations' results in the following equation.

$$lnwage_{im} = \rho_{0im} + \beta_{im}x_{im} + \eta_{im}\psi_{im} + \upsilon_{im} \tag{4}$$

In equation (4) η and ψ are the coefficients and variables respectively specific to the immigrant group. Estimating the immigrant model (3) as a constrained function as

$$lnwage_{im} = \alpha_{oim} + \beta_{im}x_{im} + \varepsilon_{im}\ ,\ st \quad \beta_{im} = \hat{\hat{\beta}}_{im} \tag{5}$$

It adjusts the immigrants' model for the immigrants' specific variables and the effect of these variables is added to the constant term. ρ_o, since

$$E(lnwage) = \hat{\alpha}_{oim} + \hat{\hat{\beta}}_{im}\hat{x}_{im} + \eta_{im}\bar{\psi}_{im} = \hat{\rho}_{oim} + \hat{\beta}_{im}\bar{x}_{im} \tag{6}$$

Hence, the endowment's effects would capture differences in the determinants common to the models (2) and (3) and will exclude the effect of immigrant group specific variables. This will allow comparing effects of the characteristics common to both the natives' and immigrants' models to be used in estimation of wage differential. The price effect takes average effects of these variables.

Estimated threefold decomposition is given as.

$$\Delta = (\bar{x}_{in} - \bar{x}_{im})\beta_{im} + \bar{x}_{im}(\beta_{in} - \beta_{im}) + (\bar{x}_{in} - \bar{x}_{im})(\beta_{in} - \beta_{im}) \tag{7}$$

The left hand side is the raw wage gap is given as $\Delta = lnwage_{in} - lnwage_{im}$, and the right hand side shows decomposition. The first component on the right hand side of the equation

(7) is the endowments effect, the second term is the coefficient effect including differences in the intercepts and the last component is the interaction term. It reflects the fact that if native group has higher means and this interaction term is positive then natives has higher returns for these characteristics and vice versa (Aldashev et al, 2008)

The twofold decomposition is based on weights from a reference group which is also assumed to be a the non-discriminatory group is as

$$\Delta = (\bar{x}_{in} - \bar{x}_{im})\beta_r + [\bar{x}_{in}(\beta_{in} - \beta_r) + \bar{x}_{im}(\beta_r - \beta_{im})] \qquad (8)$$

Here Δ is the raw differential and right-hand side gives decomposition of this differential into two components. The first term on the right-hand side of the equation is the explained part and second term in brackets is the unexplained components. β_r on the right-hand side is the set of coefficients estimated from the reference group model. As stated above, Decompositions are estimated based on the weights of the native model, immigrant models and then finally on the pooled model as reference models. The objective of these three estimations of the wage gap is to check the overall result of the discrimination against reference group effect. Jann (2008) has pointed out that the approach suggested by Neumark (1988) and Oaxaca-Ransom (1994) will inappropriately transfer a part of effects from unexplained part into the explained part, but it has not been given much attention in the literature of economics of discrimination. The complete results are available from the authors upon request.

3.2.Quantile Regression

The paper uses estimation from both the standard OLS of the regression equation to capture the average effects and the Quantile regression (QR) of Koenker and Bassett (1978) and Buchinsky (1998) to capture the earning's differential across the distribution. For the quantile regression, let the (x_i, y_i), $i = 1, \dots, N$, be the random sample drawn from the Enterprise Survey for the Malaysian employees' population. Here the x_i is the $n \times 1$ vector of observable characteristics for the individuals and y_i is the log earnings per hour. The conditional quantile of y_i on the x_i is $Quant_\theta(\mathrm{u}_{\theta i}|\mathrm{x}_i) = 0$, the regression model then becomes:

$$y_i = \beta_\theta x_i^{`} + \epsilon_i \qquad (6)$$

Both OLS and Quantile regression similar in that these models estimate the parameters of the equations by minimization of the errors, but the difference lies in that OLS minimizes the sum of the squared errors and Quantile regression minimizes the sum of weighted absolute values of the error, where the weights are the percentiles taking different values of the interest to the researchers. The θ^{th} estimator for the Quantile regression β is given as:

$$min\ \beta \left\{\sum_{i:y\geq\beta x_i^{`}} \theta\left|y_i - \beta x_i^{`}\right| + \sum_{i:y\geq\beta x_i^{`}}(1-\theta)|y_i - \beta x_i^{`}|\right\} \qquad (7)$$

The paper follows the Blaise (2005) to use the average of the whole characteristics to decompose the wage gap at the selected quantile of interest. Traditionally, bootstrapping of the sample of sizes 100 is used to conduct the analysis of the wage gap across the earning's distribution using the percentiles; this study has conducted the analysis using the 10, 50 and other samples also to check the results for possible deviations, which is being not significant. Results of each bootstrapping are available from the authors. Finally, the decomposition analysis using the Quantile regression is followed as:

$$\Delta_\theta^m = \beta_\theta^n(\bar{x}_\theta^m - \bar{x}_\theta^n) + \bar{x}_\theta^m(\beta_\theta^n - \beta_\theta^m) \qquad (8)$$

3.3.Sample Selection Problem

There remains the possibility of sample selection bias when selecting those units which are actively included in the sample as employed individuals. The ideal conditions would be to include in the sample also those who were unemployed. As Hunt (2008) has mentioned, and lack of any parental variables restricted to find any instrument to use for the sample bias correction; hence there might be some potential upward bias in the estimated coefficients of the models. Further, the study includes both the male and female into the estimate sample against the routine in the literature to use only a single group data. The inclusion helps in capture the effect of including female in the immigrants sample and natives are conducted. This removes the potential effects of inclusion of immigrant female workers from the sample the effect of which is also important to obtain a complete picture.

4. Results and Discussions

4.1. Sampling and Summary Statistics

The sample has been drawn from the Survey data of the World Bank conducted in 2007 in Malaysia. The survey is known as Enterprise Surveys and the data could be requested from the Survey unit at (http://www.enterprisesurveys.org/). The sample comprises more than Twelve thousand employees working in manufacturing and services sectors of the Malaysia. The enterprise survey usually conducts surveys of the organization doing business and human resources following standard instruments of collecting data from private and public sector enterprises. Thus, the current investigation provides an important insight into the earning's differential across these lines to check the wage differences across enterprises from manufacturing and services and the immigrants and native Malaysians are defined based on their response to the questions related to citizenship status.

Table (1) presents summary statistics for the pooled, native and immigrants' samples. The pooled sample indicates that immigrants are about 10% of the Malaysian population has non-Malaysian citizenship. Average hourly wage is MYR.12.21 in the pooled sample; MYR.5.58 the hourly wages of immigrants and hourly earnings of natives is MYR.12.93. It is clear from the Table (1) that more immigrants are present in the manufacturing sectors where the average earnings are less than the services' sector in Malaysia. Average hourly wage in manufacturing in Malaysia is MYR.10.14 when compared to MYR.19.86 in services.

Table 1: Summary Statistics

Variables	Immigrants		Native		Pooled	
	Mean	SD	Mean	SD	Mean	SD
Hourly Pay	5.59	7.14	12.93	27.12	12.21	25.94
Log Hourly Pay	1.37	0.71	2.08	0.85	2.01	0.87
Age	29.24	6.26	34.67	9.9	34.13	9.74
Squared age	8.94	4.14	13	7.63	12.6	7.46
Male	0.85	0.36	0.51	0.5	0.54	0.5
Malaysian Citizen	--	--	--	--	0.9	0.3
Training	0.26	0.44	0.41	0.49	0.39	0.49
Manufacturing	0.98	0.13	0.77	0.42	0.79	0.41
Selangor	0.29	0.45	0.29	0.46	0.29	0.45
Melaka	0.02	0.15	0.03	0.17	0.03	0.17
Penang	0.16	0.37	0.14	0.35	0.14	0.35
Kedah	0.11	0.31	0.06	0.24	0.07	0.25
Johor	0.32	0.47	0.27	0.44	0.27	0.45

Terengganu	0.01	0.1	0.02	0.14	0.02	0.14
Sabah	0.03	0.16	0.03	0.18	0.03	0.18
Sarawak	0.01	0.11	0.05	0.21	0.04	0.2
Degree	0.04	0.19	0.15	0.36	0.14	0.35
Diploma	0.04	0.19	0.16	0.36	0.14	0.35
Upper secondary	0.23	0.42	0.38	0.48	0.36	0.48
Lower secondary	0.3	0.46	0.21	0.41	0.22	0.41
Primary	0.23	0.42	0.09	0.29	0.11	0.31
Informal education	0.08	0.27	0	0.07	0.01	0.11
Professional certificate	0.06	0.23	0.13	0.34	0.13	0.33
Communication skills	0.33	0.47	0.36	0.48	0.36	0.48
Leadership skills	0.14	0.35	0.18	0.39	0.18	0.38
IT Skill	0.37	0.48	0.41	0.49	0.41	0.49
Foreign degree	0.31	0.46	0.04	0.2	0.07	0.26
Management	0.01	0.11	0.09	0.29	0.08	0.28
professional	0.02	0.14	0.1	0.31	0.1	0.3
Skilled worker	0.12	0.33	0.19	0.39	0.18	0.39
Unskilled worker	0.63	0.48	0.34	0.47	0.36	0.48
Clerical	0.17	0.37	0.24	0.42	0.23	0.42
Union member	0.01	0.12	0.04	0.19	0.04	0.18
Married person	0.45	0.5	0.64	0.48	0.62	0.48

Source: Authors calculations from the Sample

One possible reason for the low average wages of immigrants in Malaysia could be due to job placements in manufacturing, hence controlling for the phenomena would control the possibility of differential between citizens and non-citizens in Malaysia. Importantly 63% of the immigrants are working as unskilled workers compared to 34% of the native Malaysian citizens. Similar pattern is followed by the log hourly wages, as the table represents.

The survey does provide sufficient information on the education, skills and training of the respondents, main ingredients of the human capital theory and also enriches the models with other important determinants of earning's function. As clear from the table, communications skills are lower inherently by the immigrants and is one indication that non-Malaysian usually suffer from language problems as they are in the initial years of their immigration to Malaysia. It can be used as the linguistic differences between the locals and the foreigners in Malaysia to control for the language effect (known as assimilation effect) on the earnings in the labour market. It indicates that immigrants have a potential barrier to find and communicate for the desired job placements and will inherently have a little power of bargaining for the higher wages. The regional labour market characteristics across the Malaysian states and provinces are described by including statistics only for states Selangor, Kuala Lumpur, Penang and Johor. Summary statistic for the rest of the states is available from the author. Above 78% of the sample is from the manufacturing, and rest comes from the services. The immigrants are relatively more in the manufacturing sector comprising 98% while less than 2% is in the services. The situation for the natives is different where 76% are in the manufacturing and rest in the services. More (3%) locals are members of the unions at job places compared to less (1%) of the immigrants.

4.2. OLS and Quantile Regression Results

The regression results for the pooled, immigrants and natives' sample are presented in Table (2). Only OLS here and complete tabulated results are provided in the appendices. The regression results indicate that earning's increases non-linearly as the quadratic term in the pooled sample is negative and significant using the OLS and quantile regression. Further, the results indicate that earnings are increasing at an increasing rate for the immigrants showing immigrants earning higher at higher positions. Another important finding is the increasing return to schooling when qualification level indicators are used in all the OLS and quantile regressions for pooled, natives and immigrants samples. The results have been criticised as it does include the education obtained from foreign countries and does not show the effects. It is therefore stated that years of education could be used, which results in the return for the extra year of education. The results for the two types of indicators to obtain results on the return to education do not vary across samples and across quantiles. So the paper used the degree effect on return.

Table 2: OLS Regression results for pooled, immigrants and native samples

Dependent Variable: Log hourly Pay	Pooled	Q1	Q2	Q3	Q4	Q5
Age	0.0643***	0.0532***	0.0643***	0.0737***	0.0711***	0.0580***
Squared age	-0.0616***	-0.0557***	-0.0662***	-0.0716***	-0.0659***	-0.0478***
Male	0.1935***	0.1876***	0.1852***	0.1862***	0.1881***	0.2013***
Malaysian Citizen	0.3354***	0.3246***	0.3382***	0.3229***	0.3856***	0.2028**
Training	0.0960***	0.0965***	0.0914***	0.0991***	0.0864***	0.0875**
Manufacturing	-0.2028***	-0.2981***	-0.2381***	-0.2050***	-0.1593***	-0.0118
Selangor	0.0205	-0.0466	0.0098	-0.0108	0.0325	0.2993***
Melaka	-0.3137***	-0.2366***	-0.2164***	-0.2360***	-0.2336***	-0.5242***
Penang	-0.1876***	-0.2090***	-0.1614***	-0.1917***	-0.1946***	-0.1893**
Kedah	-0.4480***	-0.3861***	-0.3886***	-0.3830***	-0.4173***	-0.6575***
Johor	-0.3258***	-0.2465***	-0.2234***	-0.2513***	-0.3000***	-0.5859***

Terengganu	-0.6777***	-0.5413***	-0.6037***	-0.6258***	-0.6014***	-0.9160***
Sabah	-0.5416***	-0.4245***	-0.4299***	-0.4471***	-0.5143***	-0.8340***
Sarawak	-0.5339***	-0.4817***	-0.4723***	-0.4618***	-0.4973***	-0.7525***
Degree	0.8353***	0.7122***	0.8128***	0.9061***	0.9046***	0.8953***
Diploma	0.6229***	0.5030***	0.5715***	0.6824***	0.6979***	0.6677***
Upper secondary	0.3539***	0.2207***	0.2955***	0.3828***	0.4317***	0.4718***
Lower secondary	0.1986***	0.0629	0.1421**	0.2172***	0.2852***	0.2791*
Primary	0.0659	-0.0034	0.0298	0.0919	0.1027	0.1233
Informal education	0.073	0.0155	0.0596	0.1043	0.0826	-0.0031
Professional certificate	0.1189***	0.0686**	0.1098***	0.1018***	0.1227***	0.1852***
Communication skills	-0.0102	0.0493***	0.0229	0.0126	-0.0151	-0.0720*
Leadership skills	0.0107	0.0575**	0.0272	0.0283	0.0044	-0.0431
IT Skill	0.0503***	-0.0067	0.0016	0.0326**	0.0419**	0.1184***
Foreign degree	0.1101***	0.045	0.0316	0.0953***	0.1671***	0.1913**
Management	0.2305***	0.1566***	0.1747***	0.1863***	0.1915***	0.3889***
professional	0.1851***	0.1758***	0.1946***	0.1547***	0.1246**	0.2530**
Skilled worker	0.052	-0.0147	0.0125	0.0186	0.029	0.1544
Unskilled worker	-0.1587***	-0.1688***	-0.1654***	-0.1701***	-0.1887***	-0.118
Clerical	-0.014	-0.0426	-0.0221	-0.0152	-0.0477	0.0338
Union member	-0.1035**	-0.0159	0.0137	-0.0212	-0.1317**	-0.1955*
Married person	0.0907***	0.0550**	0.0694***	0.0744***	0.1010***	0.1229**
Intercept	0.0363	-0.0971	-0.2460**	-0.2706**	-0.0022	0.7609**

Note: t-statistic in parenthesis

Results indicate that degree holders have been at the advantage as the coefficient on degree variable is positively significant and greater than other qualification dummies. The coefficient for the schooling variable is also positive at the standard level of significance and this result is available with the author. It confirms the Mincerian hypothesis of positive returns to education proxy the human capital. The Mincerian hypothesis further includes a positive coefficient for the training. The inclusion of both these indicators in the regression is to assess the differential for the training effect assuming that return to training from the current employers would be higher compared to the training from the previous employers, confirm the hypotheses. The coefficients for most of the regional dummies are significant, which indicates differential in the earnings across the states, which is in Kuala Lumpur in our case. The result indicates that male have higher returns than the female in the Malaysian labour markets as the coefficient on the Male dummy is significantly positive in the estimations. Employment level variables included in the analysis are professional and management-level variables. The impact of higher employment level designated by professional and management level of employees are positive and significant and indicates positive returns for employee growth assuming the employees are contributing towards organizations.

OLS results indicate membership of a union at the workplace has a positive impact on employees' earnings while the membership status reveals that with higher incomes, the membership of the union is significant and positive. Considering all the important earnings determinants, it is plausible to discuss the differential across the two groups, the natives or the Malaysian citizens and immigrants or the Non-Malaysian citizens. Table (3) presents the decomposition results. Complete regression and decomposition across individual regressions at quantiles are available from the authors.

4.3. Oaxaca Decompositions

Table (3) presents the results of the Oaxaca and Blinder (1973) decomposition results along with the Machado and Mata (2005) and Blaise (2005) counterfactual regression based estimates of the differential across selected five quantiles ranging from 10th and 90th including the 25th, 50th and 75th percentiles. Results for more detailed and equally spaced percentiles ranging from 10th to 90th with an interval of 10 percentiles are available from the authors. The trend is similar across the five estimated percentiles and ten percentiles. To simplify, the results for five estimated percentiles are presented. Results indicate that immigrants are relatively at lower advantages when the OLS estimates are used. On the other hand, the estimation of the QR presents that the discriminatory tendencies increased until the middle-income distribution in the Malaysian labour market and declines further on. The level of estimated discrimination if assumed equal to the total unexplained part of the effects is 53.5% as the OLS results indicate, and it increases across the quantiles from 43% to a maximum of 58.2% and then slightly declines to 57.6%. The estimates are plausible as the OLS estimates are at the average of the quantile based estimation of the discrimination. The detailed estimation indicates that differences' endowments (E) and returns to these attributes (C+U). OLS results indicate that the raw differential is 70.8 log percentage point and adjusted differential decreases to 37.9 log percentage points. It roughly indicates the significant contribution of the included labour market characteristics and potential drawback that more carefully selected instruments could further lower the estimated differential. Hence assuming these results the available data supports roughly the existence of partial discrimination in the labour market. The level of discrimination is more than 53.5 log percentage points of the raw differential in hourly wages.

Table 3: Decomposition Results: Natives as Reference Group

Estimates	OLS	Quantile Regression				
		1st	**25th**	**50th**	**75th**	**90th**
Amount attributable:	236	176.4	226.1	247.2	209.9	210.7
- due to endowments (E):	32.9	33.7	35.6	37.9	31.9	24.7
- due to coefficients (C):	203.1	142.6	190.6	209.4	178	186
Shift coefficient (U):	-165.1	-117.2	-155.2	-168.3	-133.6	-152.4
Raw differential (R) {E+C+U}:	70.8	59.2	70.9	78.9	76.3	58.3
Adjusted differential (D) {C+U}:	37.9	25.5	35.3	41	44.4	33.6
Endowments as % total (E/R):	46.5	57	50.2	48	41.8	42.4
Discrimination as % total (D/R):	53.5	43	49.8	52	58.2	57.6

a. *positive number indicates advantage to high group*
b. *negative number indicates advantage to low group*
c. *U = unexplained portion of differential (difference between model constants)*
d. *D = portion due to discrimination (C+U)*

Discrimination across the wage distribution using the extended Machado-Mata (2005) and Blaise (2005) counterfactual distribution based on the Koenker and Xiao (2002) and Koenker and Bassett (1978) is also presented in Table (3). Differential across the wage distribution is interesting in that it is increasing until the middle percentile of income distribution and declines later on at higher-income levels, indicating economic discrimination against immigrants in the initial years and lower differential later on assuming wages are increasing with experienced as the results from regression results show. The results further highlight that natives are at favour at the bottom of the earnings' distribution and declines at higher-income levels. The decline does not imply that discrimination wade up at higher levels of distribution. It is evident that discrimination is mainly due to the differences in coefficients between the natives and immigrants and that at the bottom of the distribution, the difference between immigrants' and natives' earnings is 32.9 log percentage points with greater labour market characteristics at 203.1 log percentage points. Over the higher levels of wage distribution, the differential across the two groups is due to allotment of labour market skills in favour of natives above 31.9 log percentage points. While the negative sign for the shift coefficient indicates discrimination in earnings across the wage distribution. The advantage to immigrants first decreases and then declines gradually while the change in shift coefficients is increasing and decreasing over the distribution and does not show a trend. The shift coefficient is the unexplained part of the decomposition estimates. Summarizing the results from quantile regression, the estimate of the decomposition reveals that the discrimination first increases and then declines as shown by the estimate of the (D) the raw differential. Even the favour changes in favour of immigrants at higher levels.

Table 4: Decomposition Results: Immigrants as Reference Group

Estimates		OLS	Quantile Regression				
			1st	25th	50th	75th	90th
Amount attributable:		-236	-176.4	-226.1	-247.2	-209.9	-210.7
- due to endowments	**(E):**	-37.6	-8.2	-24.3	-40.3	-45.6	-60.9
- due to coefficients	**(C):**	-198.4	-168.1	-201.8	-206.9	-164.3	-149.8
Shift coefficient	**(U):**	165.1	117.2	155.2	168.3	133.6	152.4
Raw differential	**(R) {E+C+U}:**	-70.8	-59.2	-70.9	-78.9	-76.3	-58.3
Adjusted differential	**(D) {C+U}:**	-33.3	-50.9	-46.6	-38.6	-30.8	2.6
Endowments as % total	**(E/R):**	53	13.9	34.3	51.1	59.7	104.5
Discrimination as % total	**(D/R):**	47	86.1	65.7	48.9	40.3	-4.5

a. *positive number indicates advantage to high group*
b. *negative number indicates advantage to low group*
c. *U = unexplained portion of differential (difference between model constants)*
d. *D = portion due to discrimination (C+U)*

The estimation results are presented in Table (4) with the estimations computed after changing the reference point to immigrants. The results for the differential estimates when the reference group is the immigrants are interestingly different from what is obtained from the estimates when the reference group has been used as the natives group.

4.4. Model Selection Criteria

Table (5) summarizes results of the AIC and BIC criteria to determine the best model to estimate wages of the natives and immigrants. The table suggests the AIC for the Pooled model is not lower than the native and immigrants models separately, but that these separate models cannot be used for estimation of earning's functions, pooled model is the best representative model to estimate wages of the two groups, as separate models for the two groups will not include characteristics specific to the other group.

Table 5: Model Selection Criteria

Model	Obs	LL (null)	LL (model)	*df*	AIC	BIC
Pooled	12264	-15567.72	-12457.95	32	24979.89	25217.16
Native	11047	-13844.9	-11089.19	32	22242.39	22476.3
Immigrants	1217	-1308.466	-1182.069	32	2428.138	2591.471

5. Conclusion

The impact of immigration on the wages in the host country has been investigated using quantile regression following Manacorda et al. 2006 and others and there has been evidence that immigrants are paid lower wages as compared to the natives despite immigrants have a higher average human capital. The main impact of the immigration has been documented depressing the wages of other immigrants. Using Oaxaca Decomposition technique main finding of the current study is that there is a significant differential between wages of the natives and immigrants. Furthermore, the study identified major factors, which affect the wage differential. An observation is that immigrants have relatively more education than natives with 15 and 13 years of schooling respectively, when the wages are compared across different levels of schooling, it is revealed that average hourly wages for immigrants are significantly lower than the wages of natives. Further, estimates reveal that average earnings increases with the number of years of education for both the groups but the increase is higher for the natives compared to the immigrants.

Analysis of the data further revealed that immigrants have relatively better attributes as compared to natives but due to discrimination, there is a significant wage gap between the two groups. Immigrants are concentrated in the manufacturing sector where average wages are relatively lower as compared to the services' sector. Furthermore, immigrants are concentrated into regions to work Penang, Kedah and Johor, and higher average wages in in these wages could lower the differentials which in fact remains existing. The results reveal that there are 0.7 log point gap between the wages of immigrants and the natives and that this gap is only partly explained by differences in the observables ranging from 43 log percentage points to above 58 log percentage points with average discrimination of 53 log percentage points. There is a significant amount of the differential that has been left unexplained as indicated by the simple and quantile regression techniques, indicating an amount of discrimination at least to the extent of estimates. Hence, it is concluded that immigrants could do in an environment free of discrimination in the labour market contributing more productively to the organizational growth and economic development. Even the literature reveals discrimination is a persistent phenomenon in the labour market.

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Table 6: OLS and Quantile Regression of Pooled Data

Dependent Variable: Log hourly Pay	**OLS**	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**
Age	1.0660***	1.0499***	1.0642***	1.0714***	1.0783***	1.0599***
Squared age	0.9436***	0.9544***	0.9422***	0.9392***	0.9333***	0.9553***
Male	1.1774**	1.1577**	1.1579**	1.1746**	1.1869**	1.2096**

	*	*	*	*	*	*
Training	1.1081***	1.1083***	1.1082***	1.1153***	1.0866***	1.1079**
Manufacturing	0.8038***	0.7272***	0.7720***	0.8053***	0.8541***	0.9852
Selangor	1.0133	0.9446*	0.9967	0.998	1.0381	1.2986***
Melaka	0.7351***	0.7950***	0.7882***	0.8136***	0.7711***	0.5945***
Penang	0.8191***	0.7935***	0.8351***	0.8265***	0.8114***	0.8233**
Kedah	0.6267***	0.6532***	0.6534***	0.6750***	0.6482***	0.5161***
Johor	0.7192***	0.7715***	0.7831***	0.7866***	0.7319***	0.5592***
Terengganu	0.5174***	0.5981***	0.5668***	0.5375***	0.5582***	0.4090***
Sabah	0.5838***	0.6710***	0.6632***	0.6404***	0.5875***	0.4270***
Sarawak	0.5994***	0.6390***	0.6516***	0.6531***	0.6126***	0.4716***
Degree	2.6917***	2.3111***	2.6286***	2.9654***	2.8347***	2.7326***
Diploma	2.1456***	1.8691***	2.0703***	2.3647***	2.2724***	2.1804***
Upper secondary	1.6280***	1.3752***	1.5502***	1.7402***	1.7245***	1.7541***
Lower secondary	1.3685***	1.1542**	1.2882***	1.4615***	1.4553***	1.4490**
Primary	1.1525**	1.0353	1.1011	1.2035***	1.1734**	1.2318
Informal education	1.0523	1.0342	1.0567	1.088	0.9731	1.1306
Professional	1.1361**	1.0737**	1.1202**	1.1270**	1.1392**	1.2037**

certificate	*		*	*	*	*
Communication skills	0.9924	1.0463**	1.0227	1.0138	0.9947	0.9275*
Leadership skills	1.0199	1.0530**	1.0381*	1.0410**	1.017	0.9527
IT Skill	1.0571***	1.0107	1.0205	1.0357**	1.0498**	1.1218***
Foreign degree	0.995	0.8659***	0.8912***	0.9859	1.0793*	1.1809**
Management	1.2688***	1.1841***	1.1889***	1.2167***	1.2107***	1.5036***
professional	1.2137***	1.2080***	1.2216***	1.1892***	1.1396**	1.2943**
Skilled worker	1.0585	0.987	1.0068	1.0313	1.0294	1.1843*
Unskilled worker	0.8429***	0.8470***	0.8330***	0.8410***	0.8184***	0.8897
Clerical	0.9833	0.9577	0.9729	0.9913	0.9475	1.027
Union member	0.9148**	0.9906	1.047	0.971	0.8835**	0.8211*
Married person	1.1020***	1.0542**	1.0703***	1.0955***	1.1204***	1.1172**
Intercept	1.2420*	1.2022	0.9685	0.9189	1.1626	2.3181***

*, ** and *** presents 5, 10 and 1% respectively.

Table 7: OLS and Quantile Regression results of Native Sample

Dependent Variable: Log hourly Pay	**OLS**	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**
Age	1.0741***	1.0602***	1.0718***	1.0833***	1.0837***	1.0719***
Squared age	0.9325***	0.9412***	0.9317***	0.9243***	0.9263***	0.9404***
Male	1.2163***	1.2103***	1.2121***	1.2090***	1.2057***	1.2116***

Training	1.1090***	1.1163***	1.1082***	1.1057***	1.0929***	1.1097**
Manufacturing	0.8257***	0.7629***	0.8003***	0.8205***	0.8584***	0.9778
Selangor	1.0179	0.9791	1.0163	0.9977	1.022	1.2836***
Melaka	0.7244***	0.7959***	0.7992***	0.8132***	0.7614***	0.5986***
Penang	0.8234***	0.8289***	0.8550***	0.8339***	0.8123***	0.8352**
Kedah	0.6263***	0.6751***	0.6796***	0.6881***	0.6502***	0.5188***
Johor	0.7205***	0.7789***	0.8066***	0.7887***	0.7341***	0.5732***
Terengganu	0.4993***	0.5864***	0.5426***	0.5240***	0.5429***	0.4136***
Sabah	0.5714***	0.6654***	0.6489***	0.6284***	0.5938***	0.4416***
Sarawak	0.5913***	0.6452***	0.6380***	0.6424***	0.6000***	0.4850***
Degree	2.4280***	2.3835***	2.5148***	2.7447***	2.6210***	2.4194***
Diploma	2.0015***	1.9444***	2.0004***	2.2208***	2.1979***	1.9984***
Upper secondary	1.5368***	1.4516***	1.5124***	1.6566***	1.6925***	1.6652**
Lower secondary	1.2954***	1.2144**	1.2697***	1.3925***	1.4331***	1.3877*
Primary	1.1147	1.0793	1.085	1.1774*	1.1987	1.1964
Informal education	1.3137*	1.1987	1.0722	1.1403	1.4010*	2.2158**
Professional certificate	1.1187***	1.0551**	1.1036***	1.1084***	1.1223***	1.2212***
Communication	0.9913	1.0526**	1.0241	1.011	0.9824	0.9436

skills		*				
Leadership skills	1.0194	1.0563**	1.0242	1.0325*	1.0118	0.9843
IT Skill	1.0425**	1.0031	0.9996	1.024	1.0415*	1.0849*
Foreign degree	1.3263***	1.1682***	1.2164***	1.2721***	1.4630***	1.5964***
Management	1.2402***	1.1920***	1.1763***	1.1840***	1.1775**	1.5055***
professional	1.1752***	1.2044***	1.1785***	1.1523***	1.11	1.2766**
Skilled worker	1.0365	1.0063	0.9962	1.0064	1.0104	1.1669
Unskilled worker	0.8392***	0.8564***	0.8326***	0.8306***	0.8178***	0.8984
Clerical	0.9737	0.9835	0.9795	0.9793	0.9372	1.0296
Union member	0.9109**	0.9924	1.019	0.9626	0.8730**	0.8306*
Married person	1.0926***	1.0609***	1.0721***	1.0849***	1.0984***	1.0916*
Intercept	1.1821	0.9054	0.8671	0.8253	1.149	2.0225**

*, ** and *** presents 5, 10 and 1% respectively.

Table 8: OLS and Quantile Regression results of Immigrants Sample

Dependent Variable: Log hourly Pay	**OLS**	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**
Age	0.9778	1.0099	0.9835**	0.9936	1.0035	0.9215***
Squared age	1.0540*	0.9962	1.0513***	1.0374	1.0116	1.1438***
Male	1.1518**	1.1964***	1.1303***	1.1156*	1.1769***	1.0713
Training	1.0137	0.9772	1.0013	1.0288	1.037	0.9733
Manufacturing	0.6777*	0.7280***	0.7406***	0.6293***	0.6426***	1.2704
Selangor	1.0321	0.8103***	0.8984**	1.0787	1.3197***	1.7819***

Melaka	0.943	0.7893*	0.7169***	0.9339	1.6606***	1.6598*
Penang	0.7846*	0.7327***	0.7606***	0.8348*	0.8352*	1.0931
Kedah	0.6307***	0.7068***	0.6483***	0.6650***	0.5911***	0.8924
Johor	0.7464**	0.7509***	0.7743***	0.8243*	0.8783	0.7954
Terengganu	0.5637**	0.8525	0.7656**	0.7019*	0.5897***	0.3324**
Sabah	0.6773**	0.7994*	0.7901***	0.8138	0.7608*	0.4645**
Sarawak	0.4996***	0.4690***	0.4774***	0.5250***	0.5825***	0.5673**
Degree	1.6439***	1.1727	1.3194***	1.4631***	1.7141***	3.9241***
Diploma	1.6396***	1.0358	1.2434***	1.4422***	2.7368***	2.6946***
Upper secondary	1.1672*	1.036	1.0971**	1.0933	1.2160**	1.6155**
Lower secondary	1.1512	1.0248	1.0806**	1.1271	1.2805***	1.4192*
Primary	1.0558	1.0148	1.0215	1.0034	1.0996	1.4218*
Informal education	0.9829	0.9808	1.0352	0.9958	0.9956	0.8857
Professional certificate	1.1245	1.2001**	1.1167**	1.2567**	1.0237	0.8513
Communication skills	1.014	0.9802	1.0568***	1.0665	1.0449	0.9461
Leadership skills	0.9457	1.0013	1.0265	0.9985	1.001	0.8519
IT Skill	1.1294**	1.0174	1.0716***	1.0914*	1.1132**	1.3431***
Foreign degree	0.8476***	0.9256*	0.8882***	0.8572***	0.8927**	0.6730***
Management	1.0241	0.7601*	0.7374**	1.0341	1.6939**	2.3381**

			*		*	
professional	1.4878*	0.8573	1.1074	1.6952***	1.6957***	4.9728***
Skilled worker	1.2588*	0.962	1.0156	1.1037	1.3155**	2.2734***
Unskilled worker	0.9986	0.912	0.9237*	0.9246	0.9578	1.4350*
Clerical	1.0845	0.8602*	0.9155*	0.9542	0.9854	2.1889***
Union member	0.7724	1.1084	0.9737	0.7356*	0.7815	0.5125*
Married person	1.056	0.9531	0.9615*	0.9767	1.0389	1.2639**
Intercept	6.1640***	2.9221***	4.0945***	4.4425***	4.3689***	9.2850***

*, ** and *** presents 5, 10 and 1% respectively.

Table 9: Decomposition Results from OLS regression

Dependent Variable: Log hourly Pay	Attributes	Endowments	Coefficients
Age	313.3	38.6	274.7
Squared age	-137.5	-28.1	-109.4
Male	-2.2	-6.8	4.6
Training	3.9	1.6	2.3
Manufacturing	23.6	4.2	19.4
Selangor	-0.4	0	-0.4
Melaka	-0.8	-0.2	-0.6
Penang	1.2	0.4	0.8
Kedah	2	2.1	-0.1
Johor	0.7	1.9	-1.1
Terengganu	-0.8	-0.7	-0.1
Sabah	-0.8	-0.3	-0.5
Sarawak	-1.5	-1.7	0.2
Degree	11.7	10.3	1.4
Diploma	9.1	8.3	0.8
Upper secondary	12.6	6.3	6.3
Lower secondary	1.2	-2.3	3.5
Primary	-0.3	-1.6	1.3
Informal education	0.3	-2.1	2.4
Professional certificate	0.8	0.9	0
Communication skills	-0.8	0	-0.7

Leadership skills	1.1	0.1	1
IT Skill	-2.9	0.2	-3
Foreign degree	6.4	-7.6	14
Management	2	1.7	0.3
professional	0.9	1.4	-0.5
Skilled worker	-2.2	0.2	-2.4
Unskilled worker	-5.8	5.2	-10.9
Clerical	-2	-0.2	-1.8
Union member	0	-0.2	0.2
Married person	3.2	1.7	1.5
Subtotal	236	32.9	203.1

Table 10: Decomposition Results from Quantile Regression (Continued on next page)

Dependent Variable: Log hourly Pay	**Attrib**	**Endow**	**Coeff**	**Attrib**	**Endow**	**Coeff**	**Attrib**	**Endow**	**Coeff**
		Q1			Q2			Q3	
Age	173.5	31.5	142	288.6	37.4	251.2	295.8	43.2	252.6
Squared age	-75.2	-24.4	-50.8	-136.4	-28.5	-107.9	-134.8	-31.7	-103.1
Male	-5.7	-6.6	1	-0.8	-6.7	5.9	0.2	-6.6	6.8
Training	5.1	1.7	3.4	4.2	1.6	2.6	3.4	1.5	1.9
Manufacturing	10.5	5.9	4.6	12.5	4.8	7.6	30.4	4.3	26.1
Selangor	5.5	0	5.5	3.6	0	3.6	-2.3	0	-2.3
Melaka	-0.1	-0.2	0	0.1	-0.2	0.2	-0.5	-0.1	-0.3
Penang	2.4	0.4	2	2.2	0.3	1.9	0.4	0.4	0
Kedah	1.3	1.8	-0.5	2.2	1.7	0.5	2.1	1.7	0.4
Johor	2.6	1.4	1.2	2.5	1.2	1.3	-0.1	1.3	-1.4
Terengganu	-0.9	-0.6	-0.4	-1	-0.6	-0.3	-1	-0.7	-0.3
Sabah	-0.7	-0.2	-0.5	-0.8	-0.2	-0.6	-1	-0.3	-0.7
Sarawak	-1.1	-1.5	0.4	-1.1	-1.5	0.4	-1.2	-1.5	0.2
Degree	12.6	10.1	2.5	13	10.7	2.3	14	11.8	2.2
Diploma	10.3	8	2.4	10.1	8.3	1.8	11.2	9.6	1.6
Upper secondary	13.2	5.5	7.7	13.4	6.1	7.3	16.9	7.5	9.5

Lower secondary	3.3	-1.7	5.1	2.7	-2.1	4.8	3.4	-2.9	6.3
Primary	0.3	-1.1	1.4	0.2	-1.2	1.4	1.4	-2.4	3.7
Informal education	0.2	-1.4	1.7	-0.3	-0.5	0.3	0.1	-1	1.1
Professional certificate	-0.3	0.4	-0.7	0.7	0.8	-0.1	0.1	0.8	-0.7
Communication skills	2.5	0.2	2.4	-1	0.1	-1	-1.7	0	-1.8
Leadership skills	1	0.3	0.7	0.1	0.1	0	0.6	0.2	0.5
IT Skill	-0.5	0	-0.5	-2.6	0	-2.6	-2.3	0.1	-2.4
Foreign degree	3.1	-4.2	7.3	4.6	-5.3	9.8	5.9	-6.5	12.4
Management	2	1.4	0.6	1.9	1.3	0.6	1.5	1.3	0.2
professional	2.3	1.6	0.7	1.5	1.4	0.1	0.4	1.2	-0.8
Skilled worker	0.6	0	0.6	-0.3	0	-0.2	-1.1	0	-1.2
Unskilled worker	0.6	4.6	-4	-1.1	5.4	-6.5	-1.3	5.5	-6.7
Clerical	2.2	-0.1	2.3	1	-0.1	1.1	0.3	-0.1	0.4
Union member	-0.2	0	-0.2	0.1	0	0.1	0.3	-0.1	0.4
Married person	5.9	1.1	4.8	6.2	1.3	4.9	6.3	1.5	4.7
Subtotal	**176.4**	**33.7**	**142.6**	**226.1**	**35.6**	**190.6**	**247.2**	**37.9**	**209.4**

Table 11: Decomposition Results from Quantile Regression (Continued from previous page)

Dependent Variable: Log hourly Pay	Attrib	Endow	Coeff	Attrib	Endow	Coeff
		Q4			Q5	
Age	268	43.4	224.7	479.1	37.5	441.6
Squared age	-109.6	-30.9	-78.7	-199.7	-24.8	-174.9
Male	-4.5	-6.5	2	3.8	-6.7	10.4
Training	2.7	1.3	1.4	4.9	1.6	3.4
Manufacturing	31.8	3.3	28.5	-25.3	0.5	-25.8
Selangor	-7.4	0	-7.4	-9.4	0.1	-9.5
Melaka	-1.9	-0.2	-1.7	-2.6	-0.4	-2.3
Penang	0	0.4	-0.5	-4	0.4	-4.4
Kedah	3	1.9	1	-2.8	3	-5.7
Johor	-4	1.8	-5.8	-7.4	3.2	-10.6
Terengganu	-0.7	-0.6	-0.1	-0.7	-0.9	0.2
Sabah	-1	-0.3	-0.7	-0.6	-0.5	-0.1

Sarawak	-1.7	-1.7	0	-2.6	-2.4	-0.2
Degree	12.7	11.2	1.5	8.6	10.3	-1.7
Diploma	8.6	9.4	-0.8	7.2	8.3	-1.1
Upper secondary	15.3	7.8	7.6	8.2	7.5	0.7
Lower secondary	0.2	-3.2	3.4	-3.6	-2.9	-0.7
Primary	-0.6	-2.6	2	-6.6	-2.6	-4
Informal education	0.2	-2.6	2.8	1.4	-6.2	7.6
Professional certificate	1.4	0.9	0.5	3.6	1.5	2
Communication skills	-2.1	-0.1	-2	-0.3	-0.2	-0.1
Leadership skills	0.2	0.1	0.1	1.9	-0.1	1.9
IT Skill	-2.3	0.2	-2.5	-7.7	0.3	-8
Foreign degree	5.2	-10.3	15.5	14.4	-12.6	27
Management	0.8	1.3	-0.5	2.7	3.2	-0.6
professional	0	0.9	-0.9	-0.7	2	-2.8
Skilled worker	-3.2	0.1	-3.3	-7.4	1	-8.3
Unskilled worker	-4	5.9	-9.9	-26.3	3.2	-29.4
Clerical	-1.3	-0.4	-0.8	-12.6	0.2	-12.8
Union member	-0.2	-0.3	0.2	0.3	-0.4	0.7
Married person	4.3	1.8	2.5	-5	1.6	-6.6
Subtotal	**209.9**	**31.9**	**178**	**210.7**	**24.7**	**186**

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