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Returns From Higher Education in Malaysia: Analysis of Wage-Employed and Self-Employed Workers

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ABSTRACT

Using data from the Household Income Survey (HIS) in 2012, this study aims to investigate the returns from education between wage-employed and self-employed workers. Both human capital and hybrid models have been applied to distinguish between returns from education regarding years of schooling as a reflection of workers' productive-enhancing contribution (human capital) and returns from education regarding certificates of qualification, which serve as signals of an individual's ability (sheepskin effects). The results of the estimated earnings function reveal that the sheepskin effects brought substantially more earnings when compared to years of schooling with the largest individual sheepskin effects, which is associated with the degree and advanced diploma qualifications for both wage-employed and self-employed workers. The results showed that self-employed workers receive more substantial returns than wage-workers at the diploma, bachelor's degree, advanced diploma, and master's degree levels. This indicates that the self-employed workers' job satisfaction signals a higher level of productivity, and it could explain the higher returns enjoyed by self-employed workers with higher educational levels. Hence, this study suggests the introduction of a graduate loan implemented for self-employed workers who are unable to secure funding to start their business or to provide bridging funding during slowdown periods.

JEL Classification: J24, J31

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INTRODUCTION

The annual number of certificates awarded by public and private universities and colleges has increased dramatically, but relatively little research has been conducted on the economic benefits of certificates at the tertiary level in the labour market (e.g:Yunus, 2017). Previous estimates of returns from education have been limited by the lack of information on the types of degree attained (e.g., Kenayathulla, 2013; Said et al., 2009). Using the Household Income Survey (HIS) data in 2012 that provides comprehensive information on the types of tertiary education pursued (certificates, degrees and diplomas, master's degree, and PhD), this study will contribute to the literature in terms of returns from education in three aspects.

First, the analysis of returns in this study will discuss individuals' returns at different types of the highest certificates of qualification from different institutions, according to the field of study. An investigation of the returns from specific fields of study and from different institutions can further improve our understanding of how qualifications are related to labour-market outcomes. This is necessary due to the increasing number of graduates from tertiary education and the decreasing variance in education credentials or highest certificate achieved. Such a trend might provide a less reliable signal when hiring an employee based on his or her certificate earned per se. Thus, in some cases in the economic sector, education level would lose its potential role as a filter, and employers must rely on other productivity signals, such as the specific field of study[1] (Yunus, 2017; Machin and McNally, 2007).

Secondly, the present study extends the analysis of returns for both wage-employment and self-employment as the existing Malaysian literature on the earning differentials between these groups is not substantial (Kennayatulla, 2013; Idrus and Cameron, 2000). In the existing studies, labour market rewards to human capital among wage-employment individuals who work in the wage and salary sector are well known. However, the rewards to human capital investment for self-employment individuals is less known (e.g. Idrus and Cameron, 2000; Williams, 2003). This paper will contribute to our knowledge of the returns to education from Malaysian workers who are self-employed. This study can potentially help policymakers determine the effectiveness of different types of certificates of qualification in the self-employment activity, as governments and public policy makers encourage self-employment in order to combat poverty and unemployment, especially among graduates (Williams, 2003). In the Malaysian context, the number of graduates entering self-employment is expected to increase due to the Malaysian Government's aspiration to establish well-balanced graduates in terms of morality and knowledge by increasing the number of graduates based on these values and entrepreneurship[2].

Thirdly, this study will shed light on the issues of whether returns to education from years of education is a reflection of the individuals' productive-enhancing contribution (human capital) or returns to schooling from certificates act as signals of the individuals' ability (signalling/screening theories-sheepskin' argument). There are still several unresolved and debatable research questions concerning the relationship between education and earnings despite evidence that indicated that education generally benefits the individual (Ferrer and Riddell, 2002; Mora, 2003; Bauer et al., 2005; Teixeira, 2007). In the case of degree and diploma effects, the question arises regarding whether a proper sheepskin effect really exists[3]. This is particularly important, because much of the apparent drop in returns to education, particularly among new graduates, is concentrated specifically in graduates who fail to obtain graduate-level jobs, and they tend to be over- or under-educated[4] (EPU and Bank, 2012; Yunus, 2017; Yunus and Hamid, 2016). At this juncture, Malaysian employers already possess considerable information on the innate productivity of their employees at the time of hiring, which in turn implies the secondary role of university degrees and diplomas as an aspect of screening (EPU and Bank, 2012). A special recruitment system has been implemented to recruit productive workers, as wages are closely linked to certificates of qualification held by employees and additional years of schooling. Hence, the present study differs from previous studies in Malaysia, as it not only provides additional insights into the human capital signalling/screening theories, but also extends the

[1] The estimation based on the highest level of schooling completed (credentials) is more accurate because it provides an alternative structure for recovering the returns to schooling (Harmon, Oosterbeek, & Walker, 2003). Unlike previous studies including in Malaysia, the estimation of the returns to education remains limited to use of level of education (e.g.: Mazumdar,1981; Said et al., 2009; Kenayathulla,2013). The level of education is more general due to its measure of groups of people who were at school for a certain period of time but who may not have achieved the equivalent qualification level.

[2] Recent statistics show that 42 percent of Malaysians think entrepreneurship is a good career choice (MOHE, 2013).

[3] The empirical labour literature often refers to returns from specific credentials of education as the "sheepskin effects" (Harmon et al., 2003).

[4] Over-educated/over-qualification refers to the situation in which individuals are employed in jobs that do not require their current qualifications or the skills they have are higher than the skills required for the job. Under-educated/ under-qualification refers to workers whose qualifications are lower than that required by their occupation (Kiker, Santos& De Oliveira 1997; Hung, 2008 ;Quintini,2011).

analysis to examine the effects of educational mismatch on the educational returns of wage earners and self-employed workers with different certificates of qualification and from different institutions.

REVIEW OF LITERATURE

The human capital theory and the sorting model are two popular ventured theories that explain the nature of causality between education and productivity, thereby providing a theoretical justification for the correlation between education and earnings. According to human capital theory, education or training increases workers' productivity by imparting useful knowledge and skills, thereby raising workers' future income by increasing their lifetime earnings (Becker, 1962; Schultz, 1961). One prediction of human capital theory is the notion that education raises the productivity of an individual and that higher wages exist. This assumption prevails largely due to its success in describing the relationship between schooling and earnings in the earnings function (Psacharopoulos and Patrinos, 2004).

On the contrary, the sorting model reveals that the primary function of education is to indicate to employers in the labour market that innate productivity is related to the workers' characteristics. There are two models that comprise the sorting model, namely the signalling hypothesis and the screening hypothesis (Spence, 1973). The primary difference between these two theories is its game-theoretical nature. The signalling hypothesis explains that workers are informed about their own productivity through different levels of education, aimed at signalling their innate abilities to prospective employers. On the contrary, under the screening hypothesis, employers are uninformed about employee productivity. They require applicants to demonstrate a minimum level of education or simply look at the applicants' given level of educational attainment when screening prospective employees and inferring their innate abilities.

In the context of education, signalling and screening share a special kind of dichotomy. Screening is effective if the individuals' educational attainment can convince employers of their natural abilities, because employers use the educational attainment signal as a screening tool in the selection of candidates for work. Hence, the sheepskin effects that describe present certificates as signals of higher productivity can be used to evaluate the screening theory of education1 (e.g., Ferrer and Riddell, 2002; Mora, 2003; Bauer et al., 2005).

Hungerford and Solon (1987) confirmed the existence of the sheepskin effects in the returns from education for wage-employed workers. They identified significantly larger returns from diploma years than from other years of education. They argued that workers are rewarded not only for the productive-enhancing contribution of schooling, but also for obtaining the diploma that comes with completing a particular level of schooling. Hungerford and Solon (1987) also noted that the marginal returns from education are exceptionally large in diploma years (in year 12 and year 16 in the US). They found that discontinuities in returns were observed for certificated years. In this case, certificates of completion had economic returns which were independent from years of education. This finding confirmed the predictions of signalling theory. Heywood (1994) and Belman and Heywood (1997) consistently supported the findings of Hungerford and Solon (1987). However, Jaeger and Page (1996) found limited support for the sorting model, as they lacked direct measures of degree attainment. In contrast, their analyses of the US data included measures of both (accumulated) years of education and degree attainment. Their results generally revealed that the receipt of a degree brought about substantial earnings that benefitted the total number of years of completed schooling. As such, this finding could be interpreted as a more valid sheepskin effects. Jaeger and Page's (1996) findings also indicated that the sheepskin effects were approximately twice as large as those reported by Hungerford and Solon (1987).

Park (1999) investigated the relationship between years of schooling and level of certificate achieved. Using information from a special Current Population Survey (CPS) to estimate the sheepskin effects and by applying the quantile regression technique, he found that the interaction between years of schooling and the level of certificate achieved with additional years of schooling increased according to the level of qualification. The returns for workers with a bachelor's degree was 21 percent when compared to workers with an associate degree and a high-school diploma, which were at 11 percent and 9 percent, respectively. Silles (2007) found that the sheepskin effects from a higher university degree entailed a wage advantage of more than 50 percent compared to a non-significant premium qualification at each level of education for both men and women. This is controlled by the years of schooling in the UK. Mora and Muro (2008) found that salaries of university degree holders were approximately 26 percent more and individuals who held a secondary degree had 14 percent greater salaries in Colombia. In a

similar pattern, Gibson (2000) also documented the sheepskin effects. More precisely, he calculated that the annual earnings and benefits of a postgraduate education compared to non-schooling exceeded 50 percent for males, controlling for years of education. Ferrer and Riddell (2002) found that, in Canada, the returns from a bachelor's degree were approximately 25 percent for both genders compared to those of a high school diploma. The analogous return from a professional degree exceeded that figure by 35 percent. This study revealed that the importance of credentials increased with educational attainment, accounting for 30 percent of the returns from 16 years of schooling but more than half of returns above 16 years. The results indicated that both years of schooling and the degree's certificate of completion influenced earnings.

In empirical studies regarding self-employment, Alba-Ramírez and San Segundo (1995) estimated the returns of education in such a context in Spain. This study showed that the returns of education were higher for self-employed workers than for wage and salary workers, particularly in terms of the rate of returns from higher education. Iversen et al., (2010) found a highly non-linear relationship with very low returns from most educational levels in self-employment in the Danish labour market. The result showed that the highest returns from education in self-employment were found among doctors and lawyers in private practice, which were not considered typical self-employed professions in the sense that they required highly specialised individuals and not "jacks-of-all-trades." This study concluded that the low returns from most levels of education in self-employment could be taken as evidence in favour of the signalling theory of education. Hamilton (2000), in his investigation of the earnings differentials in self-employment and wage-employment, suggested that the nonpecuniary benefits of self-employment were substantial. Many entrepreneurs entered and persisted in business despite the fact that they had both lower initial earnings and lower earnings growth than in wage-employment, thus implying a median earnings differential of thirty-five percent for individuals in business for ten years. This result indicated that the differential earnings between wage-employed and self-employed workers cannot be explained by the selection of low-ability employees in self-employment. Using data from the German socio-economic panel survey for 1984-1997, Williams (2003) calculated the comparison returns between the self-employed and the wage-employed sectors of the economy. He estimated returns to education and work experience from standard log-earnings equations for self-employed and wage-employed workers. Two key results were found. First, additional schooling had a smaller effect on earnings for the self-employed than for the wage-employed, suggesting that educational attainment had an insignificant effect on self-employment earnings. Second, prior self-employment experience received a lower return in wage employment than did prior wage-employment experience. These results were consistent across specifications, controlling for education endogeneity and self-selection bias.

In a case study in Malaysia, Idrus and Cameron (2000) examined whether the returns to education differed between the self-employed and wage-employed sectors in a rural Malay area in Rantau, Malaysia. The result showed that there was no significant difference between the self-employed and wage-employed sectors. The result revealed that the private returns to education increased by the level of schooling that are the highest at the secondary level. Similarly, Mazumdar (1981) also revealed that the rates of returns to education differed between the self-employed and wage-employed sectors, in which the returns of the self-employed are generally lower than those of the wage-employed sector. However, the estimation of the earnings function for both studies was limited to the level of formal education.

DATA DESCRIPTION AND SCOPE OF STUDY

The present study uses the Malaysian Household Income Survey (HIS) in 2012. The HIS is one of the most comprehensive surveys of individual earnings in Malaysia, thus making it an ideal data source to analyse the returns to education at different levels of certificate qualification.

The latest HIS is useful in providing valuable information to the government for assessing the efficiency of public investment in education, especially in solving the problem of both educational mismatches (over-under education) in the Malaysian labour market. Both aspects may reflect inefficiencies in the allocation of resources.

Since the purpose of this study is to investigate the returns to education by credentials, several aspects must be considered when performing sample selection. First, the sample of the present study comprised both wage-

employed and self-employed individuals who are between the ages of 15 to 64.[5] Secondly, the sample selection in this study is restricted to those individuals who have completed their schooling at the highest certification qualification and excludes individuals who did not attend school or workers who have no formal educational qualifications. Thirdly, the sample does not include people who have received a traditional Islamic education or those, mainly migrant workers, who have qualifications which are not recognised in the Malaysian education system by the Ministry of Education, Malaysia.

Within the sample of this study, 634 individuals were excluded from the data set because they were likely not in the working age population when the data was collected. This study also disregarded 4,947 individuals who had no certificates. The sample excluded 1,828 cases in which the participants were categorized as not working. These individuals consisted of unpaid family workers or those working without pay, housewives, people looking after the home, students, pensioners, children not at school, and those who have never worked. Lastly, 75 cases with a missing value for certificates of qualification were excluded from the analysis. The sample used for this study consisted of 28,803 individuals with 19,019 wage-employed individuals and 9,784 self-employed individuals.

EMPIRICAL METHODOLOGY

The present study employs an extended Mincer model (1974) to present both human capital and hybrid models in which additional variables influence earnings apart from education, experience, and years of schooling. The human capital model is presented as follows:

$$\ln W_{itk} = a_0 + \beta_1 Years\_sch_{itk} + \beta_2 EXP_{itk} + \beta_3 EXP^2{}_{itk} + \gamma V_{itk} + \varepsilon_{itk} \qquad (1)$$

where *i* indexes individuals (i= *1, . . . ,N*), and t indexes the time period of (t = 2012). *LnW* is the natural log of the yearly earnings for wage-employed and self-employed workers[6]. Years_sch represents years of schooling according to HIS classification (as defined in the Malaysian educational system)[7]. It consists of Year One (Standard One) to beyond Year 16 (university). Those with one to five years of schooling are used as a reference group. *EXP* is the potential experience (age minus years of schooling-7), which reflects the assumption that a child begins schooling at the age of seven and starts working immediately after completing schooling; this formula is akin to the Malaysian education policy of compulsory schooling for children beginning at the age of seven. EXP^2 is the quadratic of experience. It is used to capture the concavity of the experience earnings profile. *V* is another explanatory variable assumed to affect earnings, specifically marital status, occupation, and strata. The detailed dependent and independent variables and control variables including their summary statistics are shown in Appendix A.

Next, both years of schooling and level of completed education at the highest certificates of qualification are included in the hybrid model. The model is presented below:

$$\ln W_{itk} = a_0 + \beta_0 \sum_E Edu_{itk} + \beta_1 EXP_{itk} + \beta_2 EXP^2{}_{itk} + \beta_3 Years\_sch_{itk} + \gamma V_{itk} + \varepsilon_{itk} \qquad (2)$$

where *Edu* is the level of educational attainment by *E* types of the highest certificate qualification obtained at school (Primary School Achievement Test (PSAT)/Religious, KAFA Class Assessment Test, Lower Certificate of Education (LCE), Middle Certificate of Education/Vocational (MCE/MCVE), Higher School Certificate (HSC),

[5] Wage-employed workers refer to individuals who are earning income from wage employment in government sector (a person who works for a public employer), private sector (a person who works for a private employer and receives regular remuneration in wages, salary, commission, tips or payment in kind) and Employer (a person who operates a business, a plantation or other trade and employs one or more workers to help him). Self-employment is a person who operates his own farm, business or trade without employing any paid workers in the conduct of his farm, trade or business (DOS,2012).

[6] *LnW* is the natural log of the yearly earnings for wage-employed and self-employed. Income earnings from wage-employed may be received in cash or in kind as goods and services. These include direct wages and salaries for time worked and work done, cash bonuses and gratuities, commissions and tips, directors' fees, profit-sharing bonuses, and other forms of profit-related payments and goods and services provided free or subsidised by the employer (including free food/concession). The earnings of those who were self-employed may be received from agriculture and fishing, ICT, and non-ICT activities. This income also includes imputed rent for a house value occupied by owners.

[7] Years of schooling refers to individuals who just left school in a particular year and did not have a certificate. This is to distinguish between credentials and non-credentials even though years of schooling are the same.

Higher School Religious Certificate (HSCR) and the types of tertiary education (certificates, degrees and diplomas, Master's degrees and PhDs) received from universities, polytechnics, colleges, and matriculation schools.

Econometric Analysis

In order to examine the relationship between education and earnings in 2012, a series of earnings regressions are performed. This study differentiates, specifically, between human capital theory versus "signalling/screening" theories (sheepskin' argument) to estimate the earning function for both salary-employment and self-employment workers[8]. In the context of the developing countries, the sheepskin effects in the returns to education need to be explored because the issue of human capital vs. signalling has great importance to developing countries in contemplating investment in education as a growth strategy (Hanushek, 2013). The sheepskin effects also have research and policy interest because they provide estimates of the value of completing educational programmes; Bauer, Dross, & Haisken-Denew, 2005; Jepsen, Troske, & Coomes, 2014; Xu & Trimble, 2016). In fact, most empirical research on earnings functions assume the absence of the sheepskin effects (Hungerford & Solon, 1987; Park, 1999; Antelius, 2000; Trostel, 2005).

Following convention, the natural logarithm of annual earnings, the baseline regression model, Model (1), is a straightforward extension of the Mincer equation, in which years of education is the independent variable of main interest. Model (1) is considered a human capital model developed by Mincer (1974) that provides a linear relationship between the logarithm of earnings and years of schooling, and interprets the coefficient of this variable as the return from one year of schooling. Nonetheless, the human capital model does not allow researchers to determine the nature of these returns. Hence, one of the more frequently used contrasts of the Screening model versus Human Capital theory is based on the "sheepskin argument," as shown in model (2)[9]. Model (2) is considered a hybrid model, as it nests the human capital model and the sorting model in which one's years of schooling and highest level of certificate qualification obtained (see **Appendix A**) are represented by a string of dummy variables which are the independent variables (Ferrer & Riddell, 2002).

This study employs OLS estimators to analyse the returns from education at different levels of certificate qualifications for both wage-employed and self-employed workers. Although the methodology used is only a regression analysis, the outcome of this analysis can still provide a preliminary picture of the role of certificates of qualification in enabling individuals to seek higher returns of both wage-employment and self-employment activities. This is particularly important, as it is in line with the Malaysian government's aim to shift the country from a government-dependent society to a self-employed society (Nasharudin & Harun, 2010).

Conventionally, the returns to schooling are estimated using OLS that will be associated with the sample selection bias. Sample selection bias arises when individuals self-select waged work on the basis of some unobserved attributes (such as ability, preference, and motivation) that also affect their wages (Willis and Rosen, 1979). This is an important issue in the context of developing countries, where the majority of the population is engaged in various self-employment activities (Kennayatulla, 2013). However, we cannot test the hypothesis between unobserved attributes and earnings due to the unavailability of data. Thus, the sample of individuals who are involved in wage work for which data is available is likely to be non-random in this study (Kennayatulla, 2013).

The OLS estimates of earning functions also potentially suffer from omitted variable bias. The regression analyses might be biased via the omission of ability variables or other factors correlated with degree completion. For example, unobserved inherent ability is a determinant of both schooling attainment (independent variable) as well as earnings (dependent variable). Thus, it causes the schooling variable to be endogenous in the earnings function, yielding inconsistent estimates of returns to schooling (Aslam, 2009).

To deal with the heteroscedasticity problem due to unobserved heterogeneity, namely health, ability, and family background characteristics, the present study employed the OLS estimator using regression with a robust standard error, as suggested by Huber (1992). The robust standard errors option in regression was also efficient in

[8] To the author's best knowledge, only studies by Bauer, Dross, and Haisken-Denew (2005), Bañuls and Ramón Rodríguez (2005), and Thrane (2010) estimated the returns to education for wage-employed workers by shedding light on the issues regarding whether the returns from education in terms of mere years of education are a reflection of the individuals' productive-enhancing contribution (human capital) or the returns to schooling from certificates are signals of the individuals' ability (sheepskin effect argument). However, all studies were conducted in developed countries.

[9] This study preferred to define the sheepskin effect by highest certificates of qualification rather than by a specific number of years for certain certificates. We think there are some problems with identifying degrees with years of education in our current sample due to the different possible options in the Malaysian education system, especially in upper secondary schools and universities. In fact, we encountered some difficulties when assigning a specific number of years for certain certificates in our sample as in other studies (Jaeger & Page, 1996).

dealing with normality minor problems, because some observations might exhibit large residuals, leverage, or influence as well as capture possible concerns about the effects of serial correlation on standard errors (Wooldridge, 2002).

For the purpose of analysis, the regression for human capital and hybrid models were performed. No further explanation was required for the human capital model for years of education, but this was not the case for the level of completed schooling in the hybrid model.

ECONOMETRIC RESULTS

In the human capital model (Model 1), the results in Table 1 indicate that all independent variables are statistically significant to determine earnings. The main point is to report that one additional year of schooling increases gross yearly earnings in 2012 by roughly 12.6 percent and 11.8 percent for wage-employed and self-employed workers, respectively. The years of schooling for wage employment are higher than for self-employment, and this indicates that, with an additional year of schooling, labour market earnings increase more for salaried employed than for self-employed workers.

Table 1 Annual Earninings According to (logged) by Years of Schooling for Wage-Employed and Self-Employed Workers in 2012. OLS Regression Analysis

Variables	Human Capital Model			
	Wage- Employed		Self-employed	
	Coef.	S.E	Coef	S.E
Years of Schooling	0.126	0.012	0.118	0.009
Primary School Achievement Test				
Lower Certificate of Education (LCE)				
Middle Certificate of Vocational Education(MCVE)				
Higher School Certificate (HSC)				
Higher School Religious Certificate (HSRC)				
Matriculation				
CERT IN TRADE_TECHNICAL				
CERT_COLLEGE				
CERT_POLYTHECNICS				
CERT_UNIVERSITY				
CERT_TEACHING				
DIPLOMA_TRADE_TECHNICAL				
DIPLOMA_POLYTHECNICS				
DIPLOMA_UNIVERSITY				
DIPLOMA_TACH_NURSE				
BCH_PROF DEGREE				
MASTER_DEG				
PHD_POST_DOCT				
EXPERIENCE	0.019	0.001	0.017	0.002
EXPERIENCE^2	0.000	0.002	0.000	0.000
Occupations				
MANAGER	0.411	0.035	0.413	0.010
PROFESSIONAL	0.495	0.011	0.517	0.021
TECHNICIAN	0.333	0.017	0.700	0.013
CLERICAL	0.181	0.150	0.244	0.030
SERVICE_SALES	0.004	0.046	0.654	0.017
SKILLED_AGRICULTURE	0.061	0.013	0.329	0.027
CRAFT_TRADES	0.043	0.001	0.516	0.012
PLANT_MACHINERY	0.032	0.014	0.032	0.002
ELEMENTARY	0.068	0.021	0.330	0.043
URBAN	0.211*	0.009*	0.322	0.011
MALE	0.141	0.003*	0.123	0.016
MARRIED	0.160	0.021	0.101	0.013
(Constant)	8.842	0.013	7.613	0.012
N	19,019		9,784	
R^2	0.389		0.337	

Note: Huber/white robust standard errors are in parentheses; *: not significant; -: data not available; coef: coefficient; S.E: standard errors

Regarding the hybrid model (Model 2), which includes both years of schooling and level of completed education at the highest certificates, the results in Table 2 indicate that the coefficient for all degrees remains statistically significant for both wage-employed and self-employed workers. It is interesting to note that, when degrees are taken into account, the effect of years of schooling is reduced by 8.73 percent and 6.77 percent,

respectively, for wage-employed and self-employed workers. This result demonstrates that the certificate effects are more substantial than accumulated years of schooling in determining the earnings for both wage and self-employment workers.

The results of the estimated earnings function in the hybrid model indicated that both wage-employed and self-employed workers with a bachelor's degree and advanced diploma had substantial earnings compared to other certificates of qualification in 2012. This result indicated that more educated candidates were not only more prone to procure employment than the less educated candidates, but were also more likely to procure better job opportunities and earnings (Yunus & Said, 2016). On the other hand, screening theories of education, while allowing for learning, suggest that better educated individuals earn more because education serves as a credential which signals higher productivity (Spence, 1973; (Arrow, 1962)(Arrow, 1962)Weiss, 1995).

Empirically, this result supports the claim that the returns among workers are much higher when there is a match between the skills supplied/education profile with the firm's demand compared to workers who are over-educated or under-educated[10] (Freeman,1977; Lamo & Messina, 2010; Quintini, 2011).

Table 2 Annual earnings according to (logged) by years of schooling and level of certificates of qualification for wage-employed and self-employed workers in 2012. OLS regression analysis

Variables	Human Capital Model			
	Wage-Employed		Self-employed	
	Coef.	S.E	Coef	S.E
Years of Schooling	0.115	0.011	0.110	0.014
Primary School Achievement Test (PSAT)	-0.703	0.026	-0.340	0.043
Lower Certificate of Education (LCE)	-0.564	0.025	0.300	0.043
Middle Certificate of Education (MCE)	0.363	0.022	0.212	0.142
Middle Certificate of Vocational Education(MCVE)	0.429	0.072	0.030	0.199
Higher School Certificate (HSC)	0.225	0.031	-	-
Higher School Religious Certificate (HSRC)	0.156	0.207	-0.185	0.064*
Matriculation	-0.788	0.315	-	-
CERT_TRADE	-0.285	0.042	-0.145	0.087*
CERT_COLLEGE	-0.165	0.049	0.115	0.119
CERT_POLYTHECNICS	-0.354	0.500	-0.892	0.199
CERT_UNIVERSITY	-0.461	0.193	-0.339	0.242
CERT_TEACHING	-0.024	0.090*	-	-
DIPLOMA_TRADE_TEACH	-0.007	0.057	-0.191	0.204
DIPLOMA_POLYTHECNICS	0.107	0.046	0.205	0.120
DIPLOMA_UNIVERSITY	0.214	0.029	0.300	0.090
DIPLOMA_TACH_NURSE	0.028	0.041	0.024	0.180
BCH_PROF DEGREE	0.221	0.025	0.387	0.080
MASTER_DEG	0.128	0.032	0.494	0.097
PHD_POST_DOCT	0.179	0.074	-	-
EXPERIENCE	0.020	0.001	0.018	0.002
EXPERIENCE^2	-0.100	0.002	-0.021	0.000
Occupations				
MANAGER	0.517	0.315	0.631	0.033
PROFESSIONAL	0.559	0.031	0.651	0.042
TECHNICIAN	0.400	0.021	0.950	0.039
CLERICAL	0.229	0.115	0.394	0.003
SERVICE_SALES	0.105	0.051	0.777	0.017
SKILLED_AGRICULTURE	0.063	0.015	0.474	0.007
CRAFT_TRADES	0.034	0.002	0.655	0.012
PLANT_MACHINERY	0.044	0.014	0.048	0.102
ELEMENTARY	0.088	0.021	0.370	0.023
URBAN	0.322	0.009	0.334	0.017
MALE	0.251	0.014	0.249	0.027
MARRIED	0.205	0.011	0.201	0.022
(Constant)	8.934	0.015	7.848	0.043
N	19,019		9,784	
R^2	0.487		0.432	

Note: Huber/white robust standards errors are in parentheses; * : not significant; -: data not available; coef: Coef: coefficient; S.E: standard errors

[10] Following Kiker, Santos, and De Oliveira (1997), the self-assessment method was applied to measure whether both educational mismatch phenomena occurred in the return for certificates of qualification by comparing the level of highest certificate qualification reached by individuals with occupations. Both over-under educational mismatches were measured by referring to the concept of Skill Level by Education Qualifications set up by the Malaysia Standard Classification of Occupations (MASCO) code, 2008 (see Appendix C).

It can be proven that the highest proportion of salary-employed workers with degrees and advanced diploma qualifications, at 5.35 percent, are in the professional occupational group (see Appendix B). For self-employed workers, the data in Appendix B indicates that the highest proportion of self-employed workers with degrees and diploma holders are concentrated in the manager category.

At the diploma educational level, the results in Table 2 indicated that the sheepskin effects associated with diploma qualifications from polytechnics and universities had a substantial return for both wage-employed and self-employed workers compared to their counterparts in 2012. Again, the results of the study gave support to the claim that there was no over-education or under-education situations that occurred for wage-employed workers with diploma-level educational from different institutions. The results in Appendix B showed that the highest concentrations for wage-salaried workers with a diploma qualification from either polytechnics or universities were in the technician and associate professional categories, which matched their qualifications. The demand for both diploma holders from polytechnics and universities in these categories were at 0.573 percent and 1.735 percent, respectively.

A similar result showed that the highest percentage of self-employed workers with university diplomas was in the technician and associate professional groups. In contrast, the result revealed that both over-under education situations may occur for diploma holders from polytechnics in self-employment activities. The data in Appendix B showed that the highest proportion of self-employed workers with polytechnic diplomas was in the manager and sales and services profession. The over-educated workers influenced productivity through the worker's quality, especially when the workers' qualities were more than the workers' productivity in jobs requiring lower skills, which can be a plausible explanation for the high returns of over-education for diploma-educated workers (Kampelmann and Rycx, 2012; Mahy et al., 2013; Yunus and Hamid, 2016). For diploma holders in teaching, nursing, and allied health, the results in Table 2 showed that there was not much difference in the returns between the wage-employed and self-employed workers, which was recorded at only 0.4 percent.

Nonetheless, it is interesting to report that self-employed workers who hold bachelor's degrees, advanced diplomas, master's degrees, and diplomas from polytechnics and universities enjoyed higher returns than wage-employed workers in 2012. The high returns enjoyed by self-employed workers at tertiary educational levels in this study can be attributed to the level of satisfaction and enjoyment attained by the employee himself, which may eventually lead to high productivity. The current empirical study asserts that there is a positive relationship between job satisfaction and productivity (Böckerman et al., 2011; Bhatti and Qureshi, 2007; Georgellis and Yusuf, 2016; Hoboubi et al., 2017). Job satisfaction is not only a determining factor in occupational choice but may also contribute to a firm's competitiveness, productivity, and growth potential (Millán et al., 2013). This result is consistent with the current studies that found that self-employed workers are more satisfied with their jobs than wage-employed workers (Lange, 2012; Millán et al., 2013; Kwon and Sohn, 2017; Hytti et al., 2013). Research in the management and psychology literature suggests that entrepreneurial satisfaction may depend, at least in part, on specific values and personality characteristics such as optimism, low levels of depression, confidence, and low levels of risk aversion (Bradley and Roberts, 2004; Cooper and Artz, 1995).

In the Malaysian context, the increase in the level of job satisfaction among self-employed Malaysians may also be partly linked to the efforts by universities in promoting entrepreneurship as a key career choice (Olaiya, 2015; Suan et al., 2011). Apart from motivation and encouragement, universities also position themselves as entrepreneurial centres by cultivating an entrepreneurial environment (Dina et al., 2016). In response to the current market demands, the collaboration between universities and industries in developing the curriculum in entrepreneurship helps to ensure that entrepreneurship is attractive to graduates. Various programmes are implemented to equip them with updated knowledge and entrepreneurship skills, which can lead to high productivity and higher income. For example, Malaysia Agricultural Chemicals (M) Sdn. Bhd. has collaborated with Universiti Malaysia Kelantan in research and development (R&D) in agriculture, entrepreneurship, training programmes, agricultural management projects, knowledge management and technology transfer programmes, academic publications, information exchange, co-organising meetings, seminars and workshops, and other related academic fields. In fact, Malaysia is changing the state of its society from a government-dependent society to a self-employed society. The government has advised the public to create their own job opportunities and not to expect other people's help to support them and their families. This means that the government has indirectly encouraged the community to trade and become entrepreneurs. Apart from contributing to the employment opportunities among Malaysians, the wage-earning culture could be reduced by the presence of entrepreneurs in the job market (Nasharudin and Harun, 2010).

Next, we focus on the estimation result for certificate holders. The result in Table 2 showed that, in the self-employment category, only certificate holders from colleges have a statistically significant and positive relationship with earnings and enjoy the highest return. The results for self-employed and wage-employed samples are similar in terms of the negative education-earnings relationship. The qualifications include certificates from universities, polytechnics, and colleges as well as certificates in specific trades or technical skills. The possible reason for this negative relationship between education and earnings in this study can be associated with the current available skills among certificate-qualified workers. These workers do not have the advanced skills to fulfil the labour market's needs, especially in fields related to the increasing use of sophisticated technology that may require highly skilled workers with higher educational attainment and intelligent (Yunus and Hamid, 2017). This finding is consistent with the data in Appendix B that shows that the demand for technicians and associate professionals at the diploma educational level is reported at a higher percentage of 1.709 percent than workers at certificate levels. Another similar finding also shows that the demand for diploma graduates from polytechnics in the technician and associate professional group also recorded a higher percentage by 0.148 percent than certificate-qualified workers from polytechnics.

Another interesting finding in this study is related to the non-linear relationship between education and earnings. This can be clearly seen in the case of formal educational qualifications. The results in the hybrid model in Table 2 show that workers with a MCE/MCVE recorded higher returns than HSC for both of these statutes. Hence, the assumption that the return to additional years of schooling is the same regardless of education level is not necessarily valid in the Malaysian cases (Kenayathulla, 2013). This result implies that the Malaysian labour market remains favourable for semi-skilled workers with a demand for workers with MCE/MCVE qualifications. In fact, at a glance, the data in Appendix B shows that both wage-employed and self-employed workers work in clerical, sales and services, and plant and machinery occupation groups, which match their MCE/MCVE qualifications.

As expected, the effect of experience is found to be positive, while the effect of experience squared is negative for both self-employed men and women; this suggests that earnings increase with experience at a decreasing rate (Kenayathulla,2013). The coefficient year of experience in the hybrid model has increased wage-employed and self-employed workers' earnings by 5.26 percent and 5.88 percent, respectively. Two variables are found to be noteworthy in the hybrid model. For the occupational category, it is surprising to note that the coefficient of the self-employed in this model exceeds wage-employed occupations. This finding may be supported with the increase in demand for highly skilled professionals to enhance the development of small and medium enterprises (SMES). Hence, the government recognizes the importance of high-skilled occupations in the entrepreneurship activity to increase public-private sector partnerships (MOHR, 2006). Regarding marital status, the estimation result shows that married workers may increase work efforts due to family obligations regardless of employment status.

Lastly, the results in Table 2 report that both wage-employed and self-employed workers in the urban areas show a positive relationship with earnings, and they earn significantly more than 11 percent than their rural counterparts. This result implies that there are many opportunities for both types of workers to generate higher income as well as to develop their own business, and there is a higher standard of living (in terms of the availability of health services, transportation, telecommunications, financial centres, and public amenities).

CONCLUSIONS, POLICY IMPLICATIONS, AND RECOMMENDATIONS FOR FUTURE STUDY

Using the data in 2012, this study compares the returns to education at the highest level of qualifications from different institutions between salary-employed and self-employed workers. It applies both human capital and the hybrid model (it nests the human capital model and the sorting model) to estimate the earnings function for both wage-employed and self-employed workers. Four main points can be concluded from the results of this study. First, the years of schooling for wage-employed workers are higher than self-employed workers in the human capital model. Second, the coefficient of degrees is reported as higher than the years of schooling for those of both employment statuses in the hybrid model to seek higher returns. Third, the credential effects from bachelor's degrees and advanced diplomas bring substantial returns as compared to other credentials for both wage-employed and self-employed workers in 2012. This result indicates that the current job market demands a more educated

workforce and thus, this study draws attention to the importance of furthering one's education to the university level to capture higher returns from education.

Lastly, the most important finding of the study is that self-employed workers enjoy a higher return than wage-employed workers with similar qualifications that include bachelor's degrees, advanced diplomas, Master's degrees, and diplomas from polytechnics and universities. The high returns enjoyed by self-employed workers at these qualifications may be affected by the level of job satisfaction and enjoyment experienced by the employees, which ultimately leads to high productivity. This study suggests a positive relationship between the level of job satisfaction and productivity, which is in line with efforts made by higher learning institutions to make entrepreneurship a career path that would help reduce the level of educated unemployment in the country.

Due to the importance of entrepreneurial skills in enabling self-employed workers to seek higher returns in their future earnings, this study asserts that universities and government policy makers need to increase collaboration efforts to promote entrepreneurship as a desirable career path. This is because, even though students have relevant entrepreneurial knowledge and skills, without a positive image of entrepreneurship, they may not be interested in venturing into it. This is consistent with a study conducted in 2012 that reported that students in Malaysian public universities show strong commitment in terms of entrepreneurial desires and capabilities (Othman et al., 2012). The inculcation of entrepreneurship values and changing the mind-set toward self-employment as a viable alternative to salaried employment needs to be intensified, especially in higher learning institutions.

In order to increase the number of graduates who choose entrepreneurship as a career, this study suggests that more entrepreneurship education be included in the curriculum. This will help to increase the number of high-quality educated entrepreneurs in Malaysia. Therefore, academicians should teach students theories to supplement their practical learning experience. In practice, raising the awareness of entrepreneurship could be achieved through teaching examples and by inviting entrepreneurs as guest lecturers. It can further be concluded that entrepreneurship is a critical and practical avenue for employment is crucial to enhance the intentionality of creating ventures.

This study also draws attention to the need for the Malaysian government to intensify efforts to promote more business opportunities for self-employment and entrepreneurship in petty trading, small and medium enterprises (SMEs), agriculture, and services. In particular, international cooperation in developing an environment that enables the transition of the entrepreneur's SMEs in the informal sector to the formal sector is important to take advantage of the high entrepreneurial activity present in the country.

Lastly, a feasible way to reduce the mismatch between technical and vocational education training (TVET) outcomes and employment opportunities is to encourage and intensify cooperation between the business community and education and training providers. Therefore, the development of skills should be integrated with the promotion of employment for both the private and the formal sectors.

The major implication of this finding is that heterogeneity is an important issue that should be considered when comparing salary-employed and self-employed workers. The literature on self-employment also indicates considerable heterogeneity between men and women, hence it is necessary for future research to not treat self-employed men and women as similar types of workers (Roche, 2013). This paper could be extended in various ways. Future studies on self-employment returns should include job satisfaction, motivational factors for self-employment, and occupational choice in studies to explain the education-earnings relationship. It might be interesting to determine whether there is any evidence of heterogeneity in job satisfaction for self-employed women, given their occupational choice. Hence, this study could provide guidance for researchers who are interested in studying the impact of job satisfaction and employee educational level on returns to education for both wage employed and self-employed workers in other organizations and industries. The researcher also finds that there is a lack of studies or relatively little attention from scholars or managers of various business organizations for research conducted on job satisfaction, classified by level of education and occupation (De Silva, 2014).

Likewise, future studies could be suggested to correct the presence of potential bias when estimating the returns to education especially for self-employment, as people can self-select different levels of education, as this study is not able to test those hypotheses with the available data. If workers self-select into self-employment, then the effect of an additional year of schooling will reflect not only whether education impacts earnings, but also the possibility that low- or high-educated workers select self-employment.

The future studies are suggested to conduct qualitative analysis to enable researchers to include unobserved heterogeneity variables such as unobserved ability (IQ or similar tests), family background, or other factors

correlated with degree completion in the returns to education analysis (Griliches and Manson, 1972; Griliches, 1977). These variables can be used as an instrument to expunge the endogeneity of the schooling variable, because an individual's choice of years of schooling and schooling decision tends to correlate with the unobservable elements in the error in terms of the earnings function. This in turn affects the average private returns to education (Angrist and Krueger, 1991). It is doubtful, however, that this accounts for the discrepancy in the results on the sheepskin effects.

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APPENDICES

APPENDIX A Definition of Variables and Summary Statistics for Wage-Employed and Self -Employed Workers

Variables	Definition of Variables	Wage-Employed		Self- Employed	
		Mean	Std. Dev	Mean	Std. Dev
Code 1					
11-PSAT	dummy=1 if Primary School Achievement Test/Religious	0.145	0.352	0.336	0.473
12-UPKK	dummy=1 if KAFA Class Assessment Test (control variable)	0.000	0.000	0.000	0.020
Code 2					
21-SRA	dummy=1 if Religious Certificate Low(control variable)	0.000	0.000	0.000	0.020
22-LCE	dummy=1 if Lower Certificate of Education	0.196	0.397	0.236	0.425
Code 3					
31 - SMA/SMU	dummy=1 if Religious Secondary School	0.000	0.014	0.000	0.020
32 - 4 Thanawi	dummy=1 if 4 Thanawi (control variable)	0.001	0.024	0.000	0.020
33-MCE	dummy=1 if Middle Certificate of Education	0.408	0.491	0.335	0.472
34-MCVE	dummy=1 if Middle Certificate of vocational Education	0.003	0.056	0.001	0.035
36-BASIC_SKILL	dummy=1 if Basic Skill (control variable)	0.000	0.020	0.000	0.000
Code 4					
41- HSC	dummy=1 if Higher School Certificate	0.000	0.014	0.000	0.000
42- HSCR	dummy=1 if Higher School Religious Certificate	0.024	0.152	0.019	0.136
43 - GCE 'A' Level	dummy=1 if General certificate of qualification 'A' Level (control variable)	0.000	0.014	0.000	0.000
44-MTR	dummy=1 if Matriculation	0.000	0.008	0.000	0.000

APPENDIX A Cont.

Variables	Definition of Variables	Wage-Employment		Self- employment	
		Mean	Std. Dev	Mean	Std. Dev
Code 5					
51 - CERT_TRADE	dummy=1 if Certificate in specific trades or technical skills	0.013	0.113	0.008	0.090
Code 6					
61 - CERT_AUTH	dummy=1 if General certificate of qualification 'A' Level (control variable)	0.000	0.021	0.001	0.035
62- CERT_COLLEGE	dummy=1 if Certificate from college or equivalent	0.008	0.089	0.004	0.061
63- CERT_POLY	dummy=1 if Certificate from polytechnic or equivalent	0.007	0.081	0.001	0.035
64-CERT_UNI	dummy=1 if Certificate from university or equivalent	0.000	0.020	0.001	0.029
65- CERT_TEACH	dummy=1 if Certificate in teaching / nursing / allied health	0.000	0.014	0.000	0.000
Code 7					
71 - DIP_TRADE_TECH	dummy=1 if Diploma in specific trades or technical skills	0.006	0.078	0.001	0.035
72 -ADV_HIGHER DIP	dummy=1 if Advanced Diploma / Higher National Diploma in specific trades or technical skills (control variable)	0.001	0.034	0.000	0.000
Code 8					
81 - DIP_COLLEGE	dummy=1 if Diploma from college or equivalent (particularly for private colleges) (control variable)	0.037	0.189	0.009	0.094
82 - DIP_POLY	dummy=1 if Diploma from polytechnic or equivalent	0.009	0.092	0.004	0.067
83 - DIP_UNI	dummy=1 if Diploma from university or equivalent	0.039	0.194	0.012	0.108
84 - DIP_TEACH_NURSE	dummy=1 if Diploma in teaching / nursing / allied health	0.001	0.038	0.002	0.040
Code 9					
91-BCH_DEGREE	dummy=1 if Bachelor's degree / Advanced Diploma	0.087	0.281	0.022	0.146
92 - DIP_CERT	dummy=1 if Diploma / certificate after bachelor level including professional bodies (control variable)	0.000	0.014	0.000	0.000
93 - MASTER_DEGREE	dummy=1 if Master's degree	0.013	0.112	0.007	0.081
94&95 - PhD/POST_DOC	dummy=1 if Doctor of Philosophy (PhD), Post-Doctoral Diploma /Certificate	0.002	0.042	0.000	0.000
Other Independent Variables					
MARRIED	dummy=1 if Married	0.789	0.408	0.849	0.358
	dummy=1 if Other Marital Status (control variable)	0.211		0.151	0.358
GENDER	dummy=1 if Male	0.885	0.319	0.892	0.310
	dummy=1 if Female (control variable)	0.115	0.319	0.108	0.310
STRATA	dummy=1 if Urban	0.739	0.439	0.435	0.496
	dummy=1 if rural (control variable)	0.261	0.439	0.565	0.496
Occupations				0.000	
MAN	dummy=1 if Manager	0.082	0.275	0.063	0.244
PROF	dummy=1 if Professional	0.083	0.276	0.017	0.128
TECH	dummy=1 if Technician and associate professionals	0.174	0.379	0.033	0.178
CLR	dummy=1 if Clerical support workers	0.065	0.247	0.002	0.045
SERV_SALES	dummy=1 if Services and sales workers	0.147	0.354	0.213	0.409
SKILL	dummy=1 if Skilled agricultural, forestry and fishery workers	0.023	0.151	0.435	0.496

APPENDIX A Cont.

Variables	Definition of Variables	Wage-Employment		Self- employment	
		Mean	Std. Dev	Mean	Std. Dev
CRAFT	dummy=1 if Craft and related trades workers	0.126	0.332	0.108	0.310
PLANT_MACH	dummy=1 if Plants and machine operators and assemblers	0.189	0.392	0.066	0.249
ELEM	dummy=1 if Elementary occupations	0.110	0.313	0.063	0.243
OTHER	dummy=1 if Occupations not elsewhere classified (control variable)	0.000	0.014	0.000	0.020

APPENDIX B Self-Assessment Method for Over-Under Educational Mismatches: Level of Highest Certificate Qualification and Types of Occupations for Wage Employed and Self-Employed Workers

	Wage-Employed (%)									Self-Employed (%)								
Qualification	PROF	MANG	TECHN &PROF	CLRC	SERV& SALES	AGRI& FISH	CRAFT	PLNT& MACH	ELEM	PROF	MANG	TECHN &PROF	CLRC	SERV& SALES	SKILLED AGRI& FISH	CRAFT	PLNT& MACH	ELEM
11&12- PSAT_UPKK	0.100	0.200	0.672	0.465	5.500	0.500	2.900	4.500	5.900	0.400	1.100	0.400	0.000	5.000	21.100	6.200	2.100	4.700
21 - SRA	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	0.041
22 - LCE	0.304	0.473	1.251	0.504	3.244	0.483	2.786	4.942	3.538	0.081	0.940	0.654	0.000	4.129	11.365	2.780	1.880	1.798
31 - SMA/SMU	_	0.010	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
32 - 4Thanawi	0.021	_	0.016	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
33 - MCE	0.067	2.055	6.387	3.253	8.501	0.820	3.390	6.571	2.428	0.449	1.412	1.349	0.163	10.016	7.975	3.456	1.575	1.085
34 - MCVE	0.016	0.032	0.078	0.047	0.053	0.016	0.026	0.058	_	_	_	_	_	_	0.040	0.041	_	0.048
35 - GCE '0' Level	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
36 - BASIC_SKILL	_	_	0.015	_	_	0.015	_	_	_	_	_	_	_	_	_	_	_	_
41 - STA / STAM	0.010	_	_	0.010	_	_	_	_	_	_	_	_	_	_	_	_	_	_
42 - HSC	0.300	0.400	0.600	0.500	0.500	0.100	0.100	0.300	0.100	0.100	0.300	0.100	0.000	0.400	0.400	0.300	0.200	_
43 - GCE 'A' Level	_	0.015	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
44 - MATRIC	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
51 - CERT_TRADE_TECH	0.100	0.100	0.500	0.100	0.100	_	0.100	0.100	0.100	_	0.200	0.000	0.200	0.100	_	0.400	_	_
61 - CERT_AUTH	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
62 - CERT_COLLEGE	0.100	_	0.400	0.100	0.100	0.100	_	0.000	_	_	_	_	_	0.100	0.100	0.100	_	_
63 - CERT_POLY	0.057	0.010	0.425	0.089	0.036	0.015	_	0.063	0.042	_	0.041	_	_	_	_	0.081	_	_
64 - CERT_UNI	_	_	0.026	_	0.015	_	_	_	_	_	0.040	0.040	_	_	_	_	_	_
65 - CERT_TEACH	0.105	_	0.099	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
71 - DIP_TRADE_TECH	0.078	0.094	0.268	0.015	0.042	0.015	0.031	_	0.015	_	_	_	_	_	0.081	0.040	_	_
72 - ADV_HIGHER DIP	_	0.015	0.057	_	0.015	_	0.016	_	_	_	_	_	_	_	_	_	_	_
81 - DIP_COLLEGE	0.751	0.578	1.083	0.310	0.378	0.031	0.068	0.094	0.026	0.040	0.204	0.040	_	0.490	0.081	0.040	_	_
82 - DIP_POLY	0.099	0.042	0.573	0.078	0.089	0.010	0.005	_	0.031	0.040	0.163	0.040	_	0.163	_	_	_	_
83 - DIP_UNI	0.956	0.625	1.735	0.436	0.163	0.110	0.052	0.078	0.047	_	0.049	0.286	_	0.163	0.204	0.081	_	_
84 - DIP_TEACH_NURSE	0.588	0.036	0.541	0.000	0.016	_	_	_	_	_	_	_	_	0.081	_	_	_	_
91 - BCH_DEGREE	5.356	2.260	1.524	0.299	0.184	0.026	0.027	0.031	_	0.367	0.817	0.327	_	0.490	_	0.081	0.040	_
92 - DIP_CERT	0.021	_	_	0.015	_	_	_	_	_	_	_	_	_	_	_	_	_	_
93 - MASTER'S	1.098	0.441	0.115	0.047	0.042	_	_	_	_	0.367	0.082	0.082	_	0.012	_	_	_	_
94&95-PhD_POST_DOC	0.236	0.057	_	_	0.016	_	_	_	_	_	_	_	_	_	_	_	_	_

APPENDIX C The Concept of Skill Level by Education Qualifications

The Major Group of the MASCO 2008 can be categorized according to the following four common skill levels:

Skill Level	Educational Level	Major Groups
Fourth	Tertiary education leading to a University or postgraduate university degree; Malaysian Skills Advanced Diploma (DLKM) Level 5-8	2. Professionals
Third	Tertiary education leading to an award not equivalent to a first University Level; Malaysian Skills Certificate (SKM) Level 4 or Malaysian Skills Diploma (DKM) Level 4	3.Technicians and Associate Professionals
Second	Secondary education; Malaysian Skills or post-secondary Certificate (SKM) Level 1-3	4. Clerical Support Workers 5.Service and Sales Workers 6.Skilled Agricultural, Forestry and Fishery Workers 7. Craft and Related Trades Workers 8.Plant and Machine-operators and Assemblers
First	Primary Education	9. Elementary Occupations

Note: However, the concept of skill level is not applicable to Major Group 1: Managers and Major Group 0: Armed Forces Occupations. For these two groups, the skill level concept does not reflect the main skill requirements for distinguishing them from other Major Groups.