

Marginal Returns to Education For Teachers

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ABSTRACT

The objective of this paper is to estimate a private rate of returns to education for teachers in Malaysia. Using information from teachers' survey for more than 5000 respondents, we deploy the Mincer's wage equation using an ordinary least square (OLS) as a homogenous return model. The finding indicates that the private rate of returns to schooling for an additional year of schooling is about 5 percent. This result is lower compared to the previous estimation for Malaysia. Furthermore, the marginal returns shown that the different levels of teachers training obtained the different returns. Those who completed teachers training with higher credential are likely to enjoy a higher return. This result is reflecting a sheepskin effect in a labour market. However, a significantly wage different by level of academic attainments is a result from government policy to raise teachers' income and skill by increasing their level of academic qualification.

Keywords: returns to education, human capital, schooling

INTRODUCTION

A few studies of returns to schooling in Malaysia show inconsistent results. Hoerr (1977), Mazumdar (1981) and Lee (1980) concluded that the earnings variation in human capital theory is largely explained by education. Chapman and Harding (1985), Blau (1986), Gallup (1997), Chung (2004) and Zainizam (2013) were estimated the rate of returns to education. However, the results of their studies were inconsistent due to methodology and sample was different. The limited data and resources, and to some extent the choice of schooling and earnings variables, also give a different coefficients of returns to schooling. Furthermore, previous data and analysis on returns to schooling were hampered by relatively few observations and other data inadequacies. Therefore, this paper offers an estimate based on teachers survey data. It will provide new evidence of returns to schooling using the latest data set - in particular, to estimate the average return for an additional year of schooling for teachers. In Malaysia, the education system consists of pre-school, primary school, secondary school and higher learning institutions. Primary education starts at seven and ends within six years. All students are automatically promoted to secondary school after completion of six years in primary school. The normal duration of secondary schooling is five years but it is divided into two levels. Level one refers to Form 1, 2 and 3 (Lower Secondary) and level two refers to Forms 4 and 5 (Upper Secondary). The Upper Secondary Education offers choices to students to fulfil their needs, skills and interests in career development, including education sector after completed upper secondary school. Those who are completed this level of schooling attainment with a high achievement have the opportunity to apply as teacher's training at the higher learning institutions. Meanwhile, post-secondary education offers school leavers or students the opportunity to continue their studies after completing five years of secondary education. Form Six education is a continuation of the five years of academic schooling that helps students to prepare themselves to qualify to go to the university. It takes two years to complete the post-secondary education either in the science or the arts stream before the student can sit for the Higher School Certificate (HCE), conducted by the Malaysian Examination Council. Meanwhile, higher education offers various types of courses ranging between four to six years to complete. At this point, for those interested in teaching carrier could do so by applying post diploma in education. Therefore, schooling attainment, academic qualification and training among teachers are different which is become our motivation to offer estimation a marginal return to teachers.

METHOD

The empirical analysis of this study uses the standard human capital earnings function to estimate the rate of return to teachers in Malaysia. According to Card (2001), this path-breaking work was extensively used by economists as an econometric approach to estimate the rate of return to investment in education. The model is;

$$\ln W_i = \alpha + \beta_1 S_i + \lambda_1 Exp_i + \lambda_2 Exp_i^2 + \varepsilon_i \tag{1}$$

where $\ln W_i$ is log earnings, S_i is years of schooling, Exp_i is the potential experience of individual i , and ε_i is well-behaved error term. Due to the absence of the completed data on experience, Mincer (1974) proposed the “potential experience”, i.e. the number of years individual A could have worked after completing schooling and then, assuming that he/she starts schooling at 7 years old and begins working immediately after S_i of schooling, hence Exp_i is equal to $A - S - 7$ (Age – Years of Schooling – 7). Running the simple Ordinary Least Square (OLS) regression to the above equation, one can estimate the coefficient β_1 as the average of private rate of return to schooling (Weiss, 1995). The last term of the equation, Exp_i^2 represents the experience squared to capture a concavity of the observed earnings profile. The estimation of the parameters λ_1 and λ_2 will become positive and negative respectively.

The earnings variable in equation (1) makes use of the logarithm form because the distribution of log earnings is very close to a normal distribution, especially log hourly wages (Card 1999). In addition, it is preferable to use the log transformation based on the success of the standard (semi-logarithm) human capital earnings function (Willis 1986). For the purpose of this study, the dependent variable will use monthly earnings as reported by the survey. The standard wage equation can be used to estimate the average rate of returns to different levels of schooling by converting the continuous years of schooling (S) to dummy variables which represent the different levels of schooling. After fitting schooling dummies, the extended earning function will be;

$$\ln W_i = \alpha + \beta_1 CERT_i + \beta_2 DIP_i + \beta_3 DEG_i + \lambda_1 Exp_i + \lambda_2 Exp_i^2 + \varepsilon_i \tag{2}$$

Using the above equation, we can estimate the returns for each level of training. The parameters are derived from the formulae; β_1 , β_2 and β_3 are the parameters in our model.

RESULTS

This study is uses primary data collected from the teachers’ survey. The sample consists of 5672 teachers. The mean annually earnings are MYR43, 281.49. Meanwhile, the mean of schooling, certificate obtained, age and experience are 15.44, 2.97, 38.60, and 16.203 years respectively. The return to schooling in the homogenous return model is constant across individuals. The first empirical results were derived from the estimation using equation 1 as presented by Table 1. The average private rate of return for an additional year of schooling was 5.3 percent for overall for teachers. In other word, holding all other independent variables constant, an additional year of schooling is associated with a 5.3 percent increase in annually wages. Similarly, an additional year of experience is associated with a 3.7 percent increase in annually wages. With the exception of the dummy for gender (Male = 1), all parameters are significant at 0.05 levels or better. The results show the data are consistent with the basic human capital theory. Schooling and experience are positively correlated with earnings but experience squared is negatively correlated. The average return to schooling based on a homogenous return model for teachers is lower than the average return for Malaysia, which is 10.54 percent (Ramlee & Marinah, 2013). The private rate of returns for Asia as a whole in 2004 was 9.9 percent (Psacharopoulos and Patrinos, 2004). Nevertheless, it is low compared to the Asian Tigers, for example, Singapore with an average return of 13 percent (Psacharopoulos, 1994; Sakellariou, 2003).

Table 1: Private Rate of Returns to the Teachers, Mincer’s Model

Variables	Overall	Certificate	Diploma	Degree	Post Degree
Constant	9.310*** (.021)	9.563*** (.063)	9.140*** (.040)	9.629*** (.066)	9.343*** (.096)
Schooling	.053*** (.001)	.038*** (.002)	.058*** (.002)	.036*** (.004)	.050*** (.006)

Exp	.037*** (.001)	.031*** (.0016)	.047*** (.003)	.038*** (.003)	.036*** (.003)
Expsq	.000*** (.000)	.000*** (.000)	-.001*** (.000)	.000*** (.000)	.000 (000)
Male = 1	-.008 (.006)	.018 (.012)	-.011 (.000)	-0.030** (.013)	.001 (.013)
Married = 1	.017* (.009)	.022 (.019)	.008 (.020)	.026* (.016)	.009 (.017)
Tenure = 1	-.0794** (.027)	-.017 (.012)	.008*** (.012)	.036 (.013)***	.024 (.013)*
R-squared	.544	0.346	.622	.598	.542
F	977.39	98.89	347.24	279.17	542.83
Observations	4983	1127	1271	1134	1375

Standard errors in parentheses.

*** Significant at 1 % level.

** Significant at 5 % level.

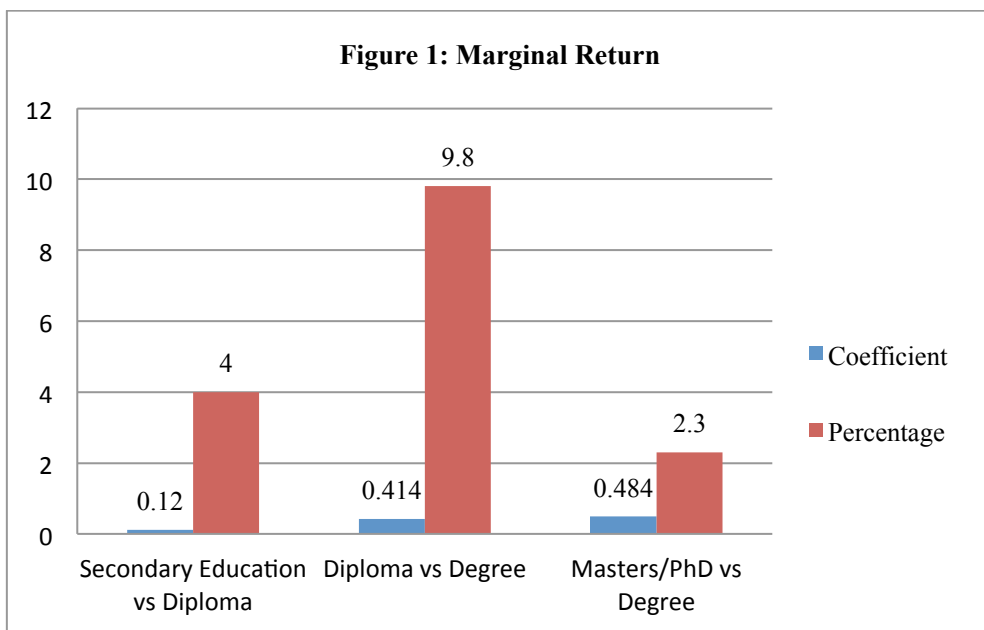
The study estimates the multiple treatment effect from the equation (2). The results show that nearly all education coefficients are statistically significant at the point of estimation of 0.01 levels, indicating that the particular education credentials' variables are different from the estimates for the omitted variables (certificate). Table 2 shows that return to individuals' trainings of those who had completed diploma level (as compared to those who had teaching certificate) increased to 0.120 percentage points. Similarly, at the higher level, returns for higher education were increased during the time of the surveys which made the earnings premium of around 0.4 percentage points as compared to the omitted educational dummy.

Table 2: Marginal Returns to Schooling

Variables	Coefficients	(Std Error)
Constant	9.805***	(.012)
Exp	.039***	(.001)
Expsq	.000***	(.000)
Male = 1	-.007	(.006)
Married = 1	.016	(.009)
Tenure = 1	.025***	(.006)
Diploma	.120***	(0.11)
Degree	.414***	(.009)

Master	.484***	(.015)
R-squared	.553	
F	759.322	
Observations	4913	

The credentials coefficients from Table 2 can be transformed to percentage returns for those undertaking different levels of educational training. Figure 1 shows the marginal gross of returns to years of schooling. The augmented Mincerian earnings function fitted well when using years of schooling dummies and other controlling variables. The reference variable was “secondary education”. All dummies for schooling are statistically significant different except for marital status and gender. Individuals with diploma level education had increasing marginal returns compared to those who had secondary education. The marginal gross returns to qualification for individuals who completed at this level were 4.0 percent. The marginal gross return for degree education to diploma education is increased by about 9.8 percent for an additional year of schooling. For those who completed master degree, additional returns of between 1.9 and 2.3 percent, compared to degree level, were received. For all levels of education, the highest returns were obtained by those who completed at degree level. The additional returns for those who completed at degree level compared to those who completed at diploma level are about 10 percent.



The results indicate that there are high and positive private returns to teachers in Malaysia, especially at higher levels of education. The findings support the previous studies (for example by Chung, 2003 & 2004; Ramlee & Marinah, 2013). Furthermore, our results showed that marginal gross returns to education at secondary education are low, consistent with the findings by Lee (1980), Lee & Sivanthiran (1992) and Chung (2003 & 2004). Meanwhile, the overall return to teachers is higher than those who are involved in manufacturing sector in Malaysia. Zainizam (2013) reported that the return for an additional year of schooling for manufacturing sector is about three percent, two percent lower than teachers’ return. The pattern of marginal gross private rate of returns to schooling provides a little evidence of the sheepskin effect in the Malaysian labour market, which is refers to the private rate of returns to education certificates rather than the accumulated years of schooling (Belman & Heywood (1997). It reflects the labour market recognizing qualification as a requirement in preference to years of schooling. Moreover, certificates could be being used as a screening device for the employer in the competitive labour market. Therefore, if this hypothesis is true, the best choice for the individual in terms of investment in education is to obtain a certificate rather than merely to complete more years of schooling. For example, those who completed their education at Form 5 (Year 11) will obtain the Malaysian Certificate of Education. However, those who completed 11 years of schooling (upper secondary) but did not obtain the Malaysian Certificate of Education (MCE), were forced to accept jobs with a

lower qualification (for example, Lower Certificate of Education – with 9 years of schooling). Their returns will reflect this qualification. However, an investment in an extra year of schooling does not give any higher return. In fact, the finding reveals that the return could be decreased. In order to get higher returns, he/she should add one more year of schooling and obtained the next level of credential. With a higher qualification, i.e. Higher School of Certificate (HSC), the results showed that they may get more returns compared to those from the earlier stages of education.

CONCLUSION

The average private rate of return for an additional year of schooling for teachers in Malaysia was 5 percent. An additional year of experience work has increased earnings by 3 percent. The returns to qualification have shown an inclining trend which is the higher level of schooling enjoyed a higher return and was stable over time compared to the lower levels of schooling. To sum up, the findings of this study are as follows. Firstly, we found the average private rate of returns for teachers is half of the Malaysian average returns. Secondly, when the returns were estimated using qualifications (or years of schooling) the findings signify a non-linearity in return. The average returns to qualifications or years of schooling differed among individuals. Those who completed a certain level of schooling but did not obtain an additional qualification did not show the same returns as those who completed the same level of schooling and who secured a qualification (or certificate). If this was indeed a feature of the Malaysian labour market, it may partly explain why workers with the same years of schooling receive different returns; the evidence is consistent with credentials having been used as a screening device.

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