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THE RETURN TO INVESTMENT ON EDUCATION IN THE BANKING SECTOR

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Abstract

This article examines the return from investment in education and how it links with agendas for sustainable development. Concept of sustainable development in economics studies can be referred as a 'path of rising per capita well being'. Rising in per capita can be achieved through accumulation of human capital. Human capital is the major contributor in driving a nation's economic growth. It refers to education, training, experience and health personified in workers which can increase their productivity. No economy can succeed without a highly skilled population that is able to respond quickly and creatively to economic fluctuations. Education and training are key for moving society toward sustainability. Investment in education is one of the ways to increase human capital in a country and it can be measured through the increase in income received. This study evaluates the returns to investment on education by using Mincerian earnings function and examines some of the factors that affect earnings. Data were collected from a survey in the banking sector in 2010.

Keywords:Returns on Investment in Education, Earning, Year of Schooling, Sustainable Development.

1. Introduction

Human capital is the major contributor in driving a nation's economic growth. It refers to education, training, experience and health personified in workers which can increase their productivity. No economy can succeed without a highly skilled population that is able to respond quickly and creatively to economic fluctuations. The Malaysia government has given a great emphasis on to education from early childhood education, primary and secondary education, tertiary education and life-long learning. Education is an essential tool for achieving sustainability and it is a major force in helping Malaysia to become a developed country in 2020. Moreover, education and training are keys for moving society toward sustainability. Since the implementation of National Education Policy, Malaysia has seen a massive change in her education system with an increase from 73 percent to percent in adult literacy rate of the overall population. In Malaysia, significant investments were made in tertiary education, with 3, 515,849 students enrolled in both public and private tertiary education institutions today (Malaysia, 2010). When an individual chose to further his study into the tertiary level, it can be said that he is asking an investment on education, this means that individual has made investment on education. The return from this investment on education can be measured by looking at the earning received when he starts to work after his graduation. According to Borland (2000), graduates from tertiary education will receive 10 to 12 percent return from their investment on education. This means that an individual will receive an increase of between 10-12 percent in his earning as he increases another year of schooling. However, it was reported by Economic Planning Unit that human capital situation in Malaysia is not improving even though the government has allocated RM 31 billion to the education sector in 2009 budget compared to RM30 billion in 2008 budget (Malaysia, 2009). Data from the Ministry of Higher Education show that about a quarter of graduates from local public universities remained unemployed 6 months upon the completion of their study. Almost one third meanwhile works in jobs at a lower skill level and received wages less than RM 1,500 monthly. Furthermore, between 2001 and 2005, the government has spent RM415 million on retraining some 40 000 graduates to improve their employability. (Malaysia, 2010). These issues bring to an important question; "Is the government massive allocation for education brings a good return to the individual, society and country?" Empirical evidences through research and analysis on the rate of return to investment in education is the answer. The rise in earning inequality experienced during the 1940s by nations around the world led to renewed interest in

estimates of return to schooling or as known as return to investment on education (Psacharopoulos & Patrinos 2004).

2. Literature Review

The rise in earnings inequality experienced in many countries led to many researchers' interests in estimating the returns of schooling (Psacharopoulos & Patrinos, 2004; Qiu & Hudson, 2009; Silles, 2007; Leigh, 2008). Schooling is an importance input in the building up of human capital. Meanwhile, human capital is a good investment to increase the economic growth of a country. Indirectly, raising the level of schooling can increase national incomes for a country (Leigh, 2008). In addition, a number of researchers show that education have had significant effects on individual earnings. One of the most common findings is that individuals with a higher educational level earn higher wages and are more likely to participate in labour force than their less well-educated counterparts (Dolton & Silles, 2008; Leigh, 2008). These common findings suit the Mincerian wage equation which suggested that a linear relationship exists between the earning received by an individual and year of schoolings (Canton, 2007; Silles, 2007; Psacharopoulos & Patrinos, 2004). According to Psacharopoulos' and Patrinos' (2004) estimation of the return to education for 98 countries, the average rate of return to one additional year of schooling is 10 percent, while the rate of return to schooling for Asia is almost equal to the world average. Qiu & Hudson, (2009) found that the rate of return to education in China had noticeable increases from 1997 (4.7 percent) to 2000 (7.1 percent). Similarly Sakellariou (2003) noticed a very high return to schooling in Singapore with an average 13.1 percent.

A number of studies related to return to schooling in Malaysia also indicate that there is a significant and positive relationship between one additional year of schooling and earning received by an individual (Chung (2000); Nor Hamiza, Rahmah & Ishak (2009); Psacharopoulos and Patrinos (2004); Hoerr (1973); and Ismail, (2009.) For example, according to Ismail (2007), the average private of return to investment in education in Malaysia 10.51 and 10.04 percent for 2002 and 2004 respectively. He also reviewed that the estimation of the private rate of return to education using the Instrumental Variable (IV) approach is higher than the results calculated by using the Ordinary Least Square (OLS) approach by approximately 10 to 11 percent. These schooling parameters show that the private rate of return to education in Malaysia was similar to the world average and slightly higher than the average of Asia (9.9 percent) (Ismail, (2007); Psacharopoulos & Patrinos (2004). Another factor that affects the estimation of the return to education is the education level. A Higher school attainment appears to yield the highest annual benefits, with per year gains as high as 30 percent (Leigh, 2008). Hoerr (1977), who studied the Malaysia's Socio-Economic Sample Survey of Household 1967 - 1968, reported that the cumulative private rate of return to education was higher for the upper secondary level of education (17.6 percent) compare to the primary and higher education, which stood at 12.9 percent and 16 percent respectively (cited in Ismail, 2007 and Chung 2000).

In contrast, the return to higher education (34.5 percent) seems higher than the secondary education (32.6 percent) in Malaysian in 1978 (Psacharopoulos, 1994, cited in Psacharopoulos & Patrinos 2004). This is similar to the findings of Leigh, A. (2008). He indicated that at the university level, bachelor degrees and postgraduate qualifications are associated with significantly higher earnings, with each year of a bachelor degree raising annual earnings about 15 percent. Another explanation for the return to schooling in Malaysia offered by Nor Hamiza, Rahmah and Ishak (2009), who are concerned with the return of workers in the private education sector. They discovered that the rates of return to education for these workers stood between 8.9 percent and 10.3 percent. Furthermore, they also found those respondents who have higher education levels like a bachelor degree, masters and PhDs will gain a higher earnings (32.8 percent) compared to the respondents who only possess diploma or SPM/STPM. The data used in this study was collected from 567 executives in private education sectors in 2007 - 2008. However, Psacharopoulos and Patrinos (2004) found that the overall average rate of return to education varied by level of education for all countries. They estimated that the private return to primary education stood at 26.6 percent, secondary education at 17 percent and tertiary education at 19 percent. All those literature review also indicated that both time spent in education and educational credentials are important in explaining higher earnings with higher qualifications (Silles, 2007). In addition, the impact of education on individual earnings according to gender differences has also become been one of the most commonly studied topics in the economic literature. Overall, women generally receive higher returns to their schooling investment especially for those who had secondary education (18 percent), compared to men (14 percent) (Psacharopoulos & Patrinos 2004). Sakellariou, (2003) also found that returns to female workers are significantly higher than male workers (15.2 percent and 11.1 percent respectively). For Chinese women, Qiu and Hudson, (2009) reported that the estimated rate of returns were higher than men and suggested that the impact of education on the gender gap is also declining. This is consistent with findings by Chen and Hamori, (2009). By using the instrumental variable (IV) methodologies, Chen and Hamori (2009) found that the rates of return for women in urban China are higher than men.

By using two Malaysian Family Life Surveys (MFLS) data conducted in 1976 and 1988, Chung (2000) also found that returns to education are high and positive for the Malaysian women. In contrast, Silles (2007) found evidences that the returns to education between 1985 and 2003 have increased for men and declined for women in the United Kingdom. For men, the return to an additional year of education grew from 5.5 percent in 1985 to 7 percent in 2003. But for women, the return to one additional year of schooling steadily declined from 8.3 percent in 1985 to about 8 percent in 2003. Findings by Psacharopoulos and Patrinos (2004) also show that the returns to primary education are much higher for men (20 percent) than for women (13 percent). Lee et al. (1995) have also discovered the same findings as Silles (2007), in which the rates of return between 1989 and 1992 for men are higher than those for women in Malaysian manufacturing sector (cited in Chung, 2000). Moreover, education also generates positive externalities (social benefits). For instance, people exchange knowledge through social interactions outside the conventional market transactions (Canton, 2007). According to Psacharopoulos and Patrinos (2004), education externalities can be estimated in the form of individual's human capital which enhances the productivity of other factors of production. The strong effects of human capital on productivity were found by Canton (2007). The results suggest that an increase by one year of the average education level of the labour force would increase labour productivity by 7 to 10 percent in the short run and by 11 to 15 percent in the long run. However, Psacharopoulos and Patrinos (2004) found mixed evidences, suggesting that social returns might be lower or higher than private returns. Similarly, others researchers recognised that the social rate of return to education may be lower or higher than the sum of individual's private rates of return (Leigh, 2008 and Silles, 2007).

3. Methodology

This paper aims to analyse the relationship between level of education and annual earning received as well as the effects of working experience by using mixed methods. Questionnaire and interviews are the two main data collection methods in this research. The data collected was analyzed using Statistical Package for Social Science for Windows 17.0 (SPSS). Descriptive statistics such as frequency, percentage, and mean were used to interpret the data. Sampling design that is being used in this research is proportionate stratified random sampling design in which the population has been stratified in a sample of members from each stratum. Research sample is consisting of employees that hold position such as managers, assistant managers, executives and secretaries that work at Bank Islam Malaysia Berhad, CIMB Bank, Bank Rakyat, Agro Bank and Maybank.. The questionnaire was distributed to a total of 150 employees who worked in Ipoh, Batu Gajah, Seri Iskandar, Bota and Ayer Tawar. The empirical analysis of this research will use earning function that was proposed by Mincer (1974) that is widely known by the previous researchers as a guideline to estimate the returns to education.

The basic earning function that will be used in this research is shown below:

$$\ln Y = \ln Y_0 + \beta_1 S + \beta_2 EXP - \beta_3 EXP^2 \quad (1)$$

Where;

$\ln Y$ = annual earning received by employee

Y_0 = constant

β_1 = years of schooling parameter

β_2 = experience parameter (in years)

β_3 = experience² parameter (in years)

Annual earnings are logged on the basis that the semi-log specification is the notion that education and experience increase income in a proportional manner that is in x percent rather than a fixed sum that is in RM x (Leigh, 2008). According to Leigh (2008), this kind of set-up will be beneficial as coefficients results from regression can be approximately interpreted as percentage effects. The relationship between education and annual earnings can also be regarded as capturing productivity. This study will further analyse the relationship between experience and earning; and marginal rate of return by using the equation below:

- a. Relationship between experience and earning

According to Mincer (1974), the relationship between experience and earning can be explained by using the equation below:

$$\partial \ln Y / \partial \text{EXP} = \beta_2 + 2 \beta_3 \text{EXP} \quad (2)$$

From equation (2), earning is expected to increase as experience increases until it reaches maximum level when the experience is equal to $\beta_2 + 2 \beta_3$. After the experience is equal to $\beta_2 + 2 \beta_3$, earning is expected to increase at a decreasing rate.

- b. Marginal rate of return

To capture the marginal return to completing each additional level of schooling, dummy variables for discrete levels of education are used to compare returns between levels of schooling (Qian and Smyth 2008). The education attainment in the data consists of five categories and their labels are shown in formula (3) below:

Level of education plays an important part to determine the differences in earning received by employees and can be explained by using the value of marginal rate of return (Chung, 2000). The differences in level of education namely S_1 and S_2 can be determined by using calculation of marginal rate of return as follows: $r_{(S_2 \text{ vs } S_1)} = 100 \times [\exp (\beta_2 - \beta_1 / S_2 - S_1) - 1]$ (3)

where S_j is the highest level of education measure using years with $S_{\text{UPSR}} = 6$ years, $S_{\text{PMR}} = 9$ years, $S_{\text{SPM}} = 11$ years, $S_{\text{STPM/SIJIL MATRIKULASI}} = 13$ years, $S_{\text{DIPLOMA}} = 16$ years dan $S_{\text{DEGREE}} = 19$ years.

Marginal rate of return can also be seen by using the model proposed by Tsung (2000) below, where the respondent's highest level of education is measured by using a dummy variable.

$$\ln Y = \ln Y_0 + \lambda_1 \text{SPM} + \lambda_2 \text{STPM} + \lambda_3 \text{DIPLOMA} + \lambda_4 \text{DEGREE} \quad (4)$$

Where;

$\ln Y$ = average annual earning

Y_0 = constant

λ_1 = dummy variable for Sijil Pelajaran Malaysia as the highest education level achieved

λ_2 = dummy variable for Sijil Tinggi Pelajaran Malaysia as the highest education level achieved

λ_3 = dummy variable for Diploma as the highest education level achieved

λ_4 = dummy variable for Degree as the highest education level achieved

4. Result and Analysis

From Table 1, it is shown that majority of the respondents have Sijil Pelajaran Malaysia as their highest level of education qualification (37.0 percent) followed by Bachelor Degree (25.2 percent). Therefore, based on the respondent's highest education qualification, most of the respondents work at the executive level position (49.6 percent). This is followed by the non-executive position (clerk) at 38.5 percent. This level of working positioning is determined by the experience that they possess. By referring to the Table 2, we can see that candidates need to obtain their SPM certificate before they can be consider for jobs at both executive and non-executive position. Moreover, most of the respondents who work in the managerial positions (assistant manager and manager) have a Bachelor Degree.

Table 1: Respondents' Highest Qualification

| | | Highest qualification | | | | | N |
|----------------------|----------------------|-----------------------|------------------------|---------|--------------------|------------------|-----|
| | | SPM | STPM/ Matriculation | Diploma | Bachelor Degree | Master Degree | |
| Current job position | Clerk | 27 | 16 | 8 | 1 | 0 | 52 |
| | Executive | 22 | 6 | 16 | 22 | 1 | 67 |
| | Assistant Manager | 0 | 0 | 1 | 5 | 1 | 7 |
| | Manager | 1 | 0 | 2 | 6 | 0 | 9 |
| Total | | 50 | 22 | 27 | 34 | 2 | 135 |

Table 2: Results and Analysis

| Model 1: Years of schooling, experience and annual earnings | |
|---|--------------------|
| Dependent variable: | Log annual earning |
| Years of schooling | 0.079 (8.550)* |
| Experience | 0.075(5.726)* |
| Experience ² | -0.001(-2.799)* |
| R ² | 0.760 |
| Model 2: Highest qualification and annual earnings | |
| SPM | -0.088 (-1.111) |
| STPM | -0.473 (-3.297)* |
| Diploma | 0.036(0.262) |
| Bachelor Degree | 0.331(2.713)* |
| R ² | 0.487 |
| N | 135 |

*Significant at 5 percent (Standard Error in parentheses)

- a. The returns to investment on education
The regression result shows that the increase in annual earnings from the raise of educational attainment by one year is 8 percent. This result is statistically significant and very similar to the international average that is around 8 to 11 percent (Psacharopoulos & Patrinos, 2004; Chen & Hamori, 2009). The respondents who have increased their educational attainment by one level will receive an increase in his income by 8 percent per year.

- b. Relationship between experience and annual earnings
The relationship between experience and annual earnings can be seen by replacing coefficient for experience and experience² in formula (2) as shown below. Years of experience will increase earnings but it is done at a decreasing rate (Naderi, 2003).

$$\frac{\partial \ln Y}{\partial \text{EXP}} = \beta_2 + 2 \beta_3 \text{EXP} \quad (2)$$

Therefore;

An increase in one year of respondent's experience will increase annual earnings by:

$$= 0.075 - (2) (0.001) (1) = 7.3 \text{ percent and}$$

An increase in ten year of the respondents' experience will increase annual earnings by:

$$= 0.075 - (2) (0.001) (10) = 5.5 \text{ percent}$$

$$\begin{aligned} \text{Annual earnings will reach its maximum when experience} &= \beta_2 / 2 \beta_3 \\ &= 0.075 / 2 (0.001) = 37.5 \text{ years} \end{aligned}$$

When one has 37.5 years of experience, percentage changes in annual earning will achieve its peak before it start to decline with any additional increase in years of experience.

- c. Marginal Rate of Return
The relationship between the respondents' highest educational qualifications and annual earnings can be regarded as capturing the marginal rate of return (Chung, 2000) as shown in Model 2 in Table 3. From the regression result, those who have SPM and STPM as their highest qualification will not receive positive impact in their income compared to those who obtained a Diploma and Bachelor Degree. In other words, by comparing the respondents' educational qualifications from SPM to Bachelor Degree, the productivity gains appear to be largest for the Bachelor Degree holders.

The differences in the level of education namely Diploma and Bachelor Degree can be determined by using the calculation of the marginal rate of return as follow;

- i. STPM to Diploma

$$\Gamma_{(\text{STPM to Diploma})} = 100 \times [\exp (0.036 - (-0.473) / 16 - 13) - 1] = 18.49\%$$

Therefore, the marginal rate of return for those who have a Diploma is 18.49 percent.

- ii. Diploma to Bachelor Degree

$$\Gamma_{(\text{Diploma to Bachelor Degree})} = 100 \times [\exp (0.331 - 0.036) / 16 - 16) - 1] = 10.33\%$$

Therefore, the marginal rate of return for those who obtained a Bachelor Degree is 10.33 percent.

By comparing these two figures (18.49 percent and 10.33 percent for Diploma and Bachelor Degree's holder respectively, those who obtained a Diploma will receive more increase in their annual earnings.

5. Conclusion

The aim of this study is to estimate the return to education among employees by using the Mincerian earning function. As stated in the Mincerian earning function, the explanatory variables include education (years of

schooling), experience, experienced squared and respondent's highest qualification. The result shows that there is a positive return to education among the respondents who work in the banking sector. By using the data from the questionnaire, the return to education among the banking sector employees is 8 percent. This means that the respondents' annual earnings will be raised by 8 percent with the increase of one year of schooling. This is slightly lower from the finding of Ismail (2009) that used the same Mincerian earning function. His findings showed that the return to education among the Malaysian employees is about 10 percent. However, this study has shown that there is a significant relationship between years of schooling and annual earning received by employees. When the highest educational qualification is taken into account by comparing the respondents who obtained SPM, STPM certifications or hold a Diploma or a Bachelor Degree, the return appears to be the largest for the Diploma holders. The increase in annual earnings for these employees is estimated at a massive 18.49 percent. This suggests that greater attention should be given by the government to increase attainment in the tertiary level. According to the Mincerian earning function, experience is another factor that can affect the annual earning received by employees besides the years of schooling. The result shows that there is a positive impact of experience on annual earning received. When the respondent has one year of experience in within their position, his annual earning will increase by 7.3 percent. After 10 years of experience, annual earning of the respondent will increase by 5.5 percent. An increase in the years of experience will also gradually raise his annual earning. This increase will reach its peak when he has 37.5 years of experience. After this duration, the percentage increase in his annual earning will start to decline. The returns of education investment found in this study suggest that the government should provide higher incentives for parties who invest in education as a human capital accumulation. According to Psacharopoulos and Patrinos (2004), a return to schooling is a useful indicator of the productivity of education and the incentive for individuals to invest in their own human capital development. Public policy needs to take note about this evidence in designing of policies and crafting incentives that promote investment while ensuring that low-income families involve in those investments. More research on the social benefits of schooling is needed. For developing countries, there is a need for more evidence on the impact of education on earnings by using a quasi-experimental design. There are more opportunities today for this type of research. Moreover, this research needs to be used to create programs that promote more investment and reform financing mechanisms.

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