INVESTMENTS IN THE DEVELOPMENT OF HUMAN CAPITAL: RATE OF RETURN T0 INVESTMENTS IN TERTIARY EDUCATION IN MALAYSIA FOR THE YEAR 2000

by

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ABSTRAK

PELABURAN DALAM PEMBANGUNAN MODAL INSAN: KADAR PULANGAN TERHADAP PELABURAN DALAM PENDIDIKAN TERTIARI DI MALAYSIA UNTUK TAHUN 2000

Pada lazimnya, orang yang mempunyai tahap pendidikan yang lebih tinggi menerima upahan yang lebih tinggi. Perkara ini adalah selaras dengan Tiori Modal Insan yang menyatakan upahan yang lebih diterima kerana peningkatan produktiviti akibat daripada lebihan modal insan yang terbentuk melalui pendidikan. Ini menjadikan pendidikan sebagai suatu item pelaburan. Sesungguhnya, jika pendidikan merupakan suatu item pelaburan, maka ahli-ahli ekonomi dan para pendidik sudah tentu ingin mengetahui akan tahap keberuntungan pelaburan ini.

Pada umumnya, keberuntungan pelaburan diukur dengan menggunakan suatu Model Kos-Faedah untuk memperolehi suatu statistik atau nilai yang dinamakan kadar pulangan. Ukuran tersebut ini dianggarkan dengan mendiskaunkan jumlah kos pembiayaan pendidikan yang ditanggungkan dan jumlah aliran pendapatan sepanjang hayat kerja seseorang siswazah. Tetapi, oleh kerana kos terlebih dahulu telah dibelanjakan sedangkan faedah diperoleh dalam jangka masa yang panjang, pendiskaunan nilai semasa perlu dilaksanakan pada suatu detik masa yang tertentu. Kadar diskaun yang menyamakan jumlah kos yang terdiskaun dan jumlah faedah yang terdiskaun ialah kadar pulangan dalaman yang dikehendaki dalam kajian ini.

Kadar-kadar pulangan dihitung untuk bidang-bidang pengajian seperti sastera, sains, sains komputer, perubatan, kejuruteraan, perakaunan dan perundangan. Perhitungan dibuat untuk yang bekerja dalam perkhidmatan awam dan juga sektor swasta. Pada umumnya, dapatan kajian menunjukkan bahawa kadar pulangan persendirian untuk pendidikan tertiari adalah lebih tinggi berbanding dengan kadar pulangan untuk bukan

siswazah. Siswazah-siswazah bidang sains dari institusi-institusi pendidikan tinggi awam dan swasta memperolehi kadar-kadar pulangan yang tinggi, iaitu di antara 15% hingga 20%. Siswazah-siswazah bidang kejuruteraan, sains komputer dan perakaunan dari kolej-kolej swasta juga berkemampuan memperolehi kadar-kadar pulangan yang baik. Perkara ini menarik ramai penuntut ke kolej swasta walaupun kos pendidikannya tinggi. Berbanding dengan kadar pulangan sebanyak 3% hingga 4% untuk pelaburan alternatif seperti bon atau simpanan tetap, kadar pulangan persendirian untuk pendidikan tertiari adalah lebih baik. Kadar-kadarnya adalah di antara 12.96% hingga 20.60% untuk siswazah universiti-universiti awam sedangkan siswazah kolej-kolej swasta memperolehi kadar sebanyak 7.20% untuk siswazah perubatan hingga 19.43% untuk siswazah sains yang bekerja di sektor swasta. Sebab-sebab siswazah kolej swasta memperolehi kadar yang lebih rendah termasuk kos pendidikan yang tinggi, jangka masa kursus yang panjang dan sektor pekerjaan.

Kadar pulangan sosial untuk semua bidang pengajian kecuali perubatan, menunjukkan bahawa lebih banyak lagi sumber-sumber sosial boleh dilaburkan dalam pendidikan tertiari. Sektor swasta juga boleh memperluaskan program-programnya terutama dalam bidang-bidang sains, kejuruteraan, perakaunan dan sains komputer, Walaupun kadar pulangan bagi siswazah-siswazah kolej perubatan lebih rendah, kadar-kadar tersebut akan bertambah baik apabila kos pendidikan perubatan dapat dikurangkan dengan terbinanya lebih banyak kolej swasta untuk perubatan.

Anggaran-anggaran kadar pulangan berguna dalam bidang perancangan pendidikan dan gunatenaga dengan menunjukkan bagaimana sumber-sumber yang kekurangan dapat diperuntukkan dengan berkesan. Pada masa yang sama, analisis kadar pulangan dapat menunjukkan bagaimana polisi kewangan untuk pendidikan tertiari dapat menepati objektif ekuiti sosialnya.

ABSTRACT

INVESTMENTS IN THE DEVELOPMENT OF HUMAN CAPITAL: RATESOF RETURN TO INVESTMENTS IN TERTIARY EDUCATION IN MALAYSIA FOR THE YEAR 2000.

Usually, people with higher levels of education receive higher levels of earnings. This conforms to the Human Capital Theory which postulates that higher levels of earnings are earned because of higher productivity resulting from more human capital formed through more education. This makes education an investment item. If indeed education is an investment item, then economists and educationists would surely like to know its profitability as an investment.

Generally, this profitability is gauged by using a Cost-Benefits Model to obtain a summary statistic or value known as the rate of return. This measure is estimated by discounting the sum of investment costs of education and the sum of discounted age-earnings stream of the graduate. But, as costs are expended in an earlier time period while the benefits are received over a long period of time, present value discounting need to be applied to the total costs and total benefits at a common point in time. The rate of discount that equates total discounted costs with total discounted benefits is the internal rate of return sought in this study.

Rates of return are estimated for fields of studies such as arts, science, computer science, medicine, engineering, accountancy and law degree programmes. Estimations are made for those working in the civil service and also for those who work the private sector. Generally, the findings indicate that the private rates of return to tertiary education are rewarding compared to non-graduates. Graduates in the field of science from both public

universities and private colleges obtain rather high rates of 15% to 20%. Engineering, computer science and accountancy graduates from private colleges are still able to obtain high rates of return. This in turn has attracted many students to private colleges although the costs of education are high. Compared to rates of returns on alternative investments such as bonds and fixed deposits that pay 3% or 4%, the private rates of return to tertiary education are better. The rates range from 12.96% to 20.60% for public university graduates while private college graduates obtain 7.20% for medical graduates to 19.43% for science graduates working in the private sector. Reasons for private college graduates earning lower rates of return include higher costs of education, length of period of study and sector of employment.

The social rates of return to all disciplines except medicine, indicate that more social resources can be invested for public tertiary education. The private sector too can expand its programmes especially in the disciplines of science, engineering, accountancy and computer science. Although medical graduates from private medical colleges do not obtain high rates of return, such rates will improve when costs of medical education are reduced with the establishment of more private colleges for medicine.

The rate of return estimates are useful in educational and manpower planning by indicating how scarce economic resources can be effectively allocated. At the same time, rate of return analysis would show how financial policies for tertiary education would achieve its objective of social equity.

CHAPTER 1

INTRODUCTION

1.1 The concept of human capital

People earn their living with their skills and training which enable them to obtain a continual stream of earnings. Such skills and training are as valuable as physical assets that yield monetary returns to its owners. Assets which generate earnings in the future are known as capital. Some people buy physical assets such as machinery and obtain some returns year after year.

Alternatively, they may invest that same sum of money to obtain higher education or training which will enable them to obtain higher earnings after graduation. Expenditure to obtain education or training that improves the productive capacity of the worker is considered as investing in capital in human form (Saxton, 2000). In investing in their human capital, they enhance their work potential and increase their earning capacity in the same way that the use of new machinery increases the productive capacity of the factory.

In fact, the economist, Adam Smith, pointed out in 1776 that a man educated at the expense of much labour and time may be compared to investments in expensive machinery. Thus, investing in human capital is similar to investment in physical capital. The concept of human capital therefore applies to any education, training or other activities which increase the quality and productivity of the labour force, thereby raising future earning levels and economic growth (Woodhall, 1987,1995).

1.2 Education, human capital and economic growth

More significantly, Adam Smith held that economic growth was primarily an effect of the division of labour and that people developed skills through habit, custom and education. The contribution of education to growth is presumed to occur through its ability to increase the productivity of an existing labour force in various ways, including technical training and general education (Hicks, 1987). However, this notion of development of skills through education remained largely ignored until Schultz (1961) and Denison (1962) explained the relationship between expenditures on education and growth in earnings. Bowman (1980) observed that as the human revolution in economic thought took hold, the concept of human capital formation became more firmly established.

Many attempts were made to measure the contribution of education to economic growth. Denison (1962), used the growth accounting approach to link total output per unit of factor input to measure total factor productivity. He discovered that about 40% of the rate of growth of output in the United States between 1948 and 1973 could be attributed to improvements in human capital or education of the labour force (Hicks,1987)

Schultz (1963), however, used a different approach to measure the contribution of education to economic growth. His approach utilized the rate of return to human capital and compared that with the rate of return to physical capital. Expenditures on education at the private and social levels were used to obtain private and social rates of return to education respectively. This approach however assumes that differentials in earnings of individuals arise because of the different levels of education acquired. It makes no consideration of factors such as motivation, family background, experience or differences in individual ability that could give rise to the earnings differentials.

Although understanding of the role of education in raising economic growth may still be limited, present-day policy makers are very likely to consider education as a strategic parameter in planning future economic growth. Zainal (1990) saw the connection between education and growth when he alleged that economic growth in Malaysia was slow in the 1980s due to the inferior quality of workers who were largely unskilled. So did Psacharopoulos and Woodhall (1985) who found that farmers in Malaysia with the benefit of a 4-year elementary education improved their output by as much as 20.4%. Some see this as a positive relationship between education and an improved quality of labour, leading to an increase in productivity. This gives the notion that workers are able to raise their lifetime earnings and future income by increasing their productivity through investing in their capability with more education or training.

1.3 Expenditure on higher education in Malaysia

The belief that education will bring about an improved quality of labour, a consequent increase in productivity of the workforce and a general rise in the standard of living is reflected in the annual budget of the Malaysian government. Billions of ringgits have been invested into the educational system of Malaysia by the government in the desire to increase economic growth and the standard of living of the country as envisaged in its Vision 2020 programme. The allocation of funds in pursuit of this belief is seen in the allocation for education under the Sixth Malaysia Plan (1991-1995) where RM7724 million were allocated and spent. This amount represented 15.4% of the total allocation for public development. Of the total, RM2591 million were devoted to tertiary education. This underscores the importance of education to the government. In fact, even bigger allocations were made available for expenditure under the Seventh Malaysia Plan (1996-2000) as seen in Table 1.1 below.

Table 1.1: Allocation for education as a percentage of funds for the public sector

Year	Total allocation for the national educational system (RM)	Total allocation for the public sector (RM)	Percentage (%)	Allocation for Public Universities (RM)
1996	10,848,486,650	55,467,290,400	19.55	1.336 billion
1997	12,081,102,900	59,982,209,600	20.06	1.316 billion
1998	12,510,391,200	64,124,392,000	19.51	1.691 billion
1999	13,462,340,030	65,095,213,400	20.68	1.445 billion
2000	14,079,737,820	78,025,291,600	18.04	1.616 billion

Source: Kementerian Pendidikan Malaysia, Pembangunan Pendidikan 2001-2010, p.6-2,3

From the table above, it can be seen that no less than 1.3 billion ringgits each year were spent by the Malaysian government to finance public university education. This was more than double the amount in the previous Plan period as there were then 251,593 students at the tertiary level in the year 2000 compared to 135,625 students in 1995. This increase was a financial strain on the government which had to expand the physical facilities of all public universities and also to upgrade the Sultan Idris Teachers College and the MARA Institute of Technology as universities within the plan period of 1996-2000. Together with the amount spent by individual students to finance their way through their tertiary studies, the financial commitment to education by the government and the people was indeed very large.

However, despite the increase in tuition fees and costs of living, many feel that tertiary education is a very worthwhile investment. They believe that those who have more education improve their opportunity and capacity to work and reap better economic rewards. Thus university enrollment continues to rise. Table 1.2 below shows the increase in student enrollment from 1995 to 2000.

Table 1.2: Number of students enrolled at local public universities, 1995 – 2000

Public university	1995	1996	1997	1998	1999	2000
Universiti. Teknologi MARA	42174	44624	53631	62216	54530	72816
Universiti. Putra Malaysia	13390	16129	21848	30832	35433	33375
Universiti Teknologi Malaysia	14853	17232	21739	26977	29891	30305
Universiti Malaya	16669	18234	19668	21635	26488	28505
Universiti Sains Malaysia	13928	16292	17875	20459	21339	19291
Universiti Kebangsaan Malaysia	14874	16528	22886	24938	22805	21738
Universiti Islam Antarabangsa	8677	11135	11698	13263	14219	10334
Universiti Utara Malaysia	9704	11637	11844	13940	16549	18668
Universiti Malaysia Sarawak	945	1414	2088	2558	3190	3912
Universiti Malaysia Sabah	411	1384	2390	4154	3662	6755
Universiti Pendidikan Sultan Idris	--------	--------	388	1832	3310	4894
Total University Enrollment	135625	154609	186009	222704	231416	251593

Sources: Buku Tahunan Perangkaan, 1999,2000, 2001

Although there was an 85% increase of university enrolment of 135,625 students in 1995 to 251593 students in the year 2000, the successful application rate was about 50% (Seventh Malaysia Plan, 1996). Among the reasons that enrolment at the universities has increased was that there was a very strong social demand arising from an increasing population of young people of university-going age as well as policy changes in Malaysian education. Malaysians have now come to realize the need for more education to meet the economic challenges of the new century. More tertiary education was needed, although 13.9% of the workforce in the year 2000 was now tertiary educated compared to 12% in 1995 (Buku Perangkaan Tahunan, 2001). The strong demand for tertiary education in 1997 to 1999 was also due to a weakening in the Malaysian economy as a result of the Asian financial crisis of 1997. Employment opportunities for fresh secondary school graduates diminished, forcing the more capable ones to pursue further studies with the hope that more education would make them more employable. There was an almost 25% increase in the intake of students in 1999 compared to the intake in 1997.

More graduates, particularly in the sciences, medical, engineering and technical-related courses, have to be trained. While there was a drop from 63% to 58% in the arts to science graduates ratio, more need to be done to redress this long-standing imbalance. The Eighth Malaysia Plan (2001-2005) envisaged a doubling of enrolment for medicine, dentistry, architecture and survey courses in line with the 60:40 science to arts student ratio necessary for the realization of Vision 2020 targets. More government spending on education has been deemed necessary.

In fact, the 10.2% increase in enrolment of Form Six classes from 138,302 to 152,365 students in the period from 1990 to 2000 (Pembangunan Pendidikan, 2001-2010) means more university facilities are needed. This meant more allocation and expenditure by the government. This financial burden is compounded when the government increased the funding from RM1 billion to RM2.3 billion for the National Higher Education Finance Corporation (NHEFC) to help those who qualify for university. Altogether, 29,000 students benefited from their loans in the year 2000 (Seventh Malaysia Plan). This government policy of encouraging higher education has given rise to an increasing demand for more resources to finance tertiary education and other support facilities for a growing young population of 4.9 million children of school-going age.

Demand for tertiary education however has partly met by the private sector in the form of private colleges. Such colleges have developed under an enlightening government policy to develop Malaysian education as an export industry. Thousands of foreign students are found among the 209,589 students at the private colleges in the year 2001. They pursue popular courses such as accountancy, business administration, engineering, law and computer science. Interestingly, very few of the private college students pursue studies in the humanities such as geography or history because such

courses are not market-oriented and attract little market demand. This underscored the fact that private college students valued tertiary education as an investment to enhance their economic productivity and not as a consumption good through which they could derive pleasure (Machlup, 1970).

1.4 Education as an investment

Generally, however, people seek some level of education not out of conscious and rational profit-seeking considerations. The education that young people receive up to secondary-level is not primarily intended to develop skills for an occupation when they graduate. Rather, it is largely intended to promote good citizenship and to provide cultural education. The abilities that are of economic value in later years are developed incidentally to this wide purpose of training up citizenship. Education at the secondary-level in Malaysia prepares little for the labour market. It is education at the post-secondary level that has some definite economic value. Unfortunately, attending classes at post-secondary level takes able-bodied youths and economic resources away from paid and productive employment. There is thus a financial burden to bear when they forgo some earnings in order to attend classes. This forgone income has to be recouped when they graduate in the near future through getting a job with better earnings. This implies that education is “bought” by people to enable them to raise their productivity and thereby, their earnings after graduation. The more advanced or prolonged the duration of the training or more market-oriented their courses, the more probable is higher education pursued for the sake of greater economic gain. Education as such becomes an investment item (Machlup, 1970).

1.5 Gauging the profitability of investments in education

If indeed education is an investment item, surely then educationists and economists would be interested in knowing the profitability of such investments. Their interest arises because the resources for investments can be used for different investment purposes that would also bring returns. The investment that yields comparatively more returns is presumably the more profitable and would be the investment choice. Indeed, investing in education demands the same consideration as investing in a business. The bottom-line is therefore profits and profitability which can be gauged by comparing the costs of investments with that of its benefits or profits

This cost-benefit analysis is alternatively known as the "rate of return" analysis. It is often used in evaluating the profitability of investments in physical capital (Psacharopoulos, 1987). Similarly in evaluating educational investments, this analysis compares unit costs spent on education and the benefits of education which are in the form of differentials in earnings between graduates of two different levels of education concerned. As costs are expended at the time of investment while benefits are forthcoming in the future, discounting with a rate of interest to "penalize" future benefits to make them comparable with benefits received at present is necessary. This discounting provides a present value of benefits that make them comparable with the present value of costs (Mishan, 1976). A cost-benefit analysis of such a nature expresses all the costs and benefits of the educational investment in terms of a single number known as the rate of return. It is this rate of return that enables one to gauge the profitability of the educational investment which the government and private sectors recognize as the key to maximize human potential (Phan, 1996).

Rates of return are also subject to the law of diminishing utility. For example, if rates of return to graduates in Computer Science are high, more students will be

attracted to pursue Computer Science. Subsequently the supply of graduates in Computer Science will increase until there is an excess of such graduates. The excess forces wages for Computer Science graduates in general to fall. Thus, rates of return to Computer science graduates fall.

Returns to educational investments are differentiated as either social or private rates of return. The social rate of return is calculated when the costs of education considered in the estimation process are those which are borne by the government and the benefits enjoyed by society. As the social rate takes into consideration many items of public expenditure, a meaningful estimation of social rates of return would require that all the spillover benefits or externalities of government investment be identified and quantified. While most social benefits can be identified, the task of quantifying the social benefits is extremely difficult. Psacharopoulos and Patrinos (2002) gave an example of workers being asked to identify how much of the productivity of other workers and factors had been affected by a graduate co-worker. Some reported negative values while others gave very high ones, showing that quantifying the benefits is most often subjective.

On the other hand, estimating the private rate of return does not present many problems. A private rate of return is estimated when the estimation effort takes into consideration all the costs and benefits pertaining to an individual making the investment.

This study attempts to estimate both the social and private rates to tertiary education.

1.6 Statement of the research problem

Rates of return are meaningful indicators of the productivity of education which in turn lead individuals to invest in their own human capital. This is often taken heed of by democratic and responsible governments. In Malaysia, incentives are used to promote investments in education which is both a public good and a marketable commodity to Malaysians today. In the perspective that it is a public good, a responsible government must reassure the people that optimal use of scarce resources of the nation has been made. The government spent no less than RM1.616 billion in the year 2000. This was about one fifth of the national budget for that year. Yet, this has not been enough to accommodate all the qualified students into the public universities. More than 200,000 young people had to seek places at private universities and colleges and tens of thousands had to go overseas for their tertiary education. This pressure for places is increasing all the time and the government thus needs to optimize the utilization of resources to meet this demand. As such, it needs to pay heed to the social rate of return to higher education in order to obtain an economically optimal and politically viable decision.

Since the government can ill afford to commit more of its national resources to higher education, the participation of the private sector in providing higher education to a selected clientele is a welcome relief. The privatization of higher education in Malaysia began in earnest in the 1980s and continued through the 1990s. By 1999, private sector initiatives have resulted in about 600 private colleges, the majority of which are not of university status to offer degree programs. Nevertheless, this has made education a marketable commodity at market prices in contrast to the public good obtainable at subsidized costs for those who qualify for it.

However, resources used in private sector initiatives are also limited and have alternative uses too. Thus the crux of the problem in making educational investments lies in the individuals making rational choices that would absorb the costs of education and generate earnings in future working life (Borjas, 1996). This optimization behaviour explains why some people obtain a lot of schooling while others drop out at an early age. Those who invest in more schooling have high "future-orientedness", that is, they have a high regard for the future (Borjas, 1996). They are willing to earn relatively low wages now or none at all when they attend university (Dios and Manuel, 2000). But, they expect to be rewarded upon completion of their studies later on with higher earnings when they become more productive workers because of their higher education. This is seen as the individual's response to opportunities of education at the tertiary level. In this regard, they are interested in the private rates of return to investments in tertiary education at the public universities as well as at the private colleges.

1.7 Objectives of the study

The main objective of this study is to make an estimation of the private rates of return to tertiary education in Malaysia. The specific objectives are:

1. To estimate the private rates of return to arts and science graduates
2. To determine the private rates of return to engineering, computer science and accountancy because they are popular choices of study.
3. To compute the private rates of return to the professions of medicine and law.
4. To compute private rates of return for graduates from public universities and private colleges.
5. To compare estimates of the private rates of return to tertiary education among graduates in the civil service and those in private employment.

1.8 The research questions

With the above objectives in mind, this study attempts to answer the following research questions:

1. What are the private rates of return for graduates in general as compared to non-graduates?
2. What are the private rates of return obtainable for degree holders in the arts as compared to those in the sciences?
3. What are the private rates of return in the fields of engineering, computer science and accountancy?
4. What are the private rates of return to education in the traditional professions of law and medicine?
5. How do the private rates of return for graduates from private colleges compare with that of graduates from Malaysian public universities?
6. How do the private rates of return for graduates in civil service compare with those in the private sector?

1.9 Significance of the study

Accurate estimations of rates of return to education help in educational planning and manpower projections. Unfortunately there are very few such studies done in Malaysia. Studies by O.D. Hoerr (1970), Lee (1980) and Mehmet and Yip (1986) are all largely dated and are not relevant to the economic situation now. There are however a couple of new but unpublished studies on rates of return to education in Malaysia. Abdul Samad (2003) made a study on rates of return to technical education at the secondary school level and compared that with the rates of return obtained by national secondary school leavers. Ooi (2003) did her study on rates of return to investments in

education at the diploma level. As these two studies focused on education below the tertiary level, a study on rates of return to tertiary education would logically complement their studies. This would be a continuation of the academic interest in rates of return studies in Malaysia. An updated study on rates of return to tertiary education at the turn of this century would also be able to indicate the changing economic situation and the relevant trends of employment at the beginning of this new millennium.

1.10 Limitations to the study

There are some limitations to this study due to the nature of data required, the degree of accuracy of information as well as the difficulty of accommodating the factor of ability and its significance or insignificance in estimating rate of returns to education.

1.10.1 The accuracy of data

The usefulness of this study depends very much upon the accuracy of data from respondents. The data required of them pertain largely to earnings received at work and expenditure incurred during tertiary studies. These are rather personal data and may be considered "sensitive" by many respondents. As such there is likelihood that respondents may not give factual data about their earnings. Similarly, data on costs or expenses may not be accurate for the fact that the respondents have forgotten.

The above problem may be reduced by using salary survey results from credible bodies such as the Malaysian Employers Federation (MEF) whose annual salary and fringe benefits survey is often used by industry as a salary guide. Meanwhile, data on costs of living of university students is obtained from a reliable source such as the survey conducted by Ghazali (2001). Data on expenses by private college students is obtained through a survey done by the researcher.

1.10.2 Snapshot nature of the information

A limitation to this study arises from the fact that information on costs and earnings are accepted on a "snapshot" basis. This means that data obtained at the present moment is assumed to be true of the situation in the past. For example, information about a worker's earnings at 35 years old now in the year 2001 is taken to be true of the level of earnings for another worker of the same age for a point in time in the past such as 1981 which is twenty years ago. This assumption ignores price changes over the decades. It also ignores the fact that a present day worker starts at a numerically higher amount of earnings than what a beginning worker twenty years ago would receive.

1.10.3 Regional variations in prices

Although Malaysia is not a really big country, differences in the costs of living between regions within the country have given rise to differences in amount of expenses incurred for university studies and earnings obtained in gainful employment. Similarly, wages paid for the same position in big cities like Kuala Lumpur are higher than in smaller towns. Such regional variations in prices affect the values obtained as rates of return. One way to overcome regional variations in prices or earnings is to take mean values. The average amount spent by the students on each item of expenses for their tertiary studies would thus be used. It may also be possible to moderate the problem of regional variation by a process of sampling.

1.10.4 Assumption of the value of the Alpha Coefficient

It cannot be denied that practitioners of different professions earn different levels of earnings due to market forces of supply and demand for their expertise. It is also just as undeniable that earnings between practitioners in the same profession could differ for

the same reason of different level of ability or expertise. A portion of an established professional's earnings is often due to the cognitive, innate and other abilities of the professional. As these abilities have nothing to do with the education received by the professional while at the university, a part of the earnings earned due to this ability has to be discounted from the total earnings received. This however can be accurately done only if there is a database of information to determine and compare the innate ability or intelligence of the graduates and non-graduates. However, there is no proper or comprehensive intelligence test carried out on all Malaysian graduates and non-graduates by categories of academic disciplines and socio-economic backgrounds. Therefore it is almost impossible to identify accurately that certain portion of earnings attributable to this factor of ability.

One way to overcome this difficulty is to use an adjustment factor known as the Alpha Coefficient (α) to indicate the portion of earnings that could be attributed to the tertiary education received by the individual. Many studies around the world assume an Alpha Coefficient value of 0.6 which means that only 60% of the graduate's earnings are deemed to be due to the tertiary education received. However, as the value of the Alpha Coefficient is rather arbitrarily decided, the adjusted rates of return so estimated may not be reflective of the true situation especially when many studies put the value nearer to 1.0 than 0.6 (Psacharopolous, 1975). The arbitrariness by which the Alpha Coefficient is assumed in a study may become a limitation unto itself. In view of this arbitrariness, a sensitivity analysis with values of (α) ranging from 0.6, to 0.9 as in Table 8 of Appendix C is conducted to show how the values of the rates of return change as the value of alpha changes. This may increase our appreciation of the value of the Alpha Coefficient, but it still does not overcome the fact that it is often arbitrarily

decided. Therefore, in the discussion on the findings in this study, only non-adjusted rates of return are used.

1.10.5 Difficulties in estimating the social rate of return to private college students

A lot of socially owned resources such as schools, public libraries, roads and health facilities are used by students in their tertiary education especially at the public universities. While these social benefits or externalities can be identified, they are almost impossible to quantify. This would result in an underestimation of the social rates of return. Quantification is even more difficult in the case of social benefits enjoyed by private college students. Apparently private colleges do not receive outright financial help from the government but they benefit by way of the externalities generated by government spending on social projects such as public libraries, roads and other public facilities. By not being able to quantify all the relevant externalities for estimation, the social rate of return so derived is bound to be underestimated and therefore is a limitation to the study.

1.11 : Operational definitions

1.11.1 Investments

When an individual's current income level exceeds his or her current consumption, the excess money can be saved or put aside in a bank account for future spending. This saving of money is different from investing which means setting aside money for the purpose of making future gains. Investment also means a sacrifice or risking of present money to gain future money (Alexander, et all, 2001). Since investments involve a possibility of losing money, it is very necessary for investors to make a careful study of their investment plans and market conditions.

In economic theory, investment is generally taken to mean the actual production of real capital goods such as buildings, factories, new equipment and inventories (Hanson, 1979). The motivation to invest depends very much on the interest rate to procure funds for investing and the rate of return which is the ratio of expected profit to capital cost. When the rate of interest is greater than the rate of return, investors shy away from making the investment as it would mean losing money. Conversely, when the rate of return is greater than the rate of interest, such an investment prospect is encouraged as money could be earned.

1.11.2: Investments in education

Making investments in education is similar to making investments in capital assets because there is the uncertainty of future returns (Perlman, 1973). Like a piece of unimproved land, there is little to be gained from a man if there is no investment in him. But when investments are made in him in the form of improving his education, training and health care, the man can increase his productive capacity.

Both Schultz (1987) and Woodhall (1987) are of the opinion that investments in education create knowledge and skills that enhance a worker's productivity and thus raise his level of earnings. Therefore investments in human capital are encouraged because they enable workers to produce higher income.

1.11.3: Opportunity costs of education:

The total costs of education for any program or level are the sum of costs of all inputs used in the production of the programs. Part of that total costs is opportunity costs associated with alternative opportunities that are forgone because a certain decision has been taken. For instance, where students decide to pursue a degree course

for three years rather than enter the labour market, they forgo income for the three years of fulltime studies. The opportunity costs of studying for a degree are thus the forgone income for three years (Woodhall,1987, Tsang, 1994). In this regard, students of mature age who are already gainfully employed forgo a larger amount of earnings compared to the student who just graduated from Form Six. When both decide to pursue fulltime studies at the university, the substantial amount of opportunity costs or forgone income is rather prohibitive to the mature-age student who may have a family to support. As such, it is expected that the Malaysian tertiary student population would consist predominantly of younger people of ages 21 to 24 particularly at the first degree level.

1.11.4: Private costs

These are costs borne by the individuals and their families and are not borne by the government. They can be categorized as direct private costs where the expenditures are directly made by the students and their families. These costs include tuition fees, books, stationery, transportation, recreation and miscellaneous expenses (Tsang,1994). Household contributions of cash and kind are also private costs.

Indirect private costs are the opportunity costs which Woodhall (1987) and Tsang (1994) consider as the economic value of alternative opportunities when resources are allocated to educational investments rather than to other forms of investments.

1.11.5: Public costs

Public costs are those borne by the government and are of a recurrent nature. They also include capital costs. Recurrent costs refer to expenditures on inputs and services with a one-year life span or less. They yield short term benefits and include

expenditure for personnel and non-personnel such as salaries of teachers, administrative and other staff. Non-personnel costs are expenditures spent on educational resources.

Capital costs are expenditures involved in the procurement of land, buildings and equipment. They normally yield long-term benefits.

1.11.6: Social costs of education

The social costs of education consist of the private and public costs and therefore are the total costs of education borne by the society (Tsang, 1994, Carnoy,1995).

1.11.7: Monetary benefits of education

The benefits of education can be categorized as monetary and non-monetary benefits. Monetary benefits are identifiable pecuniary economic benefits expressed in monetary units. Monetary benefits such as differentials in lifetime earnings are therefore measurable and are indications of higher productivity.

1.11.8: Non-monetary benefits of education

Non-monetary benefits such as improved health, social status and job satisfaction are however difficult to identify or measure although they result from higher education (Solmon and Fagano, 1995).

1.11.9: Social benefits of education

These are benefits received by society as a whole. These benefits are in the form of better health practices, stronger family bonds, reduced crime rates, better children welfare and better maintenance of the environment enjoyed by the society. Solmon, et

al, (1995) found that these benefits are positively correlated to higher education levels achieved by the members of the society.

1.11.10: Private benefits of education

Private benefits accrue to individuals who undertake educational investments and earn higher income due to increased skills and productivity resulting from the higher level of education. Some of the private benefits however may be in non-monetary forms.

1.11.11: Rates of return to investments in education

Money devoted to the education, training and health care of an individual is regarded as an investment in human capital when it raises the lifetime earnings of the individual and produces benefits firstly to the individual and then to the society. Returns to investments in education therefore have a private and a social perspective.

1.11.12: Private rates of return

When the additional earnings of the individual worker are compared to the direct and indirect costs of education borne by the individual, the private rate of return to investment in the education of the individual is obtained.

1.11.13: Social rate of return

Where the government bears a portion of the costs of education of the students in the form of free or subsidized education, comparing social benefits of education with that of the costs of the educational investment will result in a social rate of return.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter explores the literature on the Human Capital Theory since the early days even before education was thought to have been the cause of an unexplainable rise in economic growth called the “residual phenomenon”. An insight is next made into the research studies that recognized the role of education in economic growth leading to the acceptance of education and training as a factor to increase productivity and formation of human capital. The next section of the chapter then gives a historical review of the literature on the value of human labour and the advantages of education. Next and more specifically, it deals with studies that explain the causes of differentials in earnings among individuals. The discussion next dwells on studies about the profitability of education as an investment and then delves into a costs-benefits analysis on education with a discussion on the costs and benefits of education. This is followed by a discussion about research on the cost-benefits analysis methods to estimate rates of return with emphasis on the use of age-earnings profiles. The estimation of rates of return to educational investments by the internal rate of return, net present value and regression methods is briefly explained. Following that is a review made on the rates of return studies done in countries around the world emphasizing those done in the United States and Malaysia and their areas of research. This chapter on a review of the literature on human capital, cost-benefit analysis and the rates of return concludes with some views critical of the human capital concept.

2.1 Economic development and the residual phenomenon

In the years after World War Two, the economies of many European nations and the United States grew tremendously, bringing improvements in the general economic welfare and standard of living of the people. Hicks (1987) noted that there was a reduction in unemployment with real increases in the social and economic welfare of the people. But many nations failed to enjoy such growth, prompting economists to examine the relative importance of each of the factors of production in the more successful countries. Many of the economists were intrigued by a large part of economic growth that could not be explained. It seemed that the growth in national output in certain countries was greater than expected from the increase in input of economic resources used. This excess in growth defied explanation for quite some time and was known as the “residual phenomenon” (Atkinson, 1983).

This phenomenon was variously explained as due to advancements in technology employed or an expansion of the production function of the economy. But both these explanations were not convincing. They did not explain how an economy could suddenly expand its production function or how technological advancements came about to achieve the growth in national output.

Later economists, such as Mincer, Becker and Schultz with the advantage of more precise and detailed data managed to pinpoint the residual phenomenon as being due to an increase in the quality of labour used in economic production. Further research led to a new field of economics known as the “economics of education”.

2.2 The economics of education and the concept of human capital

This new branch of economics was researched chiefly by economists such as Benson (1963), Blaug (1970), Rogers and Ruchlin (1971), Vaizey (1962) and Woodhall

(1972). From a bibliography of about 800 items published by Blaug in 1966, it grew to one with over 2000 annotated entries by 1978. Encompassed within the scope of the economics of education is that of the identification and measurement of the economic value of education.

Blaug (1970) explained that the economics of education encroaches imperceptibly into the realm of labour economics, public sector economics, economics of welfare and theories of economic growth and development. Nevertheless, all these fields of economics are bound together by the understanding that the wish to obtain an education in a modern economy is an opportunity for individuals to invest in their own selves. By investing in their education, training or other activities which raise their future earnings, they develop their human capital.

This concept of human capital can be applied not only to education and training but to any activity which increases the quality and productivity of the labour force (Woodhall, 1987). Activities that include expenditure by individuals on health care, migration, job search, information retrieval and decisions which involve the individual forgoing present income for the prospect of future gains (Blaug, 1976) develop human capital. From this concept of human capital, Benson (1975) later developed a theory of human capital formation and analyzed the rate of return to investment in education and training.

Indeed, education is one of the few investments a man can do unto himself Schultz (1961). It was observed that very huge volumes of investments had been made by man to increase his own value. In fact, as long ago as 1699, Sir Petty had made a serious attempt to estimate the value of a human being (Cohn, 1979). He assumed that the worth of a human being was the total earnings due to his labour after taking into account the profits due to land and other resources. From this, he derived the estimation

that the value of a human being was twenty times the annual earnings of his labour. However, this estimation procedure ignored far too many factors to be of any use.

Later estimation procedures used the cost of production approach. This assumed that the value of man to be equal to the value of resources used to “produce” him right from the moment of his birth to the moment that he was being evaluated. This took into consideration the total cost of food, clothing, shelter, education and other things. Some refinements were made to this approach by taking due consideration of mortality rates of the workers, interest rates on the expenses as well as the costs of maintenance of the individual. Using the same modified approach, Ernst Engel (1883) believed that the costs of production of a man increased yearly by a constant amount and that the man was fully “produced” at age 27. The assumption that costs of production of a man increased yearly by a constant amount was rather simplistic and questionable. As an individual matures physically and socially, his needs change. Thus the costs of production of the individual would increase or even decrease accordingly. Dublin and Lotka (1946) made even more refinements to this approach after making a careful survey on the costs of bringing up a child.

One objection to this approach was that costs of resources spent on a person were not directly related to his market value. The individual was said to have a present and an expected future market value. William Farr (1853) refined this approach further by taking the costs of living and mortality rates into consideration.

Early classical economists paid scant attention to the value of human labour and its development. Few of them ever thought of the embodiment of capital in the human body. However, the renowned economist, Adam Smith thought that a person educated at the expense of a lot of resources such as effort and time could be compared to an expensive machine. As such, it was expected that the man would be able to earn his