

RATES OF RETURN TO TERTIARY EDUCATION: A STUDY IN HUMAN CAPITAL DEVELOPMENT IN MALAYSIA FOR THE YEAR 2000

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Introduction

Education is both a public good and a market commodity. As a public good, it is the responsibility of a responsible government to use scarce national resources for education in an optimal way. But as the government cannot meet all the demand for tertiary education, it has allowed private sector initiatives to set up private colleges to sell education as a commodity. Government and private individuals alike need to know the level of rates of return to their resources used in tertiary education to reflect the efficiency of the allocation of resources and the profitability of tertiary education as individual commitments.

Common understanding has it that those with more education receive more earnings in their lifetime of work because education improves work productivity and thereby enables those with more education to obtain higher earnings. In recognition of this, the Malaysian government has since 1996 increased its allocation of funds for education from RM10.85 billion to RM14.08 billion in 2000. Such massive expenditures on education were made to garner potential increases in worker productivity. Expenditures on improving educational attainment are therefore regarded as investment in human capital, endowing the academically successful with the capacity to improve their productivity by creating assets in the form of skills and knowledge.

In this study, it is assumed that people invest in tertiary education to enable them to raise their productivity and thereby improve their earnings. If indeed education is an investment, economists and educationists alike would surely be interested in knowing the profitability of such investments. As the resources invested in education could also have been used for different investment purposes that would similarly bring in returns, it is necessary to determine which form of investment should be the investment choice. The rates of return to education would therefore reflect the efficiency of resource allocation for educational purposes in Malaysia.

Methodology

The purpose of this study is to calculate the rates of return to education in the various fields of study at the tertiary level. The conceptual framework for this study is the Human Capital Theory which postulates that differences in earnings at work are largely due to differences in labour productivity as a result of varying amounts of education obtained by individuals. The higher the level of education obtained by the individual, the more productive the individual becomes and thereby merit higher earnings. If educational expenditure is treated as investments to develop human skills or human capital, then the yield or rates of return to such investments can be calculated in much the same way as for investments in physical capital. The use of a Cost-benefit analysis is appropriate here where traditionally, the rates of return are found by solving for r in Psachoropoulos' estimating equation of

$$\sum_{t=-s}^0 (C_h + W_{h-1})_t (1+r)^t = \sum_{t=1}^n (W_h - W_{h-1})_t (1+r)^t$$

where s represents the length in years of school cycle for the higher level of schooling, and n is the expected work life of the graduate of the higher level of schooling, C_h is the costs of education at the higher level, W_h is the earnings of a higher level of schooling graduate while W_{h-1} is the earnings of the a lower level of schooling graduate.

For the purpose of this study, the above equation is now modified to

$$\sum_{t=-u}^0 (Cu + Ws)_t (1+r)^t = \sum_{t=1}^n (Wu - Ws)_t (1+r)^t$$

where u = length of tertiary education in years
 W_s = earnings of secondary school graduate
 W_u = earnings of tertiary graduate
 t = time (in years)
 n = length of work life of tertiary graduate
 r = rate of return

The value of n depends on whether the individual enters a public university or a private college. The entry qualification for a public university is an STPM obtainable after a further 2 years of sixth form studies after the SPM which is deemed eligible for private college studies if the individual has obtained 5 credits. Thus the age of entry for public university studies is at 20, while that for private colleges is at 18 years old. Age at graduation from tertiary studies depends on course pursued and subsequently affects the length of working life after graduation.

The data to calculate the rate of return as denoted in the estimating equation above are data on costs of education and the benefits of education, namely the earnings differentials between that of the tertiary graduate and that of the SPM-qualified worker, assumed to be a clerical officer, a post that does not require further training of the SPM-qualified school leaver.

The data on costs of public university education were obtained from Ghazali Othman's study carried out in 2001, while data on costs of private college education were obtained through individual surveys. Costs of education refer to the expenditure tertiary students pay for their tuition, room and board, books, materials, transport and other related expenditures. Data on benefits of education, especially those of the earnings differentials between university graduates and the non-graduates working in the civil service were obtained from the New Remuneration

System while data on earnings for those working in the private sector were largely extrapolated by regressions on data sourced from the Malaysian Employers Federation Salary and Benefits Survey for the year 2001. The earnings differentials were obtained after comparison of post-tax earnings of university graduates to SPM-qualified clerical workers in both the civil service and private sector employment.

The private rates of return were thus calculated for public university and private college graduates working in the civil service and private sector employment.

Findings and Discussion

Table 1 below displays private rates of return to tertiary education in the various fields of study and sectors of employment.

The rates obtained above are unadjusted rates and are rather conservative ones in that the tax exemptions considered for the purpose of this study are minimal, being just the personal exemption and the personal tax rebate. Together, however, the rates indicate that:

1. It pays to earn a degree, especially from the public universities in Malaysia. The rates of return for tertiary graduates, irrespective of public universities or private colleges, range from 9.57% to 19.86% except for private college medical graduates who obtain 4.19% in civil service and 5.67% in private employment. All rates obtained above were better than those for alternative investments of fixed deposits, government bonds or other financial instruments.

Table 1: Private rates of return to tertiary education in the various fields of study and sectors of employment (%)

Field of Study	Public University Graduates in		Private University Graduates in	
	Civil Service (%)	Private Employment (%)	Civil Service (%)	Private Employment (%)
Arts	12.51	15.95	9.76	12.00
Science	12.79	19.25	13.75	19.86
Computer Science	12.78	16.97	11.15	14.37
Medicine	12.88	16.03	4.19	5.67
Engineering	11.14	17.97	9.15	18.84
Accountancy	12.76	13.63	13.21	13.89
Law	10.45	14.79	9.57	13.80

2. Rates of return for graduates in private sector employment are higher than those in civil service, indicating that the private sector pays better emoluments.
3. Comparing discipline for discipline, public university graduates obtain better rates than those from private higher educational institutions. This is largely because of the higher costs of education at private higher educational institutions.
4. Other than costs, length of study also affects the rates in that lower rates are obtained for disciplines that require a longer period of study such as medicine, law and accountancy compared to the arts and sciences.
5. Science graduates from private higher educational institutions seem to obtain better rates than their counterparts from public universities despite the higher costs in the former. This, however, is because in the estimation of rates for science majors, data on costs were culled from students of Tunku Abdul Rahman College which, although not a private college, is privately administered.
6. Accountancy graduates from private colleges also seem to fare better than public university accountancy graduates because accountancy qualifications from private colleges are affiliated to world accounting bodies and therefore are more accepted by private companies.
7. Science-based disciplines such as science, computer science, engineering and medicine [from public universities] obtain better rates than the arts or humanities.
8. Rates of return for Law graduates seem to lag behind most of the other professions or disciplines mainly because of the long process in becoming a full-fledged lawyer.

Conclusion

High private rates of return suggest that educational investments are profitable to private individuals. More private investments in education should be made, especially

in science-related disciplines such as computer science, general sciences and engineering. Their rates of return suggest that more private higher educational institutions for such disciplines are sustainable.

Despite the present low rates of return for private college medical education, such a scenario is set to change when costs are reduced with more new private medical colleges coming on stream. The reverse policy of raising university fees under the concept of corporatizing public universities will cause rates of return to decrease. Raising fees too will price tertiary education out of the reach of the less financially-able unless loan schemes are universally and easily available, especially for private higher education. If it is necessary to raise fees, they should be imposed on disciplines with high rates of return.

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