COST BENEFIT ANALYSIS IN MALAYSIAN EDUCATION

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Abstract

An accurate, in-depth cost benefit analysis has important implications for developing a realistic, fact-based and truly equitable educational policy of long-range benefits to the nation as a whole. Due to limited resources, governments in many countries are forced to make difficult decisions about which levels of education-primary, secondary, or higher should be the recipients of scarce investment funds. To allocate these resources across levels of education, one could compare the costs and benefits of each of the three alternatives. The investment that yields the highest net benefits would produce relatively greater benefits for a given cost. Malaysia, like other countries in Southeast Asia, faces similar challenges in ensuring the allocation of appropriate funding for efficient and equitable educational services. This paper provides the conceptual framework for cost-benefit analysis on investment in primary, secondary and higher education in Malaysia. Distributional impact on different stakeholders has been analyzed by employing Kaldor-Hicks Tableau with the national accounting domain. Sensitivity analysis will be conducted using different discounting rates. This study also included the social benefits and costs in the conceptual framework to provide a comprehensive cost benefit analysis in Malaysian education system.

Keywords: *Educational policy, limited resources, investment funds, cost-benefit analysis.*

INTRODUCTION

Education issues remain an important priority in developing countries. Because resources are limited and ensuring adequate allocation is a struggle for many countries, the delivery of educational services has become a challenge. Malaysia, like other countries in Southeast Asia, faces similar challenges in ensuring the allocation of appropriate funding for efficient and equitable educational services in order to promote access to quality education for all social groups [1, 2].

The continued growth in the level of educational spending is noteworthy in both the fiscal effort on education and national effort on education. Education in Malaysia has always been a priority of the government's development policy and annually, it represents the biggest chunk of the national budget. It is also considered a pillar of national development and a prime factor in promoting the country's prosperity [2]. The government has devoted a substantial amount of its resources to the sphere of education. For example, the last two decades (between 1980 and 2001), have seen an increase of 37% and 33% in the fiscal effort and national effort, respectively [14]. This demonstrates great interest and reveals a need for additional research to study and elucidate multi-faceted factors affecting educational policy.

The government's commitment towards education is contained not only in the Federal Constitution; it is also included in the Education Act of 1996 through the provision of free

education to every school-age child in the country for a period of eleven years for all its citizens [25].

An accurate, in-depth cost benefit analysis has important implications for developing a realistic, fact-based and truly equitable educational policy of long-range benefits to the nation as a whole. Not only does it disclose cost implications of educational policies, it also assesses relative cost-efficiency of alternative educational policies and interventions [21]. More importantly, cost benefit analysis suggests one way to inform the educational administrators and decision makers of the need to improve policymaking and evaluation in education. The purpose of this paper is to provide a scheme for the costs and benefits analysis of educational investments in Malaysia. We are interested in assessing whether it is more beneficial to invest in primary education, secondary education or tertiary education.

In this context, the analysis of Malaysian education will follow the conceptual framework of standard cost-benefit analysis using Kaldor-Hicks Tableau to describe potential benefits, costs and transfers that will incur in each investment decisions. Section 2 and 3, following the introduction part, explains the Human capital theory and the background of Malaysian education system. Section 4 and 5 describe the basic scheme, accounting domain, and the baseline. Section 6 and 7 analyze the potential benefit, costs and transfers from the national accounting domain. Section 8 and 9 emphasize on the distributional impact on each stakeholder, and section 10 discusses sensitivity analysis and the final section provides conclusions.

HUMAN CAPITAL THEORY

There has been a prevailing argument that education greatly contributes to the economic growth of nations globally. The belief in the positive relationship between education and economic growth has been largely backed up by 'human capital theory' [4, 23]. According to the human capital approach, education is an investment in a person's future income potential, whereby variations in labor income are due, in part, to differences in labor quality as a result of the amount of human capital acquired by the workers [7]. The theory's thesis is that education fosters economic growth by equipping people with skills, knowledge, and attitudes, thereby increasing the productivity of the work force of a nation. In a competitive labor market, more productive individuals are paid a higher wage. Schultz contended that the investment in human capital accounts for the rise in the real earnings of a worker [20]. Additionally, Psacharopoulus confirmed that average wages are higher for more highly educated workers [16]. In Malaysia, there is a strong correlation between schooling and earnings growth performance, which suggests that high levels of upper secondary and tertiary educational attainment are vital for human capital and could be translated into earnings and steady growth for the national economy as a whole [27]. A recent study shows that in 1978 returns to investment in education at the secondary school level and at the tertiary level are 32.6% and 34.5%, respectively [19]. Other studies also show that education plays an important role in explaining the earnings differentials in Malaysia [6, 11, and 13).

Generally, more education means higher productivity and better earnings and, thus improved socioeconomic status. To embark on an investment decision, one has to weigh

benefits and costs at all levels. For the government, it is also important to consider both costs and benefits of their educational investment over an extended period of time.

BACKGROUND OF MALAYSIAN EDUCATIONAL SYSTEM

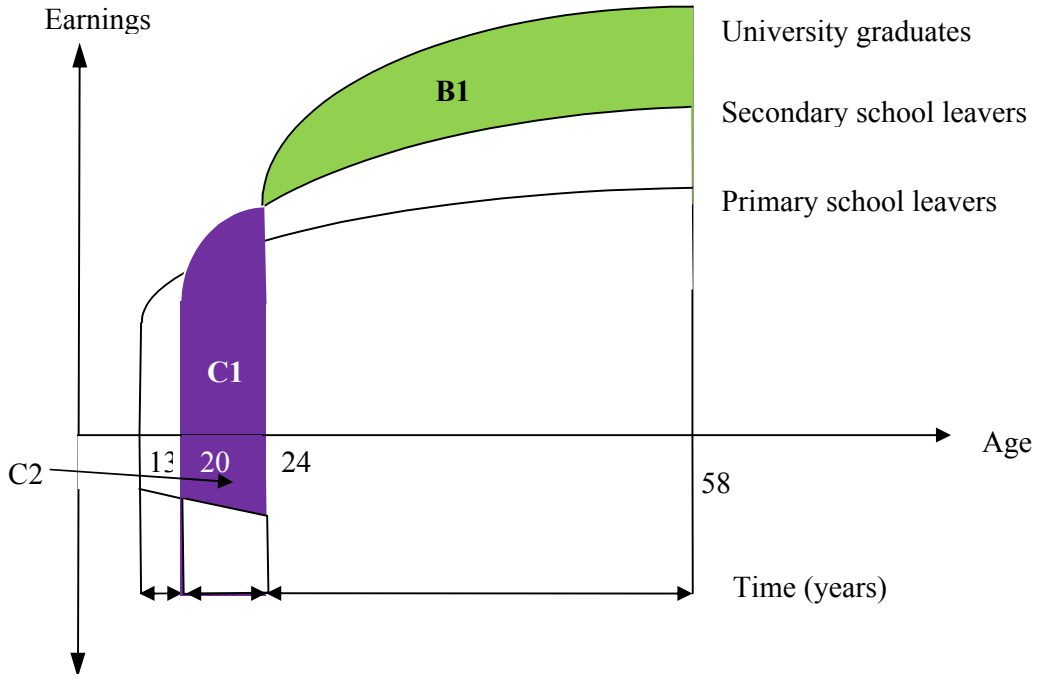
The national education system encompasses all levels of education namely, primary, secondary, and tertiary levels. Formal education in Malaysia is primarily based on the 6-3-2-2-4 setup: six years of primary school, three years of lower secondary school, two years of upper secondary school, two years post secondary school, and four years of university education.

All type of schools must adhere to the national curriculum, as well as to the prescribed school calendar. In terms of national examinations, pupils are evaluated at four levels; the Lower Secondary Assessment (*Penilaian Menengah Rendah*), which is at the end of the three years of lower secondary level; the Malaysian Certificate of Education (*Sijil Pelajaran Malaysia*), which is at the end of two years of upper secondary level; and the Malaysia Higher School Certificate (*Sijil Tinggi Pelajaran Malaysia*), which is at the end of two years of post-secondary level [14].

BASIC SCHEMATIC USED FOR ESTIMATING BENEFITS AND COSTS IN EDUCATION

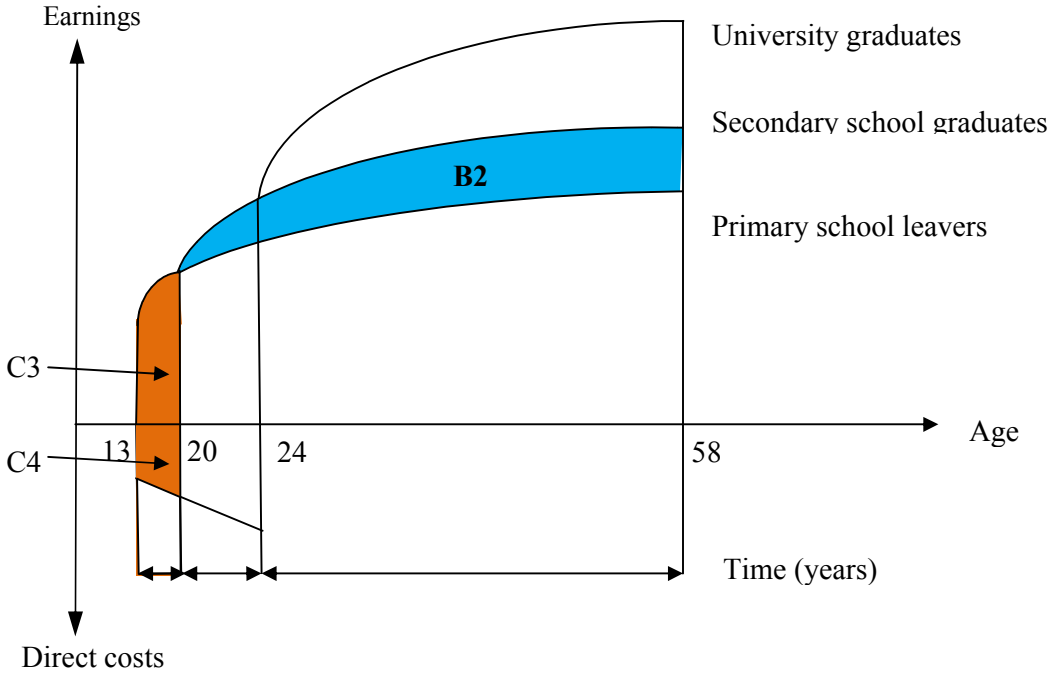
In order to estimate the cost and benefit of investing in different levels of education, we need to have data on the prevailing unit costs and age-earnings profiles of graduates at different levels of education. In this analysis, we will look into three level of education that is primary (6 years), secondary and post secondary (7 years) and university (4 years). If we are interested in the cost benefit analysis of university education, for example, the profiles would refer to earnings for university and high school graduates. Figure Al shows a stylized picture of the different costs and benefits involved. Between ages 20 and 24, university graduates spend four years in higher education institutions, incurring the costs of a university education (shaded area below the horizontal axis between ages 20 and 24), and forgoing the income they would have earned as a secondary school graduate (shaded area above the horizontal axis between ages 20 and 24). In addition to private costs, there are also costs to the government if university is subsidized. After graduating at age 24, university graduates begin to earn more than high school counterparts, and as the figure suggests, continue to do so until age 58 when both groups retire. The sum increment in earnings, represented by the shaded area between ages 24 and 58, is the net benefits of a university education [9].

Figure 1: Stylized Age-Earnings Profile for University Graduates



B1- Earnings of university graduates-earnings of secondary school leavers
C1- Forgone income that could have been earned as secondary school graduates
C2- Direct cost of university education

Figure 2: Stylized Age-Earnings Profile for Secondary School Graduates



B2- Earnings of secondary graduates-earnings of primary school leavers
C3- Forgone income that could have been earned as primary school graduates
C4- Direct cost of secondary education

The standard formula used in cost-benefit analysis but can be modified to the specific problem:

NPV for university education

$$\sum_{t=1}^{t=34} \frac{(E_u \quad E_s)_t}{(1+i)^t} - \sum_{t=1}^{t=4} (E_s + C_u)_t \, (1+i)^t$$

Es and *Eu*, refer to the earnings of secondary and university graduates respectively, Cu refers to the annual unit cost of university education, and i refers to the discount rate. The index t refers to the time periods, beginning at *t* = 1 at age 24 and ending at t = 34 at age 58. The first term on the right-hand side is the sum of the present value incremental earnings from a university education, while the second term represents the sum of the present value of costs.

NPV for secondary and post secondary education

$$\sum_{t=1}^{t=38} \frac{(E_s - E_p)_t}{(1+i)^t} - \sum_{t=1}^{t=7} (E_p + C_s)_t \, (1+i)^t$$

Ep and *Es*, refer to the earnings of primary and secondary respectively, Cs refers to the annual unit cost of secondary education, and i refers to the discount rate. The index t refers to the time periods, beginning at *t* = 1 at age 20 and ending at t = 38 at age 58. The first term on the right-hand side is the sum of the present value incremental earnings from a secondary and post secondary education, while the second term represents the sum of the present value of costs.

NPV for primary education

$$\sum_{t=1}^{t=51} \frac{(E_p - E_n)_t}{(1+i)^t} - \sum_{t=1}^{t=6} (E_n + C_p)_t \, (1+i)^t$$

Ep and *En*, refer to the earnings of primary school graduates and without primary school respectively, Cp refers to the annual unit cost of primary education, and i refers to the discount rate. The index t refers to the time periods, beginning at *t* = 1 at age 7 (depending on when the child starts working or helps in agricultural work) and ending at t = 51 at age 58. The first term on the right-hand side is the sum of the present value incremental earnings from a primary education, while the second term represents the sum of the present value of costs.

COST BENEFIT FRAMEWORK

Accounting Domain

Analyzing costs and benefit of education should start with defining accounting domain. We should consider various aspects in order to conclude which accounting domain to adopt. In Malaysia, education is mainly managed and controlled by federal government. The administration of education is highly centralized. Administrative responsibilities are divided into four distinct hierarchical levels: federal (Ministry of Education, Malaysia), state (the State Education Departments), district (the District Education Offices), and school levels. At the federal level, the Ministry of Education prescribes the curricula, syllabi, and the examination systems for all schools, government, and private. Locally, the State Education Departments and the District Education Offices monitor the implementation of educational programs. They provide feedback on a regular basis to assist the Ministry in the overall planning. The District Education Offices also serve as a link between schools and the State Education Departments.

In this analysis, we define our accounting domain as a national level. This is because Federal Government is the main financier for primary and secondary education in Malaysia. Currently, Malaysian government is subsidizing tuition fees for all the children in primary and secondary schools. Furthermore, after completing their education, the students will transfer part of their earnings in the form of income tax to Federal government. In the case of higher education, the federal government also subsidizing tuition fees at public higher educations. In addition, Malaysian government also provides loan to the students to pursue their higher education. In return, the students have to pay back the loan together with 1 percent interest to federal government when they start working. As federal government plays an important role in Malaysian education, it is more appropriate to define the accounting domain at the national level.

Baseline

Next, we should determine the baseline of the education in Malaysia. The baseline is investing in primary education. It is important to note that in Malaysia, the six years of primary education is the compulsory education. Thus, the baseline is primary education. In another words, this means that every household in Malaysia must send their children to school at the age of seven.

KALDOR-HICKS TABLEAU

K-H tableau is very helpful as it demonstrates clearly the distributional impact on each stakeholder. Table 1, 2 and 3 shows the benefits, transfers, and costs for investing in primary, secondary and higher education with national accounting domain perspective.

BENEFIT ANALYSIS

Earnings

The most obvious benefit of investment in additional years of education is increase in the productivity. Unlike earnings in public sector jobs, earnings in private sector jobs are especially relevant because they more closely reflect the economic value of labor. The private benefit of investing in additional years of education is the gain in earnings after completing the additional years of education. The gain in earnings is shadow priced to equal to productivity. We expect investments in education to increase people's productivity over their entire lifetime. Thus, it is useful to compute the present value of the increase, assessed at the time of graduation for each cohort of project beneficiaries. First of all, we need to estimate the relevant age-earnings profiles to obtain the increment in earnings at each age, and then we need to discount the stream of incremental earnings to the time of graduation using an appropriate discount rate.

Earnings at primary level refers to new wage after completing primary education minus wage which otherwise would have been earned without primary schooling. On the other hand, earnings at secondary education refers to new wage after completing secondary education minus wage which otherwise would have been earned with primary schooling. In regards to higher education, earnings refer to new wage after completing higher education minus wage which otherwise would have been earned with secondary education. The benefits of education occur over time in the future, so the incremental earnings are discounted to present values.

It is also important to note that when evaluating a project from the point of view of society, we are interested in all the benefits; therefore, we look at before-tax earnings and the value of fringe benefits in the wage package (e.g., value of health insurance and retirement benefits). But when we look at the benefits from the beneficiaries' point of view; thus we look at after-tax earnings and the value of fringe benefits. Any difference between the two values arising from taxes accrues to the government as a fiscal benefit [24].

In many developing countries, labor force surveys offer an easy source for cross-sectional data used to produce the age-earnings profiles. Such data assumes that the age-specific gaps in earnings between people with different educational qualifications remain stable through time. This means in 40 years time, the earning difference between a university graduate and a secondary graduate will be the same as the difference in earnings today. The assumption would underestimate the net benefits if the earnings differentials widen through time [24].

Social Benefits

Social benefits refer to non-monetary or external effects of education to society as a whole. There has been evidence that more schooling is associated with reduced criminal activity, lower fertility, labor market search efficiency, concern for child's health and social cohesion and others [26]. Haveman and Wolfe argue that parental education has significant effect on children. Their study show that ensuring the current parents have a high school education, reduces by 50 percent the probability that their children will drop out of school and their daughters will end up as unmarried teenage mothers; it also reduces by 26 percent

the probability that their children being economically inactive in the future [24]. Given the scant empirical evidence on the external effects of education, social benefits estimates are usually based on directly observable monetary benefits of education. Most of the social benefits associated with education have not been quantified. Thus, given the current state of knowledge in the field, it may prove difficult to incorporate these benefits in project evaluation. However, Summers illustrates how social benefits possible to be calculated in a practical way. He estimates the value of the reduction in child and maternal mortality and in fertility associated with investment in an extra year of schooling for girls by finding out how much it would cost society to accomplish the same results through other means. Summers concludes that the benefit of giving 1,000 Pakistani girls an extra year of education amounts to $88,500 and that the present value of the benefits amounts to $42,000, compared to a cost of $30,000 in education [24]. (Table 4).

Cost Analysis

In this paper, the ingredients approach will be employed to estimate costs in educational investments. Ingredients are resources that are needed for each intervention. The ingredients approach, which is a disaggregated approach, is based on individual inputs or resources used in the production of an educational program. This approach was developed to provide a systematic way for evaluators to estimate the costs of social interventions. Further this approach also requires the costs of all inputs and services associated with a particular intervention be identified so as to determine total costs and examine how the cost burden is distributed among different agents [12].

It is worth noting that in Malaysia, government educational spending finances almost all institutional costs of primary and secondary schools. However, at the higher education, most of the public universities are corporatized. Thus, financing of higher education is done by the universities. Basically, educational costs can be divided into two groups: institutional costs and private resources devoted to education [23]. **Institutional costs** include recurrent costs and capital costs. The details are as follows:

1. **Recurrent costs** (i.e. costs of inputs an annual basis) consist of the following costs:
   a. School/University personnel (e.g. salaries, employment benefits, and supplementary benefits paid to teachers/lecturers, school/ university administrators, and other school/ university staff); and
   b. Non-personnel items (e.g. costs of instructional materials, teaching aids and school/university supplies, minor and regular repair and maintenance, utilities and student welfare).
2. **Capital costs** (i.e. cost of inputs, which last more than one year) include costs for buildings, equipment, and land. If the land or inputs are donated, an imputed market value should be used to assess their costs, if they have an alternative use.). The imputed costs of land per unit area vary remarkably among different states and zones in Malaysia. It also depends on the location of the land whether it is in urban, semi-urban, or rural. With regards to equipment and furniture and fittings, the raw data on costs will be estimated using Consumer Price Index. Annualized costs will be determined based on the norms set by the Department of Statistics Malaysia, this category are expected to last at least five years and the discounting rate is set for accounting purposes at 7 percent [8].

Private resources become a significant resource in the financing of the primary schooling in many parts of the world as data shows private costs may account for one-quarter to one-third of the total cost of primary schooling [22]. In Malaysia, educational financing at primary, secondary and higher education also depend to a momentous degree on private sources. Thus, private resources should be included in the costs of education. **Private Resources** for education can be divided into three categories:

1. **Direct private costs** entail household educational expenditures related to a child's schooling, including tuition spending and supplementary study guides, uniforms, writing supplies, school bags, transportation, and boarding).
2. **Household contributions** refer to donations in cash and/or in kind from parents or Parents Teachers Associations to a school.
3. **Indirect private costs** refer to the economic value of the forgone opportunities of schooling, such as forgone earnings associated with time spent at school. It is important to note that it is illegal for children under 14 years old to work in Malaysia. However, there are some exceptions. For instance, a child may be engaged in employment involving light work suitable to his capacity in any undertaking carried on by his family [10]. This means the children have opportunity costs for attending primary education and this is the income which could have been earned if they work on the family farm for example. With the assumption that children aged 11 and 12 help in the agricultural labor, two or three years of forgone earnings while in the primary schooling have been used in the empirical literature [17]. Thus, the value of forgone work should be included as the costs of primary education. In the case of secondary and post secondary education, the child can legally work after 14 years old that is when they are in Form 2 (8^{th} grade). This means the children have opportunity costs for attending secondary and post secondary education and the value of forgone work should be included as the costs of secondary and post secondary education. In addition, there are also opportunity costs for attending higher education and this is the income which could have been earned if they work after completing the secondary education.

TRANSFERS

The defining characteristic of financial transfers is their zero-sum effect under the standard Kaldor-Hicks aggregation criterion. This is because as the financial exchange between two individuals, the financial loss to one individual always equals the financial gain to the other.

1. Transfers at Primary/Secondary Education

a. **Income tax.** Income tax is a financial transfer because this payment is transferred from the workers (students who work after completing the primary/secondary education) to federal government. This is a financial loss to the worker and gain to the Federal Government. The net is zero in the conventional accounting framework.
b. **Fees.** Fees are financial transfers from students to federal government. In this process, the students will pay the fees to the schools which then the amount in the federal government's account.

c. **Reimbursement.** In Malaysian context, the school fees are subsidized by the government. This is a transfer from government to students. Thus, Federal government is incurring the costs whereas the students are receiving them.

2. Transfers at Higher Education

a. **Income tax.** Income tax is a financial transfer because this payment is transferred from the workers (students who work after completing the higher education) to federal government. This is a financial loss to the worker and gain to the Federal Government. The net is zero in the conventional accounting framework.

b. **Fees.** Fees are financial transfers from students to universities. Students will pay the fees to the university. However, it is important to note that the tuition fees at the public universities are low. This is because the fees are being subsidized by the government. Therefore, it is important to include this subsidy as transfers. This subsidy is a transfer from federal government directly to universities.

c. **Loan.** Malaysian Government through National Student Loan Agency provides loan to all students who are academically qualified with the aim that no students should be denied access to higher education for lack of financial resources. This loan is a transfer from federal government to students to help them pay the fees.

d. **Loan payment.** When the students start working after completing the higher education, they have to pay back the loan with 1 percent interest. They are given options to pay back in installment basis. This is a transfer from students to federal government after they start working. As the values are in present values, the amount shown will be purely the amount of loan (interests not accounted).

MULTIPLE PROJECT COMPARISON

Stakeholders	Primary	Secondary	Higher Education
Students/Parents	**B1-T1-C4-C5-C6**	**B3-T2-C10-C11-C12**	**B5-T3-S3-C16-C17**
University	**---**	**---**	**S3+S4-C13-C14-C15**
Government	**T1-C1-C2-C3**	**T2-C7-C8-C9**	**T3-S4**
Public	**B2**	**B4**	**B6**
Net Benefit	**B1+B2-C1-C2-C3-C4-C5-C6**	**B3+B4-C7-C8-C9-C10-C11-C12**	**B5+B6-C13-C14-C15-C16—C17**

Status quo (SQ) = primary education
P1 refers to secondary education
P2 refers to higher education
SQ=Bo-Co=NBo
P1=B1-C1=NB1
P2=B2-C2=NB2

A rational investor –in this case a student or his/her family will undertake investment-such as additional level of schooling-if the net present value is positive. First of all, we need to compare the net benefit of investing in secondary education (NB1) with the net benefit of

status quo (NBo). If NB1>NBo, then we can invest in the secondary education. Second, we have to compare the net benefit of investing in higher education with the net benefit of status quo. If the NB2>NBo, then it is worth to invest in higher education. Third, we need to compare the net benefit of investing in higher education to net benefit of investing in secondary education. If NB2>NB1, then it is worth to invest in higher education.

DISTRIBUTIONAL IMPACT ON DIFFERENT STAKEHOLDERS

1. Students/Parents

From the perspective of the students or parents, the investment in additional years of education will benefit them if the net impact of investing in higher education is more than the net impact in investing in primary education and secondary education. In this analysis, the net impact on students or parents when they invest in primary education is **B1-T1-C4-C5-C6** (Table 1), secondary **B3-T2-C10-C11-C12** (Table 2) and higher education **B5-T3-S3-C16-C17** (Table 3). They will prefer to invest in additional years of education if the investment results in positive net impact on them. In the case, when all the three investments result in positive net impact on them, they will choose the investment which yields the most.

2. Government

From the perspective of the federal government, the investment in additional years of education will benefit them if the net impact of investing in higher education is more than the net impact in investing in primary education and secondary education. In this analysis, the net impact on government when they invest in primary education is **T1-C1-C2-C3** (Table 1), secondary **T2-C7-C8-C9** (Table 2) and higher education **T3-S4** (Table 3). They will prefer to invest in additional years of education if the investment results in positive net impact on them. In the case, when all the three investments result in positive net impact on them, they will choose the investment which yields the most. If there is no financial constraint, they might consider investing in more than one option.

3.Public

From the perspective of the public, the investment in additional years of education will benefit them if the net impact of investing in higher education is more than the net impact in investing in primary education and secondary education. In this analysis, the net impact on the public when they invest in primary education is **B2** (Table 1), secondary **B4** (Table 2) and higher education **B6** (Table 3). They will prefer to invest in additional years of education if the investment results in positive net impact on them. In the case, when all the three investments result in positive net impact on them, they will choose the investment which yields the most. If there is no financial constraint, they might consider investing in more than one option.

4.University

From the perspective of the university, the investment in higher education will benefit them if the net benefit of the investment, S3+**S4-C13-C14-C15** is positive.

SENSITIVITY ANALYSIS

A simple and powerful technique for dealing with uncertainty is known as sensitivity analysis.

1. Acounting rates

Although there is widespread agreement on the need to discount the future costs, there is less agreement on the specific discount rate that should be used in the analysis. Part of the controversy stems from the fact that there are a number of conceptual approaches to determining the discounting rates. In one approach, the discount rate is reflected by the returns to consumer saving options (eg. the interest rate on treasury bills). Another approach suggests that the discount rates should reflect the average returns to investment that are made by the entrepreneurs in the private sector. This refers to the amount that could have earned if the resources are used for profitable endeavors instead of investment in education [12]. In practice, analysts have utilized a variety of discount rates, ranging from 0% to 11% [3].The ambiguity is perhaps due to different standards that are often set by government offices. The U.S. Offices of Management and Budget, the Congressional Budget Office, and the General Accounting Office have all set different states for the discount rates that should be used in project evaluations [5]. It is also important to take into consideration that poor households have higher discounting rates compared to others.

2. Various costing and estimation technique

Sensitivity analyses can also be conducted using various costing and estimation technique. In this case, costs will be estimated under a range of assumptions in order to assess whether the conclusion drawn from the analysis are appreciably altered. The simplest method is to ascertain a range of plausible values-high, medium, and low-for each parameter of the analysis that is characterized by uncertainty [12].

CONCLUSIONS

This paper provides the conceptual framework for cost-benefit analysis of investment in primary, secondary and higher education in Malaysia. The accounting domain is set at the national level as Malaysian government plays an important role in financing the education. Distributional impact on different stakeholders has been analyzed by employing K-H tableaus. Sensitivity analysis will have to be conducted using different discounting rates. Most of the previous studies tend to focus on the private rate of return to education. However, in this paper, the conceptual framework for cost benefit analysis has included both the social benefit and social costs of education. The social benefit is the monetized value of the gains to others in society, such as the positive effects of having educated people interact with each other, greater social cohesion, and so on. The social cost is the monetized value of the cost to others in society, such as the fiscal cost if the education is subsidized, including the deadweight cost of mobilizing public resources. Most of the social benefits associated with education have not been quantified. Thus, given the current state of knowledge in the field, it may prove difficult to incorporate these benefits in project evaluation. However, recent literature pointed out those social benefits can be measured in a practical way. Therefore, it is

essential to include the social benefits and social costs to get the comprehensive picture of cost and benefit analysis in Malaysian education.

Table 1: Cost Benefit analysis for Primary education in Malaysia

K-H Tableau	Students/Parents	Government	Public	Net Social
Benefits				
Earnings	B1			B1
Social Benefits			B2	B2
Transfer				
Income tax	(T1)	T1		0
Subsidy(fees)	(S1)	S1		0
Reimbursement	S1	(S1)		0
Costs				
Institutional costs				
Recurrent cost				
School personnel		(C1)		(C1)
Non personnel items		(C2)		(C2)
Capital costs		(C3)		(C3)
Private resources				
Direct Private costs				
Non-tuition spending	(C4)		`	(C4)
Household contribution	(C5)			(C5)
Indirect Private costs/OC	(C6)			(C6)
Net	**B1-T1-C4-C5-C6**	**T1-C1-C2-C3**	**B2**	**B1+B2-C1-C2-C3-C4-C5-C6**

Table 2: Cost Benefit analysis for Secondary education in Malaysia

K-H Tableau	Students/Parents	Government	Public	Net Social
Benefits				
Earnings	B3			B3
Social Benefits			B4	B4
Transfer				
Income tax	(T2)	T2		0
Subsidy(fees)	(S2)	S2		0
Reimbursement	S2	(S2)		0
Costs				
Institutional costs				
Recurrent cost				
School personnel		(C7)		(C7)
Non personnel items		(C8)		(C8)
Capital costs		(C9)		(C9)
Private resources				
Direct Private costs				
Non-tuition spending	(C10)		`	(C10)
Household contribution	(C11)			(C11)
Indirect Private costs/OC	(C12)			(C12)
Net	**B3-T2-C10-C11-C12**	**T2-C7-C8-C9**	**B4**	**B3+B4-C7-C8-C9-C10-C11-C12**

Table 3: Cost Benefit analysis for Higher Education in Malaysia

K-H Tableau	Students/ Parents	University	Government	Public	Net Social
Benefits					
Earnings	B5				B5
Social Benefits				B6	B6
Transfer					
Income tax	(T3)		T3		0
Fees	(S3)	S3+S4	(S4)		0
Loan	S3		(S3)		0
Loan payment	(S3)		S3		0
Costs					
Institutional costs					
Recurrent cost					
Personnel		(C13)			(C13)
Non personnel items		(C14)			(C14)
Capital costs		(C15)			(C15)
Private resources					
Direct Private costs					
Non-tuition spending	(C16)			`	(C16)
Indirect Private costs/OC	(C17)				(C17)
Net	**B5-T3-S3-C16-C17**	**S3+S4-C13-C14-C15**	**T3-S4**	**B6**	**B5+B6-C13-C14-C15-C16—C17**

Table 4: Educating Girls in Pakistan: Estimating the Social Benefits of an Extra Year of Schooling for 1,000 Girls

Benefits	Number	Value ($)
Child deaths averted	60	48, 000
Births averted	495	32,000
Maternal deaths averted	3	7,500
Total Present values of Benefits($) (assuming a discount rate of 5 % and a delay of 15 years before the benefits materialize)		42,600
Total costs of one year of schooling for 1,000 girls		30, 000

Source: Summers 1992.

Assumptions:
* Child mortality rate = 121 deaths per 1,000 live births.
* Maternal mortality rate = 600 deaths per 100,000 live births.
* Total fertility rate = 6.6 live births per woman.
* A one-year increase in female education reduces the child mortality rate by 7.5% and the total fertility rate by 7.5%.
* The cost of alternative means to avert a child death is $800, to avert a birth is $65, and to avert a maternal death is $2,

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