AN EVALUATION OF THE CONTRIBUTIONS OF PRIVATE SECTOR PROVISION TO THE DEVELOPMENT OF HIGHER EDUCATION IN MALAYSIA

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Abstract

The purpose of this study is to evaluate the contribution made by the private sector to the provision of higher education in Malaysia. Specifically, it analyses the nature and extent of the private sector contribution in terms of efficiency, equity and quality of provision. Private sector involvement in the provision of higher education in Malaysia is still a relatively new phenomenon and, therefore, this is so far the only attempt to undertake a comprehensive study of its contribution. Currently, since there is a gap in the provision of higher education owing to the lack of public resources, the private sector is invited to fill this gap. The private sector comprises of conglomerate colleges and, since 1997, universities which are company-owned and -focused. Because the private universities are so new, the colleges enrol most of the students in the private sector and therefore are the subject of this analysis. Since Malaysia is not untypical of the group of developing economies, the analysis is also intended to add to our understanding of the issues in higher education which confront these economies in general.

From the literature, the contribution of higher education to economic growth and national development is explained through the human capital concept that views education as an investment which brings future benefits through increased productivity measured in terms of higher lifetime earnings. The benefits are so great that they, in turn, increase the demand for higher education and therefore put pressure on Government budget. The huge expansion in demand has forced many governments to search for alternative resources to fund the further expansion of higher education, especially from the private sector. However, since the benefits are shared not only by the individuals and their families but also by society at large, it raises critical issues of appropriate funding criteria if higher education is privately provided. Theoretically, private sector provision stems first, from excess demand, and second, from differentiated demand, the former indicating a general deficit in provision, and the latter, a specific deficit in provision. In this study we hypothesise that in case of excess demand, since the public sector is the first preference, the private sector emerges as a residual sector, and therefore, is likely to exhibit several deficiencies in provision.

Moreover, if the private sector institutions are profit seeking rather than non-profit making, their profit maximising behaviour is likely to have a significant effect on the efficiency, equity and quality of the provision.

To investigate this, we examined both the characteristics of supply and demand of private sector provision and compared them with those of the public sector. This required a considerable amount of fieldwork to provide data for analyses because of the scarcity of published information on private sector provision. Two surveys were carried out, the first of the institutions' supply of higher education and, the second, of the characteristics of student demand.

The results show that although private colleges are technically cost efficient, in terms of economic or allocative efficiency, they perform less well than the public universities in satisfying demand. On the whole, our analysis shows that the private colleges offer courses that are inferior in quality and at a relatively high price compared with the public universities. The private colleges complement the public universities and deal with a substantial number of students thus providing greater opportunities for higher education. However, since the price of private higher education is relatively high, it is accessible only to wealthy students. The situation is made worse in the case of Malaysia because of the socio-economic imbalance of the distribution of wealth by race. The results also confirm that the characteristic behaviour of the private sector providers was profit maximising and this was linked to a relatively high price and a lower quality of provision. The study concluded that the main impediment to equitable access to, and better quality of, private higher education stems from the lack of governmental support both for colleges and for students. Finally, several policy measures that aim to ensure equality of access, provide and appropriate funding mechanism, and improve and maintain the quality of provision are suggested for consideration.

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Abbreviations

ASEAN – Association for the South East Asian Nations

CBA – Cost Benefit Analysis

CEA – Cost Effectiveness Analysis

GDP – Gross Domestic Product

JPA – Public Service Department

MARA – Bumiputera Trust Council

MIER – Malaysian Institute of Economic Research

MRA – Manpower Requirement Analysis

NDP – National Development Policy

NEP – New Economic Policy

NICs – Newly Industrialised Countries

PTPTN – National Higher Education Fund Corporation

OECD – Organisation for Economic Co-operation and Development

OECF – Overseas Economic Co-operation Fund

OPP1 – First Outline of Perspective Plan

OPP2 – Second Outline of Perspective Plan

UNESCO – United Nations Educational, Scientific and Cultural Organisation

CHAPTER 1

BACKGROUND OF THE STUDY

1.1 Introduction

Although there are a lot of controversies regarding the measurement of the relative contribution of education to economic growth, there tends to be agreement on its critical role. Schultz (1961, 1989 and 1993) claimed that economic growth is not determined by the quantity of labour or physical capital invested but it is the quality of labour that is more important. Here, the role of education is critical in determining the quality. Using human capital theory, Schultz explained that economic growth is assumed to be related to the quality of the labour force and hence the level of educational investment. According to the World Bank (1993), there is sufficient evidence that higher enrolments and rapid responses of the education system to changing labour markets explain a significant part of the high growth rates of the high-performing East Asian economies in recent decades. Nevertheless, it is still not clear that increasing investment in education, in particular at higher level, will foster rapid economic growth.

During the 1973 oil crisis, when economy deteriorated rapidly, expectations for education turned pessimistic, and this led to the development of the view that, it was strong governmental policies that

created the demand for labour and economic growth. According to this view, regardless of how much high quality labour is supplied to a market, if there is no demand for labour, it will not lead to the solution of the problem (OECF 1997, 4). However, this view fails to recognise that it is investment in human capital (i.e. education and training) that forms the foundation, in which, makes it possible to realise the economic and social policies introduced by the government. Therefore, educational investment is still necessary but the critical question is how much it is required in order to sustain economic growth. Over-investment in the educational system will undermine other sectors of the economy by denying them resources.

Although it is reasonable to regard education a fundamental source of economic growth, spending on education is also facilitated by the growth of national income. It is a complex relationship. The contribution of education to growth is presumed to occur through its ability to increase the productivity of an existing labour force. Although there is still no strong evidence that more schooling does raise industrial worker productivity, it is a plausible hypothesis, and fundamental beliefs in the socio-economic benefits of education have led to its rapid expansion in many developing countries. However, constraints on public resources and current economic conditions have reduced most governments' ability to provide adequate funding for further expansion of the educational system, in particular at the higher level. Besides, it is an expensive affair seeking education abroad and if this is the case, expansion locally is necessary as an import saving strategy to the country.

For this reason, the World Bank, UNESCO, OECD as well as researchers and academics in economics of education around the world have, in recent years, suggested that complete or partial privatisation as the best

way of providing satisfactory mass higher education. It is argued that this approach, which is responsive to client demands, is likely to meet the competing claims of efficiency, equity and quality of higher education provision. In addition, recent literature in the economics of education shows that many have advocated that greater contributions should be made by students and their families to the cost of their own higher education (OECD 1990; World Bank 1994, 1995a and 1996; Baba and Tanaka 1997: Altbach and Monan 1998). This is because many benefits of higher education accrue to graduates and their families such as enhanced lifetime earnings, greater job opportunity and other non-pecuniary benefits of the immediate consumption of higher education.

Conversely, many argue that rapid economic growth and expanding industrialisation have also stimulated corporate and governmental support of, and the need for, university graduates. If there is clear evidence that shortages of highly-qualified people are a serious constraint on economic growth, it is obviously appropriate to use public funds to increase the number of people with the qualifications required by the economy (Todaro 1985; Meier 1985). At the same time, the employers must also increase their contributions in the light of the benefits they receive such as higher productivity and superior competitive advantage due to hiring greater numbers of highly educated workers (Gibbons 1998).

Therefore, the fundamental issue that needs further investigation is whether participation in mass private higher education is primarily an individual or a social benefit. Should investment in private higher education be also regarded as a public investment or purely private affair, or a mixture of both? To what extent public resources should be directed to help finance further expansion of the educational system? These are the issues that this thesis now seeks to analyse.

1.2 The research context

In recent years, the demand for access to higher education is high in many developing countries. Several factors have created such a tremendous demand for tertiary qualifications, including the rapid economic growth and rising prosperity, high population growth, and broad opportunity of obtaining secondary education. Furthermore, it is widely believed that an academic degree is essential preparation for a rewarding life. University degrees mean better job opportunities, higher salaries and, today's high-tech workplace requires the skills gained by university study. This demand and pressure for greater opportunities in higher education has proved a challenge on government resources especially for many developing countries. Although demand has increased significantly, the supply of places at publicly sponsored universities has not changed to keep pace.

World Bank reported that in most developing countries, higher education has been the fastest-growing segment of education system during the past twenty years, with enrolments increasing on average at 6 to 7 per cent per year (1994, p. 16). In many countries, higher education is heavily dependent on government funding, and unit costs are high relative to other segments of the educational system. However, economic difficulties and increased competition for limited public funds have reduced many governments' ability to continue expanding higher education. Such difficulties lead governments to reconsider social priorities including educational reform programmes and to re-channel available resources to meet only the most serious problem.

Recognising constraints on governments' budget, and in attempt to cope with the increasing demand, many countries have moved towards the

private provision of higher education. Theoretically, the high demands for private higher education may stem from two reasons (James 1991a, 1991b). First; because of the absorptive capacity of the public system (free or highly subsidised) is less than the demand for places – excess demand. Second, because of the public system failed to meet differentiated people's preferences about educational content and method due to religious, linguistic, cultural and nationality reasons, on the one hand, and the need for special skills amongst enterprise, on the other – differentiated demand. It is argued that the private sector from the former is likely to offer education that is inferior to the existing public system, whilst the latter is likely to produce a much superior one. In Malaysia, since the public sector is less capable to offer sufficient places for higher education, we predict that the existence of the private sector is likely to exhibits some characteristics of the excessive demand driven situation.[1]

Recent trends show that private higher education institutions are beginning to develop under the pressure of financial stringency in publicly funded higher education. It is becoming clear that no country could afford the provision of the most expensive form of higher education to everyone who would like to participate free of charge. In recognition of their reduced capacity to fund further expansion of public higher education, many governments in developing countries are allowing the development of a private higher education sector to keep pace with the growth in student numbers. Similarly in Malaysia, the government is allowing the development of a private higher education system in recognition of their reduced capacity to fund further expansion of public higher education. However, it is observed that private higher learning institutions have been established to accommodate only the high social demand for university

[1] We shall discuss these characteristics in detail in Chapter 2, Chapter 4 and Chapter 5.

training in the fields of greater employment opportunity, but neglecting the importance of research and development in knowledge development (Altbach 1991, James 1991a, 1991b).

Private sector involvement in the provision of higher education can be observed from the distribution of enrolment's share in private higher institutions. Amongst Asian countries, the Philippines has the largest share (83 per cent) of tertiary-level enrolments in private institutions, followed by South Korea (65 per cent) and Indonesia (58 per cent), whilst Malaysia and Thailand recorded less than 8 per cent (Tan and Mingat 1991, p. 43). Consequently, private financing in higher education are also highest in Philippines (86 per cent), followed by South Korea at 77 per cent, Indonesia at close to 50 per cent, and Thailand at 27 per cent, whilst Malaysia at only 15 per cent (Tan and Mingat 1991, p. 45-46). Thus, by these standards there remains ample scope for increasing private participation in financing higher education in Malaysia.

The shift towards the private provision of higher education is strongly supported by the World Bank policy proposal that developing countries should rely more heavily on private schools, cost-recovery in higher education (i.e. users pay through tuition fees), student loans and selective scholarships, and decentralised management. Analysts at the World Bank and elsewhere have suggested that an increasing proportion of the cost of higher education in developing countries should be shifted from government to parents, citing both efficiency and equity arguments. It is argued that such a policy package would result in more resources flowing to education, more efficient use of such resources, and more equitable access to education (OECD 1990, World Bank 1994, 1995a). Nonetheless, so far, no government seems entirely satisfied with existing

methods of funding and the way higher education costs are shared (Woodhall 1991a, p. 28).

Shifting the cost of higher education to the private sector can adversely effect the demand especially amongst the families from lower socio-economic backgrounds. It is observed that the provision of higher education by the private sector will only increase the cost of access to higher education, such as increase in tuition fees. The burden of the private costs will be likely to reduce their demand for higher education, and consequently have a significant impact on the inequality and inequity of the provision. Moreover, the economic burden will be much higher for low-income families if indirect cost (that is the income forgone) is included.

For Malaysia, having achieved the basic objectives of mass literacy, and the equalisation of opportunities at primary and secondary level of education, emphasis has now shifted in favour of post-secondary learning. The main aim is to foster greater economic growth through the process of industrialisation. Towards achieving the aim, it has becoming a matter of increasing concern that while the country competes favourably with others in the spread and quality of its basic education, it is being left behind in the development of higher level manpower. Recent statistical data reveal that a shortage of scientists, technologists, engineers and doctors, financial and other personnel, and even skilled technicians are apparent.[2]

[2] We shall discuss this aspect in greater detail in Chapter 4.

It has also been observed that the skill intensity[3] of Malaysian industry is falling. For years, the Malaysian economy has flourished as a labour-intensive assembly based industry. But rising labour cost (especially wages) are forcing industries to transform themselves into using high-skilled labour with a higher value-added production. According to a World Bank study in 1995, it was found that in the late 1980's and early 1990's the skill intensity of the Malaysian manufacturing industries was declining seriously. The World Bank blamed the problem on the shortages of educated people (World Bank 1997).

Therefore there is an urgent need to expand higher education, both in terms of quantity and also quality in order to meet current and future requirements of the economy. Furthermore, to purchase education from abroad is likely a burden on the economy. In relation to this, the critical issue that needs to be addressed is how much of this expansion is required? Also, there is the related issue of how much can the economy afford and what the rate of development and investment should be? Should the government be fully responsible in providing sufficient funding, or should it be also shared by the private sector?

This is a labour market issue and the dimensions of the required expansion are first of all set by its manpower requirements. What is the shortfall of supply to particular industries and occupations? It is obvious that rapid economic growth, on average at 7 to 8 per cent, in recent years have resulted in a severe shortages of skilled labour at all levels and all sectors. Recent statistics show that the largest contributors to employment creation are the manufacturing, construction and the service sectors. Projection made up to the year 2000 reveal that the

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[3] The number of skilled workers (i.e. scientist, technologist, engineers, doctors, financial and other managerial personnel) as a percentage of total workforce.

manufacturing sector has the capability of creating more that 1.3 million new jobs within a 10 year period (1990-2000). Within that same period, the construction and the service sectors is expected to generate 0.5 million and 1.2 million new jobs respectively. Employment in the agriculture sector is expected to complement these trends reducing by more than 0.5 million jobs within this period.

On the supply side, the labour force is projected to grow at about 2.9 per cent per annum, increasing from 7 million in 1990 to about 9.3 million by the year 2000. Whereas on the demand side, employment is expected to increase by 3.1 per cent per annum, thus outpacing labour supply. Projections made for employment by occupation shows that the average annual rate of growth of jobs in the professional and technical, administrative and managerial categories is between 5 to 7 per cent. This indicates that currently, there is a strong demand for educated workers. If this trend continue, it will bring serious implications on the labour market requirements that might limit economic growth.

What is the capacity of current higher education system towards meeting these requirements? According to figure released by UNESCO (1996), only 7.2 per cent of university-age Malaysians enrolled in local higher institutions. This figures seems to be very low compared with 35.8 per cent of the same age group in Argentina, 54.8 per cent in South Korea and 79.7 per cent in United States. The reason for this low attainment rate is due to the limited capacity of local public higher institutions to absorb students. As for example, at degree level, it was estimated that for every 100 qualified applicants, less than half are offered places. In the absence of local alternatives, Malaysians are heading overseas in greater numbers to resume their education. In 1994 there were more than 60,000 Malaysians studying abroad in several host countries. It was

estimated that Malaysians are spending more than RM3 billion per annum (US $1 billion) on foreign education (Malaysia 1996). To the economy, this outflow represents a strain on its current account.

The government cannot make good these shortcomings because of lack of resources. It cannot continue to buy education abroad and it cannot expand sufficiently at home. Therefore the private sector has a part to play. It is necessary not only to allow the private sector to establish their colleges, but to make a more rigorous effort to promote their growth in accordance with the national needs. Of course we do not start from a blank sheet, there is a private sector. Private post-secondary education has been growing rapidly since 1980's, catering for the needs of those who have failed to secure places at local public higher institutions. Unable to grant degrees, these colleges offer courses leading to degrees at overseas universities, a practice known as 'twinning programmes'. Despite fulfilling national needs, higher education expansion must also be related to costs and capacities, and quality needs to be taken as given or there needs to be agreed minimum standards and ways of controlling standards.

In doing so, it raises questions of how much do we need to expand and what form of expansion should it take? Should the private sector compete with or complement the government's provision? Should private higher education expand on the expense of public resources, or should it be privately funded? Should parents pay for their children's higher education, or should the government subsidise them? If it needs to be subsidised, to what extent should the government subsidise higher education? Ultimately, how to ensure efficiency in the financing system, and assure equality in the allocation of public resources, and finally maintain the quality of the provision. All these questions have their own merits and

necessitate further investigation in order to ensure that the expansion of higher education through the private sector would contribute towards economic growth and national development.

1.3 The rationale of the study

The private provision of higher education in Malaysia is still a relatively new phenomenon when compared with other countries like Japan, Philippines, South Korea, and even with several countries in Latin America such as Colombia and Brazil. It is observed that recently, there is an obvious change in the government's stance towards the private sector provision, which is from one of firm restraint in the seventies and early eighties to a more accommodating approach in the nineties. The fundamental reason for such a move was claimed due to constraints facing the financing of higher education. Although government expenditure on higher education is already relatively high compared with other developing countries[4], the enrolment rate for tertiary education, however, is still low roughly at less than 9 per cent (1995 statistics). It is argued that with competing demand for the public sector funding, financial allocations for higher education cannot continue to increase. In contrast, many had claimed that the relatively low attainment rate at the tertiary level is because, public sector institutions had a limited capacity to cope with the increasing demand for higher education. It is well accepted that the cost to build, equip and maintain one particular institution of higher learning is likely to be an expensive public investment. Therefore, it is necessary not only to allow private colleges to be established, but

[4] 19 per cent of public expenditure are on education, and from this 30 per cent are allocated for higher education. Whereas in most developing countries, public expenditure for education constitutes less than 10 per cent (Malaysia 1996).

also more importantly, to provide essential supports for their development so that current and future demand can be met efficiently.

However we argued that, although private sector provision offers an alternative means of continuing education for the society, this provision is simultaneously attached to several sources of market failure. For instance, imperfect information on the benefits of schooling, or, difficulty in obtaining unsecured consumption loans for schooling, especially at higher level, is likely to hinder most decisions to invest. There has been an increasing fear that the growth and the expansion of many private colleges in the country recently, might bring a negative impact on overall national development objectives. Since independence (in 1957), and during the early stages of national development, education was seen as a means of achieving national unity through the eradication of poverty and the restructuring of the society.[5] During this period, the government was very restrictive about establishing private universities and, or, colleges because of the socio-economic unbalance amongst majority ethnic groups in the country. Education at all levels, during this period were highly subsidised by the government. Thus, the relaxation of this restriction, if not properly controlled, might not bring about the positive impact desired. In addition, private sectors, which are market driven, might not result in satisfying current or future manpower requirements of the economy. Therefore, it is likely that government interventions are inevitable to correct any market failures.

In a study by Abu Shah (1987), it was revealed that public higher education has been an effective instrument to act as intervention strategy in the economic development, primarily towards ameliorating income

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[5] We shall discuss this aspect in greater detail later in Chapter 4.

disparities. The study found that higher education that was subsidised by the government provides easier access for student from disadvantaged family backgrounds, and consequently, reduces income inequality amongst the society.

Spaulding and Hussain (1989, p. 105-116) suggests that government interventions through 'positive discrimination' was an effective strategy to address the problems of inequalities in the educational opportunities of the rural people and disadvantaged groups. The study explained that the provision of scholarships and subsidies to students from the lower-income groups, which favours the Bumiputera[6] more than the non-Bumiputera[7], is based on the assumption that there is a strong relationship between income, enrolment and achievement. However, the study suggested that, preferential policies should also be geared more towards the poor and disadvantaged of all ethnic groups. In addition, educational policies should emphasise not only on the provision of scholarships and other special provisions for such disadvantaged groups, but essentially, emphasis should also be given to improve the provision of educational services.

In another study, Kassim (1989) offer similar findings and argued that although the percentages and actual numbers of Malays increased significantly, and although the percentages of non-Malays declined, the actual numbers of non-Malays, however, have increased continuously over the years. It is important to note that the study has established the increase of all ethnic representation in higher education despite the

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[6] Bumiputera refers to those with cultural affinities indigenous to the region and to one another, comprising the aborigines, the Malays and Malay-related ethnic groups.
[7] Non-Bumiputera refers to those whose cultural affinities lie outside, comprising the Chinese, the Indians and other smaller communities made up of Arabs, Sinhalese, Eurasians and Europeans.

preferential policy. Thus, the study indicates that preferential policy through positive discrimination benefited both, the preferred and the discriminated groups.

Study by Badarulzaman (1993) also reveals the crucial role of government policies to correct markets failures in the light of gaining greater competitive advantage amongst industries that employed university graduates. The studies discover that government intervention is essential to reduce mismatches between university graduates and industrial manpower needs. The study claimed that in most cases, lack of university and industrial links and co-operation, has led to a considerable wastage in financial resources and time for graduates training.

Although there are many extensive studies that give special emphasis to higher education development in Malaysia, most of these studies have not adequately addressed many of specific issues surrounding the private provision of higher education discussed earlier. Being outside the public education system, private education does not regularly provide data and statistics for official survey and analysis. Information available on various aspects of private education may be fragmented, contradictory and controversial, subject to sources, sampling design, and also on expected outcome. Thus, there is an immediate need to evaluate the private provision of higher education in the country, which as many contributions to the literature have suggested, in the areas of efficiency, equity and, in fact, the qualitative aspects of private education, the debates are far from concluded.

There have been several attempts by Mat (1995), Salleh (1995), Salih (1996), Ismail (1996) and Leigh (1996) to review the role, prospects and challenges of private higher education in Malaysia. Nonetheless, these

reviews seem to rely heavily on published and unpublished materials from the Ministry of Education and other relevant government offices that are not exhaustive[8]. A recent attempt by Denny (1999) to study students' choices to attend private sector higher education, however, rely only on a small samples of Chinese students who attend the American University transfer programme at a local private college. Thus, the findings are unlikely to provide sufficient understanding on the nature and extent of the contributions that the private sector can make to the expansion of higher education in Malaysia.

In one review, Mat (1995) claimed that private higher education has a strategic role in human resource development in Malaysia, especially in the field of science, technology and management, which are crucial to economic growth and increase national competitiveness. However, Salleh (1995) raised three fundamental issues relating to private provision of higher education, viz., equity, high investment cost and recognition. He admitted that there is lack of financial resources (e.g. loans, scholarships or grants) available for students in the private sector, which prevents those from rural and disadvantaged backgrounds to enter private colleges. He also claimed that since investment in higher education is an expensive affair, many private colleges tend to offer courses that are less cost intensive such as in business, management, accounting or computer studies. In addition, there have been several reports that courses offered by some of the private colleges (through the twinning concepts) are not recognised by the government.

Ismail (1996) supported the above view and argued that, without proper government interventions, a more liberal policy on the private provision of

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[8] So far, data and information on private higher education in Malaysia are very limited.

higher education is likely to have several negative impacts. She claimed that there has been a great concern that the implicit objective of most private colleges is to maximise their profits, which could have significant impact on the quality of the provision. In another review, Leigh (1996) claimed that there is huge gap in the cost to families of publicly and privately funded education in Malaysia. He observed that students in private higher education and their families carry the burden of paying the full cost of fees and other non-fee expenditure, whilst at the same time, those in the public universities are heavily subsidised. Denny (1999) revealed that students in the private college feel they have been unjustly treated because of the preferential policy. However, since the study interviewed only 20 respondents of Chinese race in a private college as its samples, the findings are likely to be limited and ethnically biased.

Despite these extensive reviews and study, which show the likelihood of market failure in the private provision of higher education, there is still a lack of original research to show the extent of these failures. We observed that constraints on data and other related information about the private sector provisions have contributed to our limited understanding of the issues surrounding this subject. Thus, further extensive study based on original data is likely to be useful and seems to be justified. In addition to the academic contribution of this study, some findings might have significant implications for the existing policy governing higher education development in Malaysia, particularly.

1.4 Research objectives and scope of studies

The general purpose of this study is to analyse the nature and extent of the contributions that the private sector can make to the expansion of higher education in Malaysia. In the process of this analysis we shall

review current theoretical debates on higher education and recent policy approaches to the development of higher education, especially to its finance. The precise objectives of this study are as follows:

(a) To examine specific problems and issues affecting the development of higher education in Malaysia. The justification for looking at higher education is that it can be a catalyst to economic growth and national economic development;

(b) To explore the extent to which the expansion of higher education in Malaysia requires private sector provision;

(c) To investigate the performance of private sector provision through comparing it with existing public provision in terms of efficiency, equity and quality;

(d) To identify market deficiencies in the provision of higher education; and

(e) To explore and suggest appropriate policy options.

In order to achieve these objectives, it is necessary to investigate a variety of theoretical and policy issues related to higher education development. We have argued that higher education contributes to economic growth. But investment in higher education requires sufficient financial resources from the economy. Economic difficulties and constraints on government resources raise critical issues on the financing of higher education. Since education is considered as a mixed-good, it is argued that both the public and the private sector should help to fund higher education. However, it is still not clear what would be the

appropriate mix of financial resources that could lead to efficiency, quality and equity in the provision of the higher education. How much should government spend on higher education, and what should be the contribution of individuals and their families?

On one hand, it may be argued that subsidies would make higher education inefficient and inequitable since a large body of literature shows that the proportion of students from wealthier family backgrounds in higher education is relatively high in most countries (Tsang and Kidchanapanish 1992; Tsang and Taoklam 1992). On the other hand, charging for higher education through introducing tuition fees and other types of charges would be likely to put barriers for poor students wishing to enter higher education. Consequently, this would also lead to inefficiency and to an inequitable provision of higher education.

Also, we argued that although markets and competition are important in allocating resources efficiently, there is no evidence that competition between the public and private sectors would improve performance. It is still not clear how competition would lead to a better quality of provision, especially when the majority of the private sector is profit motivated. The profit motive will only encourage institutions in 'cutting-corners' and lead to quality defects in higher education provisions.

Thus, although a shift in the policy towards private sector provision of higher education has become evident, it has not totally removed problems and issues in relation to this new development. Should these problems and issues persist, the operation and expansion of private sector provision may not bring about the positive impact desired. Through looking at the specific problems of Malaysia, this study will analyse these issues and explore appropriate policy options for the future development

of higher education. The findings from this study should help to enlighten policy makers in discovering and understanding the role of the private sector in higher education. In addition, through examining these issues in the Malaysia context, it is hoped light will be shed on related issues that confront all nations in higher education development, and consequently, make a general contribution to the debates on this subject.

1.5 The theoretical framework

To have some coherence, the study needs the guidance of a theoretical framework. This theoretical framework is crucial because it constitutes a part of the intellectual foundation on which the entire study rests. Without this, the discussions, analysis and findings of the study may appear as totally unconnected. In this, the point of departure is the human capital concept regarding investment in education. Human capital theory argues that investment in education contribute towards the general growth of the economy (Schultz 1961, 1989 and 1993). There is a very large literature that has attempted to quantify the contribution of higher education to economic growth and generally supports the view that such contributions are significant. A long list of external benefits have been suggested in the literature, including the suggestion that society benefits from the knowledge that individuals receive from higher education. These arguments provide strong grounds for the public funding of expansion in higher education.

However, many studies have argued that the external benefits that accrue to society seem to be negligible when compared with the many benefits that accrue to the individuals and their families. Consequently, it is argued that the private individuals should pay for the expansion of higher education rather than the public. The basic support for this view is

that, in all cases, the private rates of return to investment in higher education are always higher than the social rates of return (see Psacharopoulos 1973, 1981, 1985, 1989 and 1994; Psacharopoulos et al 1996). Consequently, this led to two different views concerning the financial responsibility for higher education that are highly debated. The first view is that higher education, similar to other levels of education, is for the common good of the people. It is argued that graduates of higher learning institutions enhance the economic, scientific and technological, cultural, and political development of a nation, and therefore, the government should be responsible of funding them. On the other hand, the second view argues that government should not be held responsible for finance beyond secondary levels of education because a university education is a means for the individual to achieve his or her own personal goals. In addition, graduates are likely to receive a lifetime income which, in most cases, is above the average of the general population.

We shall explain why education cannot be considered as a pure public good that should be entirely publicly funded and argue instead that it is a mixed good financed out of both public and private funds. We shall explore the financial implications of this approach and the concepts of efficiency, equity and quality in the provision of higher education.

Since the central issue concerns the private provision of higher education, we shall consider privatisation as a means of relieving governments of some of the cost burden and providing greater efficiency in the provision of the educational services. On the other hand, we shall examine whether it is necessary for the government to provide financial support for private higher education. This is because the market system does not ensure optimum social investment in higher education, as externalities exist in

the case of higher education, which is considered as a quasi-public good[9] (Tilak 1991 p. 230, Sanyal 1998 p. 16). Furthermore, higher education is subject to market failure because it is essentially an investment good that involves a long time horizon and has uncertain returns. Since capital markets are imperfect, this would be likely to produce inequalities in the distribution of wealth and income, and reduce social mobility (Creedy 1995 p.3).

The theoretical implications of human capital concept, the public economics of education debate and the expansion of private sector provision depend, however, on assumptions governing the capital market insofar as it is used to finance higher education. In many cases, it is safe to assume that real capital markets are imperfect. From the demand-side, the cheapest sources of finance for higher education are usually in the form of grants or free loans from parents, relatives, foundations and governments (Becker 1975, p. 103). However, students or their families may have different degrees of access to these funds because of differences in parental and family backgrounds. Furthermore these sources are rationed and usually are not sufficient to meet all financial needs. From the supply-side, we assume that the objective of the public sector, through limited public resources, is to minimise the costs of provision within the constraints of a minimum level of quality and a maximum number of graduates per year. The main objective of the private sector, on the other hand, is to maximise profits. The government assumes that by maximising the number of graduates, it will maximise long-run economic growth. Therefore, the main objective of government policy is to increase the total output of graduates at minimum cost through

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[9] Some scholars used the term 'quasi-public good' which also mean 'mixed good' where there are possibility of excludability. Thus, in this study these words shall be used interchangeably.

the public and private provision of higher education. Using this theoretical framework, we shall examine the public and the private provision of higher education in Malaysia. We shall examine the possibility of market deficiency and seek to identify the best available options for government intervention.

1.6 Significance of the study

Although many have suggested that the private provision of higher education would be most appropriate, especially for developing countries where public resources are scarce, there is still a lack of empirical evidence showing that such a move would ensure efficiency and equity, while maintaining the quality of provision. All arguments, whether for or against the private provision of higher education, need to be substantiated from empirical evidence. Without such evidence all the arguments, however well been formulated and articulated, remain unexplained.

The debate about financing the investment of higher education has been concerned not only with the funding of institutions but also with financial support for individual students (Woodhall 1988, p. 2). The main concern is to determine to what extent the government should help to finance higher education, and how much should the students and their families should contribute. There are no easily applied criteria to determine the total level of either public or private expenditure on higher education. On the demand-side, the number of pupils or students enrolled in higher education is determined by a variety of economic and non-economic factors that require further investigation. Similarly on the supply-side, government policy on the supply of places and the allocation of financial resources for education in general also has an important influence on

higher education development. Obviously, this will determine the level of fees and the extent of financial support required by students.

Although there are many studies on the financing of education, issues surrounding the appropriate public and private mix of funding of higher education have not been addressed adequately. Many studies focus on the financing of education by level of education, for example, primary, secondary and tertiary levels. These studies seem to reach similar findings asserting that many developing countries have over emphasised higher education in terms of allocating public resources (see Psacharopoulos 1984, 1991 and 1996b; Psacharopoulos et al 1986; Pernia 1991; Birdsall 1996). However, to what extent private resources should be diverted to the expansion of higher education is far from concluded. Although there have been several extensive studies by James (1986, 1987, 1991a, 1991b, 1991c and 1993) to investigate the nature and extent of private sector contributions to the expansion of higher education, her studies focus mainly on non-profit characteristics of private sector provision. Nevertheless, it is observed that the nature and extent of contributions of for-profit characteristics of private sector provision has not been dealt adequately. This issue represents a gap in our knowledge that merits further investigation.

To examine this, the theoretical framework adopted in this study hypothesised that, in case of excess demand, for-profit characteristics of private sector provision is likely to prevail over the non-profit form. To reflect the nature and extent of private sector contributions to the expansion of higher education, we investigate the characteristics of demand and supply of their provision and compared them with the public sector.

1.7 Summary

We have shown that recent policy recommendations on the development of higher education have suggested that individuals and their families should be the ones who should pay rather than the government. It is observed that private participation in financing higher education could be achieved through two main approaches. First, by charging appropriate fees for public education, and, secondly, by facilitating the expansion of self-financing private institutions. Through such a strategic move, it will help address several crucial issues in higher education such as excess demand and the reallocation of public resources to more critical fields in higher education required by the economy. However, it is still not clear whether this will ensure efficiency and equity in the allocation of educational resources, and at the same, the quality is being maintained.

We have suggested that cost recovery policies (making the user pay) would make higher education become more expensive and accessible only to the wealthy and elite society. Such consequences raise issues on the efficiency and equality in the provision of higher education. On the other hand, if the government continues to fund higher education at a level needed to maintain quality and meet the social demand, the question arises as to whether the beneficiaries will be those who are already advantaged or whether those from less privileged backgrounds will also gain access. These contradictory views on the provision of higher education by the private sector raise several crucial issues and justify further investigation.

Having set out the background to and the purpose of this study the remaining chapters are organised as follows. In Chapter 2 we provide an extensive review on the literature regarding the expansion of higher

education and economic growth. In Chapter 3 we focus specifically on the literature dealing with the financing of higher education. Chapter 4 offers a retrospective coverage of the Malaysian economic and education development that throw light on critical issues of private sector higher education that merit further investigation. Chapter 5 set out a simple theoretical framework and Chapter 6 outlines the statistical methods used to collect and evaluate our data. Chapter 7, 8, 9 and 10 provide the analyses and evaluate the results on the empirical work. Finally, Chapter 11 set out our conclusions, discusses several policy options and concludes with a brief discussion of future research areas that require further investigation.

CHAPTER 2

EDUCATION INVESTMENT AND ECONOMIC GROWTH

2.1 Introduction

It is argued that education contributes to economic growth. However, it is also argued that education requires a substantial amount of financial resources, in particular at the higher level. Constraints on government resources necessitate consideration of alternative sources of funding, especially from private resources since it is argued that the benefits of higher education largely accrue to the individuals and their family. The debate on the appropriate mix of public and private resources is far from concluded. Although it is argued that the private financing of higher education would contribute towards efficiency, equity and quality of the provision, there is contradictory evidence showing that private financing is inefficient, inequitable and inferior in quality. This Chapter reviews the relevant literature and the theoretical perspectives of higher education development, with special emphasis being placed on private sector provision and the consequence of its funding.

2.2 Education and economic growth

Research on the economics of education started in the late 1950s or early 1960s with assessments of the profitability of investment in education. It is claimed that investment in human beings has been a major source of growth in advanced countries, whilst the small amount of human investment in most underdeveloped countries has provided an explanation for their backwardness. Many believe that education and training have the ability to increase the productivity of an existing labour force. General observation shows that countries that have higher levels of income also have higher levels of education attainment. This relationship has led to a widely held view, especially amongst developing countries, that more education means more growth. In the modern economy: education and training is critical, providing the skills and knowledge required in accelerating the industrialisation process and the development of new technologies.

Many have agreed that Schultz (1961) has provided the most influential work in this area of study which later has spawned numerous studies focusing on educational investment and its relationship with the economic development of a nation (Blaug 1992; Cohn and Johnes 1994; Carnoy 1995a; Psacharopoulos 1996a). The research literature provides sufficient evidence to show that investment in education can accelerate economic growth, and that it contributes towards national development.

2.2.1 Human capital theory

Schultz (1961) first introduced the human capital concept in attempt to explain the sources of economic growth with special reference to the United States. Using the rates of return method, he shows that schooling increases

the future earnings of a student and the productive capacity of labour, and therefore it should be considered as investment, rather than consumption. In the study, he assumed that rational people would attempt to invest in education up to the point where returns, in terms of extra income, are equal to the costs of undertaking education. Although being heavily criticised, this study has initially established the relationship between education and economic growth.

Denison (1962 and 1967) undertook similar studies using the growth accounting model (also known as the residual approach) to explain education's contribution to economic growth. In his studies, labour inputs are adjusted to reflect changes in the age, sex composition, working hours and most importantly levels of education. In his earlier findings, he estimated that 23 per cent of the growth in the United States between 1930 and 1960 was due to the increased education of the workforce (Denison 1962). However, in another comparative study between countries in the United States and Europe, he found that there was a wide variation in the educational contribution to economic growth. The contribution varies from 25 per cent in Canada, 15 per cent in the United States, 14 per cent in Belgium, 12 per cent in the United Kingdom, and 2 per cent in Germany (Denison 1967). Both studies demonstrated that investment in human capital, particularly through education, has made a significant contribution to the economic growth.

In addition to educational investment, Becker (1962, 1975) extended the concept of human capital to include also investment in training which provides further support to the earlier findings. He emphasised that investment in education and training is crucial in the human capital formation to support economic growth. Blaug (1976, p. 829) provided a wider explanation of the human capital concept which consider spending on health,

education, job search, information retrieval, migration and in-service training as investment decisions.

Therefore, human capital investment, apart from education, may also include other forms of investment such as health and nutrition, labour market information, migration, specialised and general training, and on-the-job training. Nonetheless, in this study, we shall consider only on the human capital issues surrounding educational investment.

2.2.2 Critics of human capital theory

Although human capital theory has been used extensively to explain the contribution of human capital investment (in particular education) to economic growth, many have however, challenged the credibility of this theory. For instance, Shaffer (1961) provided three main reasons in an attempt to explain human capital shortfalls. First, education is classified as a mixed good comprising consumption and investment. Therefore, it is difficult at the margin to differentiate to what extend expenditure on education is a consumption or an investment expenditure. Second, although there remains a case for treating all expenditure on education as investment, there are several methodological issues that bring about problems in estimating the returns to investment in education (see Psacharopoulos 1994). It is a difficult and tedious process to calculate the costs of schooling in terms of private expenditure, public expenditure and the opportunity costs. Furthermore, there are serious ambiguity associated with predicting the net present value of a life time income, especially in an environment where data are scarce. Finally, human capital theory is not a sufficient basis for formulating public policy on educational investment. Shaffer (1961) asserted that decisions on

educational investment should not neglect the importance of other societal and political factors.

Human capital theory has also been challenged on the issue of whether education contributes to raising productivity. The credentials theorists argued that education only serves as an admission ticket for certain profession (Berg 1970; Thurow 1970; Wiles 1974; Bedi and Born 1995). Schooling has no direct effect on productivity, hence does not raise total output. This theory holds that educated workers receive higher earnings because of their superior innate ability, and not because of their specific knowledge and skills acquired during the educational process. Notwithstanding this, education, to some extent, does have a positive effect on the income distribution (Berg 1970).

Several screening models supported strongly the credential theory regarding education's contribution towards productivity and economic growth. This includes signalling theory (Spence 1973), filtering theory (Arrow 1973) and the screening theory (Stiglitz 1975; Psacharopoulos and Layard 1974; Whitehead 1992; Tachibanaki 1987; Oosterbeek 1993). According to Spence (1973), firms are not aware about individuals' productivity, and therefore, schooling qualifications act as a signal for hiring decisions. Signalling theory used educational institutions or educational achievements as a signal on the assumption that individuals from a good institution or with a high level of educational achievements are more productive. At the higher levels, education acts as a filter for employers to select their employees for a bigger task. The filtering theory argued that a certificate has strong influences on earnings and job levels, especially at the higher levels of education (Arrow 1973). The screening theory reaffirmed that productivity is not affected by schooling. This theory assumed that education only identifies the productive

traits of the individuals (Stigliz 1975). For hiring decisions and setting individuals' wages, education provides useful information to identify individuals with a higher expected productivity. This theory argued that return to schooling varies, conforming to the individual's innate characteristics such as sex, age, ethnic groups and social classes (Stigliz 1975; Psacharopoulos and Layard 1974; Whitehead 1992; Oosterbeek 1993). In some instances, it is also argued that education is being used as a screening device in the promotion process (Tachibanaki 1987). Hence, education qualifications only act as a screening device in making hiring decisions or the promotions process, although such qualifications may not be necessary for the job.

The theory of segmented labour markets also shows that investment in education does not determine individuals' productivity, and therefore, does not lend support to human capital theory. It is assumed that wages are attached to specific jobs rather than to individual workers. Therefore, education has no impact on labour productivity. Instead, employers used educational merits to allocate their employees according to the appropriate task (Doeringer and Piore 1971).

Despite the controversies and debatable issues surrounding human capital theory, previous and recent findings still show that this theory is important in attempts to explain the educational contribution towards labour productivity and economic growth. Besides, the alternative theory to human capital (credentials, screening and segmented labour) also have their own weaknesses (Lambropoulos 1992, Bedi and Born 1995). The following section reviews some of those findings.

2.2.3 Empirical evidence on human capital contributions to economic growth

A series of studies on the returns to investment in education undertaken by George Psacharopoulos have updated our understanding concerning education's contribution to economic growth (see Psacharopoulos 1973, 1981, 1985, 1989 and 1994). Psacharopoulos (1984, p. 346) claimed that the contributions of education to economic growth are said to be even larger, considering all the indirect effects of education on other social welfare indicators. He commented that previous research (either the rates of return approach or the growth accounting method) had failed to establish the interrelations between education and fertility, life expectancy, child mortality, environment and crime. This has resulted in an underestimate of the true contribution of education to economic growth and social welfare in general. In his recent work for Mexico, he found that returns to investment in education, measured by earnings, are depressed during an economic recession and rise again as economic growth resumes. Using Mexican data from three household surveys in 1984, 1989 and 1992, he also found that returns to education remain high, even after a significant expansion of the educational system (Psacharopoulos et al 1996). These results indicate that educational expansion has a significant correlation with economic growth, though the directions of causation may be debated.

Kim and Lau (1995) explain how human capital formation has successfully helped many East Asian countries to emerge as Newly Industrialised Countries (NICs). Special emphasis on education and training has led South Korea, Hong Kong and Singapore to expand their industrial sectors enormously and to sustain high economic growth. Birdsall et al (1995) has similar findings. They confirmed that East Asian economies have experienced rapid growth over three decades, with relatively low levels of

income inequality because of their significant investment in education. Investment in education is a key to sustained growth, both because it contributes directly through productivity effects and because it reduces income inequalities.

In Malaysia, Lucas and Verry (1996) examined the factors that led to the phenomenal economic growth and narrowing of income differentials achieved in Malaysia since 1970. Education and training are amongst factors identified that contributed to this successful achievement. A significant expansion of educational and training activities brought about almost universal primary education before 1985. By the end of the New Economic Policy (1990), the lower secondary school enrolment rate exceeded 80 per cent. From 1980 to 1991, the average annual growth rates in enrolment were 2.36 per cent in primary, 1.58 per cent in lower secondary, 4.22 per cent in upper secondary, 9.23 per cent in post-secondary, and 14.75 per cent in tertiary. This expansion has played a critical role in permitting the rapid transition of a rural economy into a modern economy with greater skill intensity[1] (Lucas and Verry 1996, p. 567-568).

Therefore, it is clear that investment in education can contribute towards economic growth. More schooling means more growth. However, many studies have failed to suggest appropriately what levels of schooling are best at assisting growth. It is common amongst developing countries to follow models of educational development which give special emphasis to higher education. This is in contrast with recent research findings postulating that among the three main levels of education, primary education continues to exhibit the highest social profitability in all world regions (Psacharopoulos

[1] This refers to the number of skilled workers (i.e. scientist, technologist, engineers, doctors, finance and other managerial personnel) as a percentage of total workforces.

1994, p. 1326). Over-investment in higher education may lead to inefficiency in the allocation of national resources. On other hand, higher education is important in producing a highly educated workforce with appropriate knowledge and skills to facilitate the development of new technologies and the industrialisation process (Minehan 1997). It is therefore crucial to address questions related to what levels of education are best at assisting growth. The following section reviews studies that seek to address these questions.

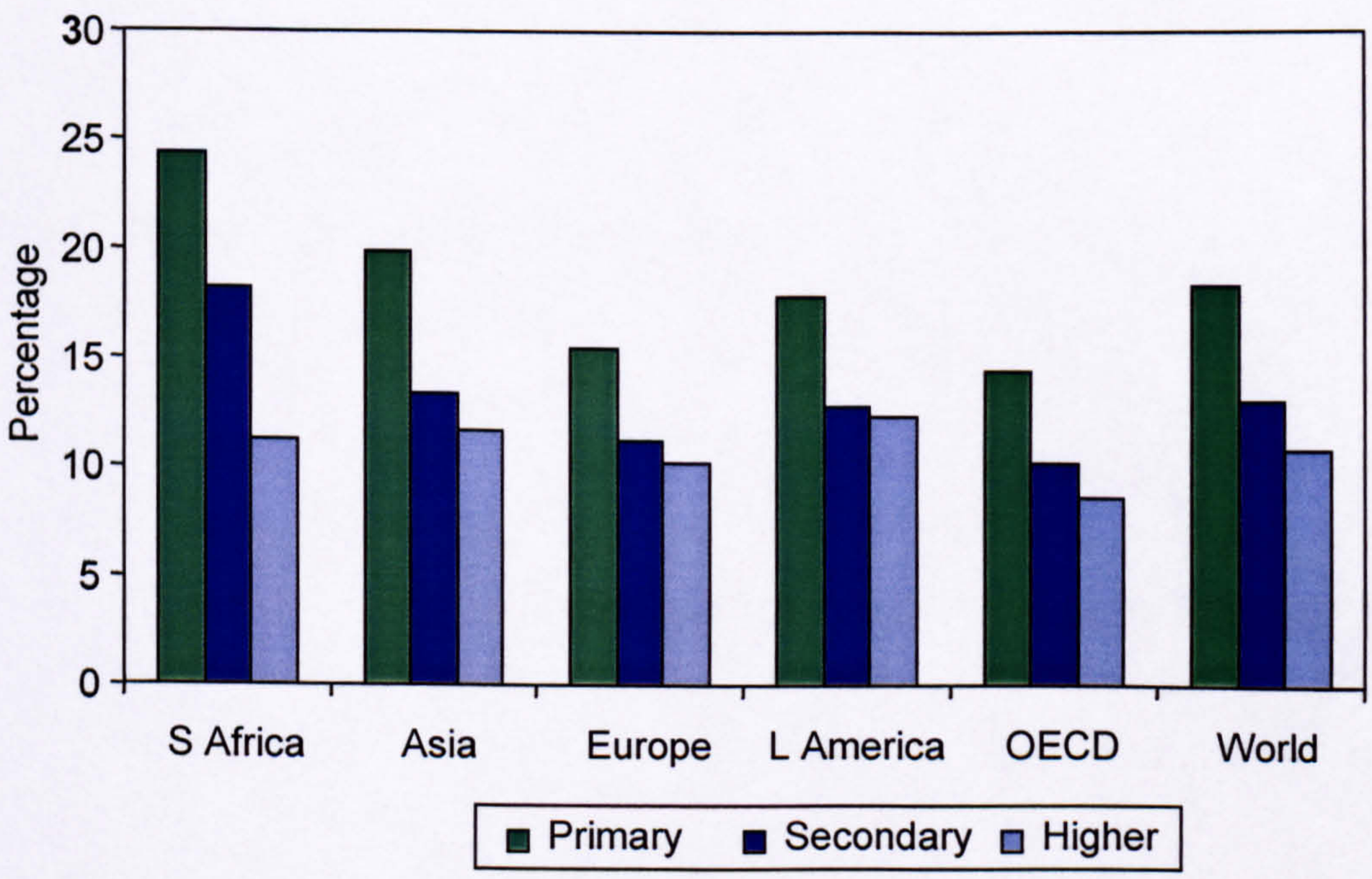
2.2.4 Priorities in educational investment

Since education is normally being considered as part of public goods, priorities for this kind of investment may be reflected from the allocation of public resources. Nonetheless, previous studies show that the allocation of public resources across levels of schooling are highly debated, especially in developing countries (Todaro 1985; Psacharopoulos and Woodhall 1985; World Bank 1986, 1994, 1995a; Psacharopoulos 1994, 1996b; Birdsall 1996). Many studies revealed that the allocation of public resources across levels of schooling is commonly characterised as being biased in favour of higher education. This situation is in contrast with research findings on investment criteria by levels of education that are based on the rate of return approach.

It seems obvious the rate of return will be higher, the lower the base from which one starts. Thus, educating the totally unskilled and illiterate will have a relatively high rate of return. Paradoxically, graduates are needed to teach the unskilled and illiterate but their rewards are likely to be low compared with other professions and so this will help to lower the rates of return to higher education.

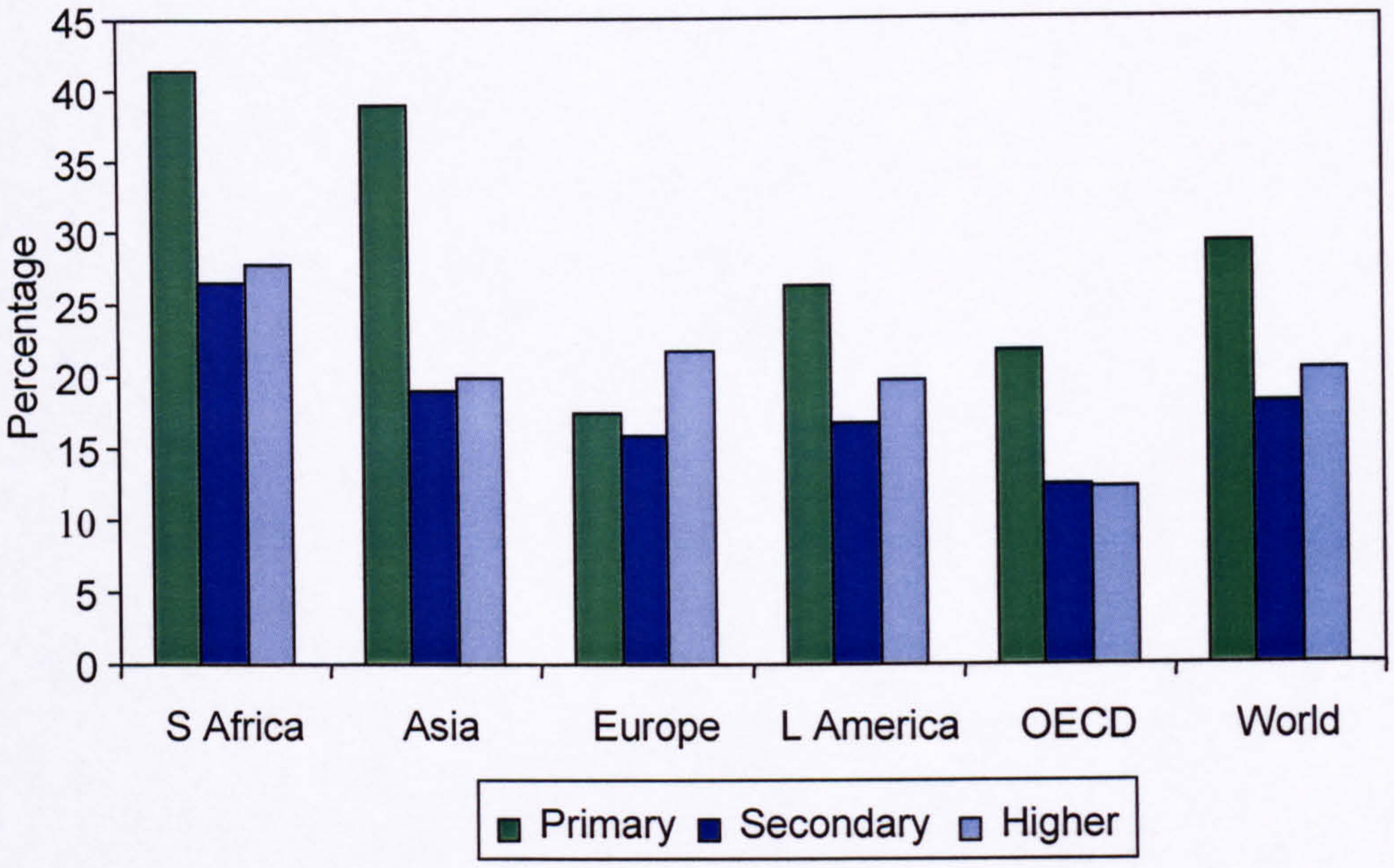
In several extensive comparative studies on returns to education in developed and developing countries, Psacharopoulos (1973, 1981, 1985, 1989 and 1994) found that both private and social returns are relatively high at the primary and secondary level. Amongst Asian countries, the social rates of return are estimated at 27 per cent for primary level, 15 per cent for secondary level, and 13 per cent for higher level education (Psacharopoulos 1985). These studies tentatively suggest that developing countries should prioritise their investment in primary and secondary education, rather than in tertiary education due to the return incurred. In a recent update, the pattern for the rates of return established in earlier studies are upheld, though the rates seem to decline at all levels (Psacharopoulos 1994, see Figure 2.2.4a and Figure 2.2.4b).

Figure 2.2.4a, Social rates of return by regional averages(latest year)



Source: Figures adapted from Psacharopoulos 1994, p. 328

Figure 2.2.4b, Private rates of return by regional averages (latest year)



Source: Figures adapted from Psacharopoulos 1994, p. 328

Todaro (1985, p. 327-335) argued that higher education in many developing countries has been wrongly applied to the real need of development. Many developing countries modelled their higher education according to the structure and function of higher education in the industrialised societies. This is due to exaggerated beliefs in the benefits of quantitative expansion in educational opportunities enjoyed by those nations, especially in higher education. It is believed that expanding educational opportunities will accelerate economic growth through increasing labour productivity and lifetime earnings. This has led to an overemphasis on higher education that has posed critical issues in the efficiency, equity and quality of education provision (Pernia 1991, p. 144).

Psacharopoulos (1991, p. 6-7) argued that there are three important factors that lead to a series of economic inefficiencies and social inequalities in higher education in most developing countries. First, there is more demand to enter public universities than the state budget can respond to. Second, the demand for university entry is fuelled by the low cost of entry, the high benefits expected (in particular private benefits), and the requirement of a university degree in order to get employed in the public services. Third, the incidence of university attendance is higher amongst wealthier groups in the population.

According to Psacharopoulos (1991, p. 7), a country may have misallocated its resources if:

a) the education budget is more or less fixed as a share of public spending, as is the case in most developing countries,

b) the country has a high incidence of illiteracy, and,

c) the wealthier groups in the population divert resources to higher rather than primary education.

These situations might lead to inefficiency in educational provision and to under-investing in what it needs most, especially at the primary level, to increase the literacy rate. In relation to inequality, he argued that in the present higher education system, the lower income classes are most likely to be excluded from gaining access. This might due either to the need to forego income while studying or they might be from a disadvantaged background, and therefore, do not receive sufficient coaching to compete at the national university entrance. On the other hand, for the wealthier families, if they

failed to gain access in local public higher institutions, they are likely to enrol in a private university/college or to go abroad (Psacharopoulos 1991, p.7).

We have observed that Psacharopoulos' studies seem not to favour higher education, especially amongst developing economies if the country has not achieved universal primary education. It would be an inefficient allocation of public resources if the literacy rates are still low (Psacharopoulos 1996b, p. 422). However, recent studies by the World Bank (1994, 1995a) show that many developing countries have achieved near-universal primary education. Furthermore, it is observed that returns to secondary, post-secondary and higher level education have become more significant in these countries. Subsequently, recent literature on the economics of higher education has widely supported the views that education beyond the primary level is crucial to develop sufficient educated workforce in order to sustain economic growth in a competitive environment. We shall review this in the following section.

2.3 Public Higher education investment and development

In almost all countries higher education has always been an important priority in the public agenda. Increasing participation and transformation of higher education from elite to mass system inevitably leads to a much larger community involvement, and consequently, makes issues pertaining to higher education development more complicated.

2.3.1 The role of higher education

Although investment in higher education is expensive, it has generally been agreed that this investment can be a key contributor to a country's economic growth and that it enhances national development. Saha (1991) identifies

three dimensions through which higher education contributes towards national development, viz., the economic, the socio-cultural and the political. Higher education is seen as a vital component of the process of nation building, expected to bring about the socio-economic and political development of a country. However, in many instances, it will be impossible for all these dimensions to be pursued simultaneously because of conflicting interests (Saha 1991, p. 248). Nevertheless, as the most expensive sector of education, it is important to ensure that the higher education system produces the right mix of manpower pertinent to the national needs. Higher education also has a crucial role in the social and cultural development of a society, and thus in national development and nation building. In addition to this, Saha (1991) also argued that higher education has a modernising effect in terms of imparting changes in values, attitudes and life-styles. He claimed that a person who has attended some form of higher education is likely to be less traditional, less family-oriented, more secular and more change-oriented in attitudes, values and behaviour. In terms of political development, the higher education system produces citizens who are politically aware, and who have a strong sense of national identity, and who are interested in, and participate in, the political processes of their country (Saha 1991, p. 252-255).

Although higher education also contributes towards socio-cultural and political development of a country, this study is designed to focus only on the economic contribution to higher education, and specifically to what extent expansion in higher education can contribute towards economic growth. Higher education institutions have a crucial role in human resource development, i.e. tailoring education programmes to be responsive to the emerging human resource requirements of the changing economy. This is

the major challenge facing higher education expansion in many developing countries today. Meier (1985, p. 621) argued that,

> *"High-level manpower is needed to staff new and expanding government services, to introduce new systems of land use and new methods of agriculture, to develop new means of communication, to carry forward industrialisation, and to build the educational system."*

It is apparent that a shortage of highly educated personnel and professionals, such as engineers, scientists, doctors and top managerial personnel are inevitable in a modernising economy, especially as the pace of development is getting faster. Therefore, higher education institutions bear the main responsibility for training a country's highly educated and skilled workers, specifically in the pursuit of scientific and technological advancement.

In a study on higher education and development in newly industrialising countries (NICs) in Asia, Singh (1991) demonstrated two crucial roles of higher education institutions that enable countries like the South Korea, Singapore, Taiwan and Hong Kong to emerge as industrialising economies. First, higher education has supplied adequate scientific and technological manpower, either in terms of quantity or quality to work, at the different levels of the economy. And secondly, higher education has been able to adopt, adapt and improve the technology that has been imported through research and development programmes. Therefore, apart from human resource development, higher education also contributes to the extension of the frontier of knowledge through conducting high quality research projects. According to Altbach (1991, p. 105), university-based research is an important ingredient for scientific and technological strength in an

increasingly competitive world economy. Basic and applied research will yield new knowledge that may result in new products and services or improved forms of production.

Therefore, there is a need for an expansion of higher education to fulfil the requirement of the industrialising economies in a competitive environment. In the following section, we shall review the theoretical aspects of higher education development.

2.3.2 The theoretical aspect of higher education development

Trow (1973, p 173) analysed the process of higher education development into three stages, viz., elite, mass and universal education. According to him, higher education starts as an elite institution with enrolment rate of 2 to 4 per cent of the relevant age group. The transformation from elite to mass takes place when enrolment increased to 15 and 20 per cent. The dividing line between the elite and mass system is at 15 per cent enrolment of the relevant age group. From this, we may observe that higher education in most developing countries is at the transition stage from an elite institution to a mass system of higher education. Teichler et al (1980, p. 12) argued that elite education gives way to mass education because of the positive relationship between education and the labour market. Higher education expansion comes about as a result of economic forces and the society's need for a more educated and highly qualified people. The final stage of expansion (i.e. universal stage) as suggested by Trow (1973) is achievable as the enrolment rate increases to more than 30 per cent. This marks the maturity stage of a higher education system, and we may observe that many developed countries are likely to exhibit this stage of development.

Saha (1991) claimed that, higher education in most developing countries is at the stage of expansion from the elite institutions to a mass system. At this stage, it is economically rewarding for individuals with a qualification from higher education because of high demand in the labour market. However, these expansions have increased rapidly, and well before universal primary and secondary education have been attained. This has led to inefficiency in the expansion of the higher educational system as explained by Psacharopoulos (1991 and 1994). The consequence of rapid expansion in higher education is that the unit cost of higher education exceeds by many times the unit cost of primary and secondary education. Thus, the relative costs of higher education for the less developed countries are much higher than costs in the industrialised countries.

Windolf (1992), however, provides a wider context of higher education development and examines three alternative explanations of the expansion of its provision. First, higher education is likely to expand because of the pressure from the economy. He claimed that higher education expanded apace with economic growth and technical progress. There is a direct relationship between the need for trained and qualified personnel and the expansion of higher education. Enrolment in higher education increases during times of economic growth, and decreases during recession. He argued that the educational system reacts to the demand in the job market. Although in the short-term there may be a shortage or an excess of the qualified personnel, balance will eventually be restored between the educational system and the job market. Thus, the trend and magnitude of higher education expansion is determined by the actual demand for qualified professional and technical personnel within the economy itself (1992, p. 6).

Second, higher education may expand because of competition among individuals over social status. In this situation the demand for higher education may increase despite economic recession and high graduate unemployment. In this case, there are instances where educational expansion may be found not in times of economic growth, but rather in times of economic recession (Windolf 1992, p. 7). Thus, whereas human capital theory hypothesises a direct relationship between educational expansion and economic growth, in this explanation, Windolf suggests that there is an inverse relationship. This means that economic recession and unemployment bring increased university enrolment, while economic boom and high employment lead to stagnant higher education expansion. This apparent conflict of views could be reconciled in terms of long run and short-run analysis. It is quite clear that growth is required to enable an expansion in education and so in the long run there is likely to be a recursive relationship between economic growth and education. In the short-run, however, unemployment may encourage people to become students and boom conditions may provide better chances of employment and income.

Finally, Windolf (1992) argued that higher education expansion is also likely to happen because of political factors. He claimed that, whether or not, and to what extent, universities are supported and allowed to expand is determined by the state. The state and the political parties decide the amount of public resources to be allocated, and the types of entrance requirements to be imposed, in higher education (Windolf 1992, p. 8). In this case we may observed that, the level of funding is likely to have significant effect on the expansion of universities and, consequently, on student enrolment. Although higher education expansion through political intervention may provide wider access to, and contributes towards greater equality of the provision, it may occasionally lead to inefficiency in the use public resources. On the one

hand, it could be argued that political intervention to improve access to higher education is a sign of the failure of the market to supply national needs, but on the other hand, one could also argue that this may contribute to a distortion of market allocations.

The above studies have provided a useful framework towards understanding the reasons for demand and supply for higher education that brings about to its expansion. The framework raises issues on how and why does it expand? Is it because of the increased demand for more educated personnel in the labour market, or is it because of striving for social status, or is it because of the political desire? All these aspects may have important consequences for the sources of funding for the required level of expansion.

2.3.3 International trends in higher education development

The above discussion clearly shows that higher education has multiple and varied tasks which include nation building, the training of high level manpower, satisfying the social demand for education, conducting research and creating an environment for centres of excellence. Since the post-war period, higher education has dramatically expanded in many parts of the world, including the developing countries. Expansion has taken place in almost every country, but to different extents depending on the educational policy and the level of development of each country. Many writers correlate the development of higher education with the pace of economic development in each country since educational statistics seem to show that enrolment ratios are relatively high amongst developed countries compared with the less developed ones. For example, the average enrolment ratio for higher education amongst OECD countries[2] is 51 per cent, compared with 21 per

[2] Organisation for Economic Co-operation and Development

cent in middle-income countries and 6 per cent in low-income countries. Many claim that higher education expanded dramatically first in the United States, then in Europe, and currently in many developing countries. In many developing countries, the high estimates of social rates of return of investment in higher education (i.e. 10 per cent or more) are believed to have made significant contributions to increase productivity and to higher long-term economic growth. These, in turn, have led to a further expansion in higher education provision.

Educational statistics reveal that higher education enrolments have increased significantly in the last 20 years. As could be seen in Table 2.3.3, except for the sub-Saharan Africa, enrolment ratios at the tertiary level have increased in almost all regions.

Table 2.3.3
Public expenditure on education as percentage of the GNP and Higher education enrolment ratio (percent of age group)

Region	Enrolment in higher education		Public expenditure	
	1980	1997	1980	1997
East Asia & Pacific	4	8	2.5	2.3
South Asia	5	6	2.0	3.0
Sub-Saharan Africa	2	2	4.1	4.3
Middle East & N. Africa	11	16	5.0	5.3
Latin America & Caribbean	14	20	3.8	3.7
Europe & Central Asia	30	32	5.5	5.4
Europe EMU	25	49	5.6	5.4
WORLD	13	19	4.0	4.8

Source: World Development Indicators, 2000

There are several reasons to explain this trend. First is the result of increased secondary school enrolments, which subsequently intensified

demand for higher education. Second, as real income increases, the demand for higher education, which is considered as luxury good, will also increase. Third, the need for expanding the economy leads to a need to develop indigenous high-level manpower and to replace expatriate workers. Fourth, related to the government policy on education and manpower planning, where the forecasting approach suggests that for a country to grow economically it should have a given number of engineers, architects and other high level manpower that only universities can produce (Psacharopoulos 1991, p. 5). Fifth, the need to transfer new technologies and to increase competitiveness in the world economy requires highly skilled manpower. Many studies have shown that the demand for higher education is becoming more and more customised because of changing labour market needs on the one hand, and diversified clientele on the other; this requires additional resources. The rapid obsolescence of skills following the accelerating technological development and greater emphasis on scientific and technological research all call for more financial resources.

Although enrolments for tertiary education have increased substantially, the public resources for education in general, and in higher education in particular, have not increased in tandem (Table 2.3.3 shows the share of GNP allocated to education for the last 20 years). The main reason for this is that there are many other sectors, which need to be developed and which compete for the limited public resources. In addition, further efforts by the government to generate more public funds through taxation, is unlikely to be favourable and could result in a negative impact politically.

Nonetheless, it is observed that during the earlier stage of rapid and massive expansion of higher education, the state took the responsibility for providing the necessary resources on the grounds of greater access and equity. This

can be observed in most countries around the world during the post war period. Sanyal (1998) believed that there are three reasons for the most governments to do so. First, to supply suitable qualified personnel during the period of economic boom, and for most developing countries, the main task is to replace the expatriates by suitable qualified nationals. Second, although higher education would result in higher returns, there was uncertainty about the level of individual returns, and therefore, to achieve a socially optimum amount of investment in higher education, the state should play a major role. Third, investment in higher education is highly expensive, and therefore, remains the monopoly of the few rich and the elite of the society. Thus, to provide greater access, and also for equity considerations, the government should subsidise this investment (Blaug and Woodhall 1977). During the sixties and seventies, resources for higher education all around the world, in general, were enough so that the states were able to provide sufficient funding. The Robbins Report that was published in the United Kingdom at around this time suggested a massive expansion in higher education with a leading role to be played by the government (NCIHE[3] 1997). Many governments around the world followed this report in formulating their higher education policies.

However, in recent years, higher education has suffered from growing financial constraints. Economic recession and increased competition for limited public resources have reduced many governments' capacity to support higher education, and public expenditure for higher education has fallen. For example, the World Bank reported (1994) that the decrease in per student expenditure has been particularly severe in Africa and Middle East. The report claimed that in Sub-Saharan Africa, during the period of 1980s, the average public expenditure per student declined from US$6300 to

[3] The National Committee of Inquiry into Higher Education

US$1500 in real terms. In the Middle East and North Africa, it declined from US$3200 to US$1900. Similar patterns of severe declines in public resources also exist in the former socialist countries of Europe and Central Asia, which took place in the early 1990s. For instance, higher education recurrent expenditures in Hungary fell by 21 per cent between 1991 and 1993 (World Bank 1994, p. 17). This, to a certain extent, has affected the per student expenditure significantly, and is likely to contribute to the remarkable deterioration in the quality of the education provision. However, some may also argue that these patterns may reflect the more efficient use of public resources and that lower spending per student is desirable since higher education has been heavily criticised due to its expensiveness.

The unit costs for higher education are high relative to other segments of the education system. Since in most countries higher education is heavily dependent on government funding, many have criticised the disproportionate per pupil costs of education when compared with the primary and secondary-level costs. The imbalance is particularly apparent in many developing countries. According to Todaro (1985, p. 330), developing countries spend large proportions of their educational budget on a very small proportion of their students enrolled in tertiary education. In Brazil, for example, 23 percent of the public education budget goes to higher education, even though higher education represents only 2 percent of the student population (World Bank 1994). In earlier periods, education statistics show that, on average, the ratio of total per pupil costs of secondary to primary education is 6.6 to 1 and that of higher to primary education is 17.6 to 1 in developed countries. But for developing countries the relative ratios are much higher, some 11.9 and 87.9

to 1 respectively.[4] These means that, for the equivalent cost of educating one university student for a year, 88 primary school children could have received a year of schooling. This either reflects that higher education is an expansive investment, or perhaps, an inefficient use of public resources. Since the early 1980s policies on higher education have been dominated by the concern to reduce public expenditure per student in higher education, and the need to increase efficiency by encouraging universities to earn income and also to be much more strictly accountable for grants received.

Although the rapid growth of enrolment has led to increased access to higher education, many have argued that higher education is still very elitist, especially in most developing countries. The World Bank (1994) reported that, in Latin America, white-collar employees make up only 15 percent of the population, but their children account for 45 percent of higher education enrolments. Similar pattern exists in sub-Saharan Africa, where white-collar employees represent only 6 percent of the total labour force, but their children takes 40 percent of the total enrolments. In South Africa, white students comprise about 80 percent of university enrolments, whereas only 13 percent of the total population are white. It is also found that in Asia and Middle East professionals make up about 10 percent of the total population, but their children represent 43 percent and 47 percent, respectively (World Bank 1994, p. 23).

All these points have posed serious obstacles to the efficiency and equity of educational provision and have been the focus of many studies on higher education development.

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[4] These data are based on Psacharopoulos studies in 1973: *Returns to Education: An International Comparison*. Though recent data are not available, it is however believed that similar pattern persists since investment in higher education is relatively more expensive.

2.4 Private higher education

The increasing demand for access to higher education exceeds the resources available to most governments. This reduces the ability of most governments to continue expanding higher education within the public sector. As a result, there is a growing interest in many countries in the potential role of the private education sector in satisfying the demand for higher education. Recent studies have advocated that complete or partial privatisation is the best way of providing satisfactory mass higher education to meet the competing criteria of efficiency, equality, and quality. Theoretically, from the government point of view, the development of private sector provision is considered as a means of lessening the pressure on government funding, and of ensuring greater access to higher education. Whilst from the student or family point of view, the existence of private sector provision provides them with an alternative to the limited public provision. Despite this, there is criticism of private sector provision for it's regulated nature, restricted access (based on income) and related inequity and quality problems.

2.4.1 The role and provision of private higher education

The most frequent arguments found in the literature in favour of private sector higher education are related to its ability to reduce the burden on government expenditure, to improve efficiency in education provision, to increase the diversity of choice and access (equity), and to make education providers more accountable to their clients. The proponents of private education argue that private provision would result in more-resources flowing into education, more efficient use of resources, and consequently, more equitable access to education (World Bank 1994, 1995a; Patrinos 1990; Sanyal 1998).

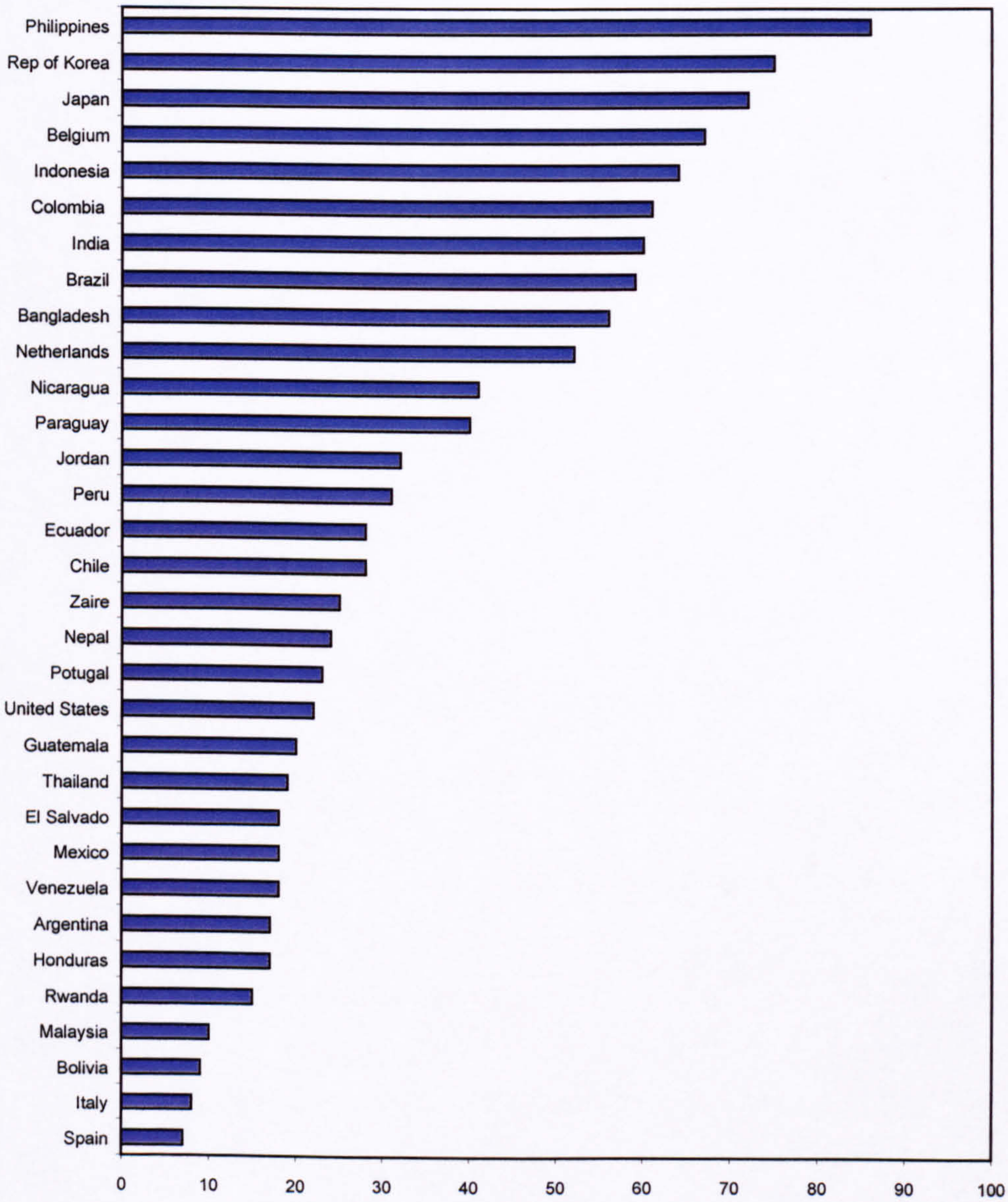
The World Bank (1994, p. 34) claimed that the private provision of higher education increases educational opportunities at little or no direct public cost, especially in countries where the capacity of public institutions are very limited. In addition, it is also argued that private sector higher education can respond efficiently and flexibly to the changing demands of students and changing labour market needs. According to Patrinos (1990 p. 162), private providers are more attentive to the needs and requirements of its clientele because they depend almost entirely on tuition fees to cover their operating costs. To a certain extent, some proponents of private provision also argue that private sector education sometimes appears to be superior in raising cognitive ability, especially in many developing countries (Jimenez et al 1988a, 1988b; Cox and Jimenez 1988).

In considering the role of private sector higher education, the percentage of students enrolled in this system compared with the public sector system reflects the kind of choices in which governments and higher education systems all over the world are facing (see figure 2.4.1). For example, countries that have high percentages of students enrolled in the private sector are the Philippines (86 percent), Republic of Korea (75 percent), Japan (72 percent), Belgium (67 percent) and Indonesia (64 percent). In most of these countries, access to higher education has been substantially widened without, or with minimal, financial burdens on government budgets.

However, according to the World Bank (1994, p. 36), the private provision of higher education may vary within countries. For example, in many industrialised countries in Europe and the United States, the private sector caters primarily for those who want something different, whether it is higher education with a particular religious, cultural or vocational emphasis, or simply what is perceived as higher quality (Williams 1996a, p. 46). Although

places at the public universities are substantially sufficient, private universities still exist to meet different preferences, and in many cases, it is partly financed by grants from the government (James 1986).

Figure 2.4.1 Share of enrolment in private higher education (percent)



Source: World Bank 1994, p.35

In several European countries, private universities and, or, private tuition is either not permitted, as in Greece and Germany, or strongly discouraged as in Scandinavia countries. Instead, the public sector is supposed to provide for all that have passed the appropriate secondary school examination and who thereby qualify for entry to higher education. In few Western European countries, there is a high proportion of enrolments in private institutions, such as in Belgium and the Netherlands, with 67 percent and 54 percent respectively (see Figure 2.4.1). Nonetheless, higher education continues to be almost entirely financed by the state, which subsidises both public and private higher education institutions (Geiger 1988, 1990; World Bank 1994, p. 35). As in the United States, private provision arises where public universities and colleges are unable to respond fast enough to the needs of rapidly changing economies (Geiger 1990). However, many of these countries are also facing pressure on their budgets as mass higher education continues to expand (OECD 1990).

In Japan, according to James (1986), private sector higher education is relatively large compared with the public (National) universities, but public universities, have higher prestige than the private institutions. In addition, access to these National universities is strictly limited by competitive examination. They provide a very high proportion of the country's scientists and technologists, and, industrial and commercial companies within the country eagerly seek graduates from these universities. On the other hand, private universities and colleges cater for the less able, but families are willing to pay the substantial fees so that their children can attend them. This is mainly because, to the society, education is seen as the prime route to social and economic advancement.

There is a similar severe restriction of publicly provided higher education accompanied by a proliferation of less expensive, low prestige private institutions in several countries in Asia and Latin America. Many claim that the quality of training at many private institutions, which tend to offer programmes in a limited number of disciplines where teaching costs are relatively low, is less than satisfactory (Tilak 1991; James 1991a). Nonetheless, the World Bank (1994) argues that, in some countries, such as in the Philippines, differences have also been observed within the private sector itself, which is between private non-profit and for-profit universities and colleges. The non-profit institutions are typically smaller and more selective and have higher private costs than the for-profit, which is likely to reflect the better quality of provision. Furthermore, graduates from the non-profit institutions eventually get higher-paying jobs than those from the for-profits (Jimenez and Tan 1987a; Patrinos 1990; Tilak 1991).

A similar pattern also exists in Latin America. According to Johnstone (1998), the proportion of students attending private institutions has more than doubled over the last 15 years, and, reflects not only the growing demand for tertiary education and diversification, but also some dissatisfaction with public universities due to political turmoil and poor academic quality. According to the World Bank (1994), private higher education institutions in Colombia and Peru are among the top universities, and, offer relatively high quality of education compared with the public sector. Similarly, in Argentina, the number of students in the private sector, which provide alternatives for better tertiary education to the society, has increased 76 percent between 1985 and 1994 (Marquis 1998). It is also observed that the function of private educational institutions in Kenya is not so much to absorb excess demand, as it is to enhance quality (Eisemon 1992). China and India also allow and,

or, encourage private educational institutions to be established in order to meet the growing demand for higher education.

Thus, we observe that the expansion of private higher education exhibits great variation both between and within countries, which is likely to affect the efficiency, equity and quality of higher education provision.

2.4.2 The demand for private education

James (1986, 1987, 1991a, 1991b, 1991c and 1993) has provided a comprehensive theoretical framework to explain the development of private sector education. According to James (1986 p. 255-276), the demand forces that lead to private sector provision are of two types: excess demand or differentiated demand. Excess demand denotes the general excess of unsatisfied (potential) demand; differentiated demand denotes specific areas of higher education where there is a lack of provision. The former is likely to be the source of demand for private sector education in developing countries, where public resources are often scarce, whereas, the latter is likely to be dominant in advanced industrial societies, where there is open access and places are guaranteed for everyone.

Theoretically, excess demand is attributed to limited public spending, which creates an overflowing demand from people who would prefer to use the public system of education, but who are involuntarily excluded and pushed into the private sector. The general assumption underlying this theory is that public and private provisions are perfect substitutes. Under this condition, if a family discovers that the private benefits (Bi) from education are high enough to cover the price of education (P), they will seek places in the private sector as a second-best solution. James theorised that, if the option

of attending public sector education is not available to everyone, only families with $Bi > P$ will enter the private sector (1986, p. 257). Therefore, if other factors remain constant, the smaller the capacity of the public sector, the larger will be the excess demand for private sector education.

In contrast, the general assumption underlying differentiated demand theory is that public and private provisions are imperfect substitutes. This is because the public system is compelled to be relatively uniform in contrast to people's diverse tastes and preferences with respect to product variety and quality. If these tastes and preferences are not accommodated by the public sector, it will motivate people to seek them from the private suppliers, and thus, constitute the differentiated demand. In most cases, preference differentiation consistently stems from religious, linguistic and national characteristics. The more uniform public sector education relative to public preferences, the greater will be the volume of differentiated demand.

However in some cases, preference differentiation also stems from the quality level and, or, the need for special skills amongst diversified enterprises in the economy (James 1991c, 1993, Sanyal 1998). For instance, a low quality of public sector provision may encourage the growth of a high quality private sector. James (1993 p. 576) argues that, since demand for academic quality is highly income-elastic, for any given public education quality level, the quality-driven private sector education is expected to be larger in areas with greater income inequality, especially those with more families in the upper tail of the income distribution.

The characteristics of private sector provision will strongly reflect whether it is based on excess demand or a differentiated demand. In countries where public sector education is small and insufficient, a large non-selective private

sector often develops to serve the large group that is excluded from the public sector. In this case, the private sector typically operates on the basis of 'fee-for-service' and is likely to be profit motivated. In the effort to meet the huge market demand, these institutions will compete with each other and offer only products whose price will cover their costs. Since it is most likely that these institutions will keep their costs low in order to maximise their profits and survive in the market, the quality of education offered will be affected (i.e. it will be determined by the required level of profit).

On the other hand, in countries with large public sectors, the private sector often emerges as a selective high-cost institution to serve the relatively small groups of people who are willing and able to pay for the kinds of education demanded. A non-profit private sector often emerges if the demand is from religious, cultural and linguistic groups, but if the demand is for quality or special skills, private sector education may develop as for-profit institutions. In the latter case, reputation acts as an entry barrier by causing high prices to be charged to cover most of their costs. The gap between the cost of supply (including profit) and the price level likely to make demand effective is usually covered by government subsidy. In some countries like the United States, government grants are channelled to these institutions to allow them to engage in graduate programmes and research that would not be financed privately (James 1991a p. 192-193).

Thus theoretically, there are likely to be several versions of private sector institutions, ranging from non-profit to for-profit institutions, and characterised by the types of demand that exists. However, from the above discussion, we would expect that in case of excess demand, for-profits are likely to prevail over the non-profits institutions.

2.4.3 Conflicting evidence on the benefits of private higher education

Many have argued that the major advantage of private sector higher education has been in responding more quickly or efficiently to market demands (Patrinos 1990; Balan 1990, p. 17). The private sector responds to the needs of the economy and society, and provides relevant types of education. In addition, many also argue that graduates from private higher education receive higher rewards from the labour market in the form of lower unemployment rates, better paid jobs and consequently higher earnings (Jimenez and Tan 1987a; Patrinos 1990). Notwithstanding this, studies have revealed that private institutions tend to offer mainly programmes that have high private benefits but fewer social benefits. Many have argued that research and broad educational needs are less important to the private sector institutions. In most cases, private sector institutions offer subjects that are mainly of low capital-intensity in character (James 1991a, p. 193-194). The private sector is only likely to offer professional fields, such as engineering and medicine if the potential for economic profit is high (Tilak 1991, p. 233). In terms of employment, evidence shows that unemployment rates among graduates from private universities are relatively high. For example, studies by Arcelo and Sanyal (1987) revealed that, in the Philippines, unemployment rates among graduates from private universities are about 2.8 times higher than that from public universities.

Those who are in favour of private higher education argue that, private universities or colleges are likely to increase competition amongst educational providers (both public and private), and hence enhance the quality of provision. However, evidence shows that the higher quality of private education compared with public higher education is rather exaggerated. To a certain extent, it can be argued that the private sector is

likely to offer a better quality of education if the public system fails to meet the standards of quality that the society demands (differentiated demand). However, in most cases of excess demand, evidence seems to show that the quality of education offered by the private sector is likely to be inferior to that offered by the public sector. James and Benjamin (1988) discovered that public higher education in Japan provides better facilities, which are significantly related to quality, than private universities and colleges. For instance, they found that the student-teacher ratio in public universities is only eight, compared with twenty-six in private universities. Although more than 75 percent of students in higher education enrolled in the private sector, teachers in this sector constitute less than half the total of the country. Similarly, the student-staff ratio in private institutions is three times the ratio in public institutions in Indonesia and the Philippines, and more than double in Thailand (Malakul 1985; James 1991a, p. 197). In Japan, Colombia, Brazil, Argentina, Indonesia, and in several other developing countries, private universities are found to employ more retired, part-time, and under-qualified teachers (Tilak 1991, p. 230). It is also found that the teachers in the private sector are paid less and have less academic prestige. In terms of expenditure per student, in most cases, private universities spend less than half of what public universities use to spend (James 1991a, p. 196).

The proponents of private sector higher education also argue that, the existence of private universities or colleges is likely to provide greater access to higher education, and lead to a more equitable provision (Psacharopoulos and Woodhall 1985; Psacharopoulos et al 1986; James 1987; World Bank 1994, 1995a). However, on the other hand, it may also be argued that the private expansion of higher education in the absence of loans and, or, grants for the poor could lead to inequity in provision since tuition fees in this sector are relatively high. Moreover, if the existing public sector higher

education does not have tuition fees or is highly subsidised, this could lead to 'double-inequity' of the provision. This is because in many countries, it is likely that students from advantaged backgrounds move from the best secondary schools into free public universities, while the poorer students end up paying for the lesser-quality education offered by the private sector. For example, according to the World Bank (1994, p.36), 74 percent of the students in Thailand who attend the best public universities come from middle- and upper-income families. The fees paid by students, however, represent only 7 percent of recurrent costs at these elite institutions.

At the same time, because tuition fees are relatively high in the private sector, students who choose to enter private universities have parents with, on average, one and a half times the income of those of students in public universities (Tilak 1991, p. 234).[5] For example in Brazil, 44 percent of students who enrolled in fully sponsored public universities (with no tuition fees) come from families in the top 10 percent of the income distribution. On the other hand, only 18 percent come from families in the bottom half of the income distribution. In an earlier study, James and Benjamin (1988, p. 127), discovered that public universities in Japan seem to have slightly higher redistribution effects than private universities in transferring resources from the top income quintile to the others. Furthermore, as fees in private universities are very high compared with the public universities, only the relatively wealthier students opt for these institutions. In the United States and Thailand, for example, fees per student in private universities are 5 and 2.5 times those in public universities respectively. Levy discovered that (1985, p. 454) as access to public higher education is restricted, students from upper and professional classes are likely to enter private universities, though public universities remained the first choice. Psacharopoulos (1991)

[5] In Thailand nearly 20 percent enrolled in private tertiary education.

shares the same view. Thus, unless cost sharing is also introduced in public universities, and, an appropriate funding mechanism can be made available to disadvantaged students attending private institutions, equity objectives cannot be effectively served by the growth of private higher education.

It has also been argued earlier that private higher education provides considerable relief to the governments from financial burdens, as they are self-financing. However, in many countries, private sector education also received substantial funding and grants from the state that is also likely to affect the public budget. For example, Tilak (1991, p. 232) discovered that in most developed countries, state subsidies cover more than 90 percent of the recurrent expenditure of private institutions. He claimed that, in Sweden and Canada, the government provided the capital needs for the private institutions. Levy (1986, p. 174) revealed that implicit subsidies or indirect government support to the students to purchase higher education is an important source of funding for private universities in the United State. He quoted that, roughly 85 to 90 percent of scholarship money in California goes to students in private universities, while private enrolments form only 10 to 12 percent of the state's total enrolment. In Belgium and the Netherlands, the World Bank (1994) disclosed that the private and public universities received equal funding from the state. In Japan, 21 percent of private higher education expenditure is covered by state subsidies. Geiger (1987, p. 18) argued that state subsidisation in Japan originated from the economic failure of many private institutions of higher education. He found that in cases where institutions face closure, significant amounts of public funds are used to help private higher education institutions to maintain operation. Similarly, in several developing countries, such as Thailand, the ratio of government expenditure to private expenditure on higher education is 93:3, but only 30 percent of students attend private institutions (Malakul 1985). In a different

study, Muzamil (1989, p. 247) discovered that 77 per cent of the government budget on higher education in Uttar Pradesh in India goes as aid to private colleges.

Thus, these findings raise doubts about some of the claims made for the expansion of private sector provision of higher education. The situation is much more complex than might be thought at first sight. In particular, it is questionable whether private sector higher education is economically efficient, provides equitable access to higher education and offers high quality of degree programmes. These issues are central to this research and will be considered in Chapter 7, 8, 9 and 10 below where we present evidence from Malaysia.

2.5 Summary

In this Chapter we have shown that education investment is critical for economic growth. The high demand for higher education and the pressure on government's budget have led many countries to consider private sector to offer higher education services. However, although it has been argued that the private sector provision will enhance efficiency, equity and quality in higher education, there is no conclusive evidence to confirm this view. The debate on who should bear the cost for higher education also is inconclusive since both the students (including their families) and the society, benefit from higher education investment. In the following chapter, we discuss in greater detail issues in methods of financing of higher education investment.

CHAPTER 3

FINANCING OF HIGHER EDUCATION INVESTMENT

3.1 Introduction

Higher education is both a private and a social investment whose costs and benefits are shared by individual students, their families, government, and to some extent employers. Since education is considered as a quasi-public good (or mixed-good), issues in financing of higher education involve searching for amounts and sources of funds. Consequently, it is crucial to determine how much should be spent and how the costs for higher education should be shared. Thus, in this Chapter we shall discuss issues regarding the financing of higher education investment which include methods of funding and different approaches of evaluating the investment.

3.2 Issues in the financing of higher education

In many developing countries, the existing and the projected, provision of public higher education is insufficient to meet the ever-increasing demand. Although it is generally accepted that higher education is important for the development of the nation, it is increasingly recognised that public funding alone is insufficient to guarantee access and coverage of the college-age population. Even many industrialised countries are also been confronted with similar challenges. A number of OECD countries have responded to the

funding crisis by introducing innovative policies during the past decade aimed at increasing higher education efficiency and stimulating alternative resources for higher education through extensive diversification strategies (OECD 1990). The debate about financing higher education, however, has not been concerned only with the funding of institutions. Equally important is on the financial support for students. Of course, these are interrelated issues and literature have provided a wide spectrum of funding arrangements and financial resources that are possible means for assisting higher education expansion. These may include improving efficient utilisation of resources, encouraging income generation, adopting cost recovery policies including cost-sharing with students either in terms of tuition fees or student loans, and also through the private sector provision of higher education (OECD 1990; World Bank 1994; Sanyal 1998; Jonhstone 1998). The main interest of this study however, is to examine issues surrounding the private provision of higher education.

3.2.1 Public versus private finance

The debate on public and private finance of higher education is far from concluded. In most countries, education consumes the second largest share of public expenditure after security, ranging between 6 and 15 percent of gross national product (World Bank 1995b and 2000)[1]. Despite this, many suggest that education should also be partly privately funded. This is because the benefits of higher education are thought to accrue to both individuals and to society as a whole. Consequently, it is generally accepted that education is a shared responsibility between students (and their families) and the government.

[1] See also World Development Report (various years).

For individuals, the benefits of higher education take the form of personal, cultural and economic rewards. For instance, in most cases it is observed that the private rates of return for higher education are greater than the returns to society (see Psacharopoulos 1985 and 1994). Based on such observations, recent policy recommendations have suggested that the consumers of higher education should be the ones who should pay, rather than the government (Saha 1991; World Bank 1994 and 1995a). The relatively high private rates of return to investments in higher education compared with the social rates of return justify large investments by individuals. Furthermore, in almost all cases, graduates typically enjoy substantial advantages over non-graduates in the labour market. In all countries for which reasonable data are available, graduates' lifetime earnings are much higher on average compared with the non-graduates. Therefore, it is argued that there should be a charge for individuals to enrol in higher education. This however, raises fundamental efficiency, equity, and quality issues that need further examination.

Despite the justification for private finance, there is also a strong case for public funding for higher education. According to the World Bank (1995a, p. 54), there are basically three reasons for public financing of higher education. First, an individual's consumption of education is likely to bring positive effects to others through externalities and spill-over benefits. Therefore, government should ensure that individuals must be encouraged to consider the social rather than the private costs and benefits of behaviour. It is often argued that this is true for many aspects of education at all levels. At higher levels of education, the externalities and spill over benefits to the society from teaching and research findings may be substantial. For instance, non-graduate workers are likely to benefit from the knowledge of a graduate worker, and the society is likely to benefit from many significant research

findings. Second, government funding may be necessary because limited financial markets do not allow students to borrow sufficient amounts, on the basis of enhanced future earnings, to cover costs. This is true especially amongst less wealthy and disadvantaged families. The private purchase of schooling, especially of higher education, is beyond the means of many poor families. Therefore, grants, loans and other forms of subsidies are essential to ensure greater and equal access to higher education within society. Third, human resource investment is a principal strategy in poverty alleviation, and therefore it must also be a government concern. Education opens new opportunities for the poor and so increases social mobility. In addition, education also can reduce income inequality through increased in productivity of the agriculture sector and facilitating the absorption of labour into the modern industrial sector.

On one hand, one may argue that public spending on higher education can reduce inequity, open opportunities for the poor and disadvantaged, compensate for market failures in lending for education, and make information about benefits of education more generally available. However, on other hand, governments' inability to develop higher education sufficiently, because of financial constraints, excessive bureaucracy, and inefficient use of resources, illustrate some of the reasons for the development of private higher education. There is sufficient evidence to show that public spending on education is often inefficient and inequitable. It is inefficient when it is misallocated among competing users. It is inequitable when qualified potential students are unable to enrol in higher education because educational opportunities are lacking, or because of their inability to pay. Many claim that present systems of financing and managing education often fail to meet these challenges (World Bank 1994, 1995a; Burnett 1996).

Moreover, public funding is becoming more difficult to provide as enrolments expand.

To reconcile these views, we need to explore the related concepts of efficiency, equity and quality that characterise the market of higher education provision.

3.2.2 Efficiency aspects

Efficiency is a term used to describe the relationship between inputs and output, but because this relationship can be analysed from several different perspectives, a clear definition on the concept of efficiency is crucial. In economic terms, there are two relevant concepts of efficiency, viz., economic efficiency and technical efficiency. The former is concerned with achieving a desired (by consumers) level of output at minimum cost, whilst the latter is concerned with the maximum output that can be achieved from a particular input of resources with a given level of technology. Scitovsky (1952, p. 55) suggests that an economically efficient distribution of consumer goods is one that distributes a given quantity of goods in best conformity with consumers' preferences, whereas a technically efficient distribution is one that performs the physical task of distribution at a minimum cost of inputs. In most cases, studies of efficiency in the field of education are concerned with economic efficiency rather than technical efficiency (see Psacharopoulos and Woodhall 1985, p. 206).[2]

In addition to this, literature in the economics of education also suggests that investment decisions need to consider both internal and external efficiency

[2] Nonetheless, some studies of the effects of new technologies such as television or computed-assisted learning are primarily concerned with technical efficiency.

(Psacharopoulos and Woodhall 1985; World Bank 1994, 1995a). Internal efficiency is concerned with the relationship between inputs and output within the education system or within individual institutions, as indicated by the quantity and quality of inputs and outputs involved. This refers to the effective management of financing to improve the efficiency of investment decisions and, increase the overall academic and institutional performance. In case of measuring the efficiency of investment in education, the rate of return method is widely used in the literature. If the estimated rate is greater than the market interest rate, then the investment yields better economic returns than alternative investment opportunities and, is therefore, considered efficient.

External efficiency is concerned with how education influences economic performance, as indicated by the employment prospects and earnings of students. Subsequently, external efficiency includes equitable access to education, producing the right types of educational activities based on national needs, lower unemployment rates amongst graduates, better paid jobs and consequently higher earnings (Psacharopoulos and Woodhall 1985; World Bank 1986; Jimenez and Tan 1987b; Patrinos 1990). For instance, higher education is considered efficient when it supplies the right level of skilled or educated workers to the labour market. Thus, a shortage or a surplus of graduates relative to social demands should be considered a sign of inefficiency.

3.2.3 Equity aspects

Equity is about fairness and in this case refers to the way the costs and benefits of an educational investment are distributed among different groups in society. According to Psacharopoulos and Woodhall (1985, p. 244), the

question of equity in educational investment is whether the costs and benefits are equally distributed among different social, economic or ethnic groups, and also among different regions. The main concern is to have a fair and equal access to educational facilities.

There are at least two types of equity: horizontal equity and vertical equity (McMahon and Geske 1982; Psacharopoulos and Woodhall 1985; Chapman 1999). Horizontal equity is about fairness among equals, which means giving equal treatment for equals, while, vertical equity is about giving the same opportunities to the poor as to the rich. Both concepts are crucial since disparities in educational participation may exist in terms of sex, socio-economic background, urban and rural areas, and also race, language and religion. For example in Malaysia, disparities exist not only between males and females and between different geographical regions, but also between the majority of ethnic groups. Considering the heavy reliance of higher finance on family contributions, one would expect a significant correlation between the likelihood of attendance and the level of family income.

3.2.4 Quality aspects

Quality is one concept that is difficult to define and measure. A clear definition of this concept is likely to provide better results in measuring the level of quality. It has been suggested that the quality of education can be defined both, by the learning environment and by student outcomes (Ross and Mahlck 1990; World Bank 1995a). For the learning environment, indicators of quality may include the quantity and quality of inputs in use, campus scenery that is conducive for learning, and the availability of supporting services. Whilst an important indicator of the quality of education for student outcomes is the value added of schooling in the form of the

amount of knowledge and skills gained, and the increased probability of income-earning activity (Bridge et al 1979; Lockheed and Hanushek 1988). In the case of higher education, the value added also includes research productivity.

3.3 Alternative methods of financing higher education

The increasing demands of higher education on the public budget at time when government funds are limited can only be resolved through finding additional sources of financial support. In doing so, it is important to know the available sources of funding. In many countries, the direct costs of education are financed largely by the taxpayer, although in some cases tuition fees are considerable. The main reason why many governments subsidise higher education is to prevent under-investment (Psacharopoulos and Woodhall 1985, p. 137). This is essential, bearing in mind the substantial social benefits which accrue to the society through having more educated people (externalities and spill-overs).

Another reason concerns equity and the equality of opportunity. If higher education is being provided under free market conditions, only those who can pay afford to pay tuition fees can enrol. Since education is itself a determinant of lifetime income, if it is not subsidised, income inequalities are likely to be preserved due to under-investment among the poor families. There is also justification for the government subsidising higher education since it is capable of deriving higher tax revenues from educated people (Chapman 1999, p. 4). However, Hammer (1996, p. 4) argued that subsidies to higher education need to be treated more carefully than subsidies to primary education since they will tend to conflict with the social goal of progressive income redistribution. There is a large and growing body of

evidence, especially in developing countries, that the primary education subsidies benefit the poor while subsidies to higher education is highly skewed in favour of the relatively affluent. In this case, the goals of efficiency and equity are therefore in conflict.

We have shown earlier that governments in many parts of the world are facing constraints on their national budgets and financial resources. The growing financial constraints on educational investment combined with continued strong private demand for higher education have led many governments to consider the possibility of increasing the share of financial contributions from the students and their families. This can be done through various cost-recovery measures, which includes tuition fees and student loans.

3.3.1 Tuition fees

Despite controversial issues surrounding tuition fees, many countries are considering them as an important source of funding in the provision of higher education. So far, there is no standard measure to determine the appropriate level of tuition fees. In some countries all education in publicly owned institutions (including universities) is provided free, but in other countries, there is a certain amount of fee imposed. In practice, tuition fees may be paid by students themselves or by their parents and families, or, through grants and loans provided by either government or private agencies. In private sector education, tuition fees are compulsory to cover almost all costs of educational provisions in the absence of government's grants. However, although usually private higher education institutions do charge tuition fees but in some cases, a privately owned and administered college, especially if it belongs to a religious or charitable body, does not charge fees. According

to Woodhall (1995, p. 426), this type of institution normally receives substantial amounts of funds from private contributors and also from central or local government.

On one hand, some may argue that an increase in tuition fees might contribute to both efficiency and equity. According to this view, institutions that charge fees are likely to be more efficient because they are wholly dependent on student fees for their income, and will therefore be more responsive to the needs of students, or employers, as well as attempting to maximise efficiency (Birdsall 1982; Hammer 1996). On the other hand, the opposing view suggests that charging tuition fees for higher education would be inefficient because of the existence of externalities, and inequitable because it would limit access only to the rich (Psacharopoulos and Woodhall 1985; Chapman 1999). If the government does not charge for higher education, the minorities who receive it are being subsidised by those taxpayers that do not receive higher education. Moreover, it is found that in many cases, students who attend higher education are mostly from affluent families.

Woodhall (1995a, p. 426) claimed that to this extent, there has been some controversy about whether government funds should be given to public institutions to enable them to abolish or reduce fees, or whether governments should simply provide financial assistance for students to enable them to pay fees. In most countries, the majority of public institutions do charge fees, but at a level that is subsidised by the state. To reconcile this, Thobani (1983 quoted in Psacharopoulos and Woodhall 1985, p. 149), suggests that whenever there is excess demand for higher education, the price should be raised and additional revenues used to expand this service, up to the point where further investment is no longer socially profitable. However,

Psacharopoulos and Woodhall (1985, p. 149) argued that this method could only lead to a more efficient use of resources if the social rate of return can be accurately measured.

The proponents of private provision for higher education argue that tuition should be charged at rates that will eventually lead to an equalisation of the private and social rates of return to education. Many agree that that those who can afford to pay should pay the full cost of their education, while those who cannot should be subsidised (Andrian 1983; Psacharopoulos et al 1986). The latter may include grants in the form of scholarships or loans to certain disadvantaged groups (Woodhall 1989). Some may have also justified tuition fees for reason that relates to the labour market failure. It is observed that the recent failure of the labour market to absorb all university graduates has led some educational planners in most developed and developing countries to formulate strategies to limit access to higher education beyond levels necessary for economic development (Andrian 1983; Glytsos 1989). Regarding this, it is argued that charging tuition fees at the tertiary level will lower the returns (especially private returns) to a more realistic level, hence reducing the demand for higher education.

3.3.2 Grants and Loans

It is argued that charging tuition fees without an appropriate funding mechanism would create barriers especially to poor students gaining access to higher education. Therefore, financial assistance in terms of grants and loans are being introduced in order to maintain accessibility in the face of increasing costs borne by students and their families. Despite this, there is disagreement as to whether financial aid for students should be given in the form of grants or loans. Woodhall (1995b, p. 422) argues that those who

advocate student loans believed that the government should subsidise higher education on grounds of national welfare, since education brings both monetary and non-monetary benefits to the society. It is argued that a loan system will impose a lesser burden on public funds than a system of grants or scholarships. It will also be more equitable than grants, since those who will themselves benefit from higher education, in form of higher lifetime earnings, will contribute to the costs of their education through repaying their loans.

In contrast, the opponents of loans argue that student loans will be less effective than grants in encouraging students to continue higher education because of the fear of debt especially among poor students. Since the students may be so concerned about the size of their debts, the risk of wastage and dropout might increase. Moreover, it has also been argued that the costs of administering a loan scheme and the problems of students who default on repayments are likely to reduce the potential savings from introducing such scheme (Woodhall 1995b, p. 422-423).

Disputes on whether to provide loans or grants as a means of financial assistance to students have involved both developed and developing countries. However, in times of economic difficulty and severe financial constraints that limit public expenditure, there is very little support for grants, since grants do not reduce public spending. Thus, the debate about loans versus grants is less significant. Moreover, some have argued that loans are more equitable than grants because they ensure that those who directly benefit from higher education will ultimately pay when they repay their loans (Woodhall 1995b, p. 423).

A series of comprehensive reports, compiled by Woodhall (see 1983, 1990, 1991a, 1991b, 1991c and 1992), which review and evaluate student loans programmes introduced within both the developed and developing countries provides a useful account of the scheme. According to Woodhall (1995b, p. 421-422), in most countries, student loan programmes provide long-term low-interest loans (sometimes interest-free loan) for students to enable them to pay tuition fees, and to some extent, living expenses. There are, however, considerable differences in terms of repayment and in the rate of interest charged on student loans. But many governments generally, subsidise student loans so that the student does not usually have to pay interest. If there is interest, the rate charged on the money borrowed is usually below market rates of interest. However, although the main purpose of introducing student loans is to reduce financial pressure on government's budget, in real terms, the government continues to bear the burden of the costs due to the considerable amount of subsidy in the loans provision (Albrecht and Ziderman 1991 and 1992, p 360). In addition, lack of financial and administrative infrastructure required in ensuring the effective management and loan recovery, especially amongst developing countries, hinder the positive contributions of a loan scheme (Woodhall 1992, p. 353).

Despite the problems, it is observed that many countries are seriously considering student loans as a means of financing higher education. Generally there are two types of student loans that applies, viz., means-tested loans and income-contingent loans. The means-tested loan means that, the eligibility of the student for loans depends on the level of the student's family income. In this case, loans are specifically intended for needy students who would otherwise be unable to afford to pay fees or living expenses. Whereas, income-contingent loans refer to loans that need to be paid by students as a fixed proportion of their graduate income each year

until their debt is repaid. Occasionally, the latter is confused with a graduate tax (which might be another source of funding for higher education) because both use the tax system as method of collection. The main difference is that, the former involves repayment of a debt, and payment comes to an end when the debt is fully acquitted, while a graduate tax involves a continuous contribution from a graduate (Woodhall 1995b, p. 422).

3.4 Methods of evaluating higher educational investment

Generally, there are two perspectives of the economic evaluation of educational investment (Psacharopoulos and Woodhall 1985; World Bank 1994, 1995a). First, the external evaluation, which refers to evaluating educational investment in terms of the payoff to individuals and society in the form of monetary and non-monetary benefits. Second, the internal evaluation, which refers to evaluating the payoff to alternative investments in improving educational outcomes in the form of maximum utilisation of resources. There are several methods available to evaluate both perspectives of evaluation, which include cost-effectiveness analysis, cost-benefit analysis, and the manpower analysis. The employment of these approaches either individually or in combination, may provide some indication of the profitability of the investment decisions. The main aim is to provide appropriate guidelines towards achieving efficiency, equity and quality in the provision educational services. We shall briefly review each of these approaches in turn.

3.4.1 Cost-effectiveness analysis (CEA)

Cost-effectiveness analysis (CEA) refers to the evaluation of alternatives according to both their costs and their effects of a particular decision (Levin

1983; Psacharopoulos and Woodhall 1985; Rossi and Freeman 1993). The main purpose is to consider the most effective way to increase output or to change the combination of inputs so as to maximise output. This approach compares the output achieved with various combinations of inputs, which allow us to identify the lowest cost of achieving a desired level of output, or the highest level of output that can be achieved for a given cost (input). Thus, by using this approach we could establish the level of economic and technical efficiency of both the public and private sector provision of higher education.

The procedure of CEA can be applied to evaluate different alternatives of social investment programmes, which includes higher education investment alternatives. In this, it is crucial to define and measure the concept of cost. All investment projects require resources, which could otherwise be used for other valued alternatives. By devoting them to a particular activity we are sacrificing the gains that could be obtained from using them for some other purpose. In this study, we used CEA to analyse the supply-side data. In this, we defined cost as the amount of resources devoted to higher education by both the public and the private sector. These resources may include personnel, buildings, facilities and equipment, and are measured in terms of the amount of expenditure devoted to these resources. For example for personnel, which include teaching and non-teaching staff, we used expenditure on salaries to measure their costs. For buildings, the appropriate measurement would be the amount of rent paid (if it is rented) or the depreciation value (if not rented). For teaching facilities and equipment, we used the total expenditure on these resources as the measurement. In addition to this, there are also data on managerial expenses that should be included in the total costs.

Under CEA, both the costs and effects of alternatives are taken into account in evaluating programmes with similar goals. To perform this analysis, it must be assured that, first, only programmes with similar or identical goals can be compared, and second, a common measure of cost and effectiveness should be well defined so that it can be used to assess them. However, it should be noted that in this procedure, the most effective alternative is not necessarily the most cost-effective. Levin (1983, p. 20-21) argued that, the most effective alternative can actually cost many times as much as the most cost-effective one.

One major disadvantage of this method is that one can only compare the CEA ratios among alternatives that have similar objectives. In addition, this method does not allow one to ascertain whether a programme is feasible in terms of whether its benefits exceed its cost. For instance, in some cases, it is possible that investment in a programme that has lowest cost in achieving its objective turns out to be not feasible because of relatively low returns. In this case, society is likely to benefit more if the resources were used in some other way. This can only be ascertained through a cost-benefit analysis.

3.4.2 Cost-benefit analysis (CBA)

Cost-benefit analysis (CBA) is widely used by economists and policy makers in the search for efficiency in government spending. This approach compares the costs and outcomes of alternative investments when the outcomes can be estimated in monetary terms. CBA enables a direct comparison of the costs and benefits of an alternative or comparison of their magnitudes with those of other types of social investment in education or in other sectors. Through this method, it is possible not only to determine which educational investment has the largest benefits relative to costs, but, it is also possible to

compare these results with other investment alternatives, such as health, transportation and other types of physical capital investments, like plant and equipment. Hence, CBA allows policy makers to compare the desirability of alternative educational investments, as well as in determining the balance between investing in education and other sectors.

The most popular method used in CBA is the internal rate of return (IRR), where the decision to invest is made if the rate of return of an investment project, estimated from the present values of benefits and costs, is higher or at least equal to that of other alternatives.[3] The rate of return to investment in education is a measure of the future net economic payoff to an individual and, or, to society when there is an increase amount of education received. Thus, this approach provides insights on individual educational investment behaviour, government subsidies to different groups of individuals, relationship between public sector macroeconomic policy and public education policy, and, to some extent, information on the changing demand for and supply of skills. Although the use of the rate of return method largely depends on the availability of relevant data, this method is still important to compare the costs and future income of alternative programmes or projects. If the estimates were accurate, they could be useful in formulating appropriate social polices.

One way of estimating IRR is through the traditional algebraic method (Woodhall 1970; Psacharopoulos and Woodhall 1985; Johnes 1993b;

[3] Other methods are cost-benefit ratios (CBR) and the net present value (NPV) which share same discounting principle of CBA. In CBR, both benefits and costs are discounted to represent present values, and decision to invest is made if benefits exceed costs, and, benefit-cost ratio is greater than of all alternative investments. NPV involves calculating the difference between the discounted value of benefits and costs (i.e. present value). In this, decision to invest is made if NPV is positive, or NPV for investment in education exceed the NPV of other alternatives.

Ashworth 1997). In this method, the rate of return is estimated by solving the value of r from the following equation:

$$\sum_{t=c}^{n}(Y_x - Y_{x-1})_t(1+r)^{-t} = \sum_{t=0}^{c-1}C_t(1+r)^{-t}$$

Where,

Y_x = *income of an individual who has attained the xth level of education*

C_t = *the cost of education*

n = *years of employment*

c = *years of education*

t = *the year referred to by each variable*

In the event of sufficient data, it is possible to estimate both the private and the social rate of return to education through this algebraic method. The private rate of return refers to the annual value of the discounted lifetime returns accruing to an individual attributable to receiving an extra amount of education. While the social rate of return, measures the relationship between all the social costs of education that must be borne by society as a whole, and the benefits that are expected to accrue to society. To estimate IRR appropriately, it is crucial to identify and measure all the costs and the benefits involved across all period over which they materialised. Thus, it has been recognised that there are considerable difficulties of estimating the returns because in many cases it is always difficult to gather sufficient and suitable data.

The costs of education from an individual's perspectives may be in terms of direct and indirect costs. Direct private cost includes all expenditures made either by parents or students themselves on tuition fees and other non-fee expenditure such as books and learning materials, living and travelling expenses and other expenses related to education. Indirect private costs refer to the economic value of the forgone opportunities of schooling, normally measured by the amount of income forgone. Whereas, the social cost of additional education is equal to the private costs plus any costs borne collectively through taxes or voluntary donations used for public spending on education.

In terms of the benefits, educational investment from both, individual and social points of view yield two types of benefits, viz., monetary benefits and the non-monetary benefits. Monetary benefits usually refer to the additional income received by educated workers as compared to those who are less educated. On other hand, non-monetary benefits normally refer to the immediate benefits of direct consumption of education that are more difficult to quantify. This may include the amount and the types of knowledge gained, development of personal attributes (cognitive and affective), and higher status and greater enjoyment of cultural activities (McMahon 1988). From society's point of view, the benefits of additional education are the additional productivity of those who have had more schooling, the collective consumption value of education, and, the externalities of education (such as more civilised collective behaviour, a wiser choice of political leadership, and a more productive environment (spill-overs).

3.4.3 Manpower Requirement Analysis (MRA)

Education development, especially in terms of its planning, also sometimes is based on future manpower requirements. Since the method is not been employed in our analysis, the discussions on this topic shall be fairly brief. The basic principle underlying this approach is that the extent and structure of educational expansion should be explicitly geared to the prospective demand for labour across the economy. It is often argued that shortages and surpluses of differently qualified groups occur because of the lack of proper manpower planning. Although through this approach it is possible to determine the level educational investment required by the economy, it does not, however, indicate whether the level of educational provision is efficient, equitable and of good quality, which is the main concern of this study. Moreover, this approach has been subjected to considerable criticism in terms of its method and the assumptions used in the forecasting procedure.

Nevertheless, although it is impossible to forecast the future demand for skilled manpower of different categories accurately, this approach at least reflects the macro-economic condition affecting future job opportunities for workers with different levels or types of education. In addition, it also provides the current patterns of labour utilisation in terms of pay levels and proportions of employed and unemployed workers of every sector. The general concept that underlies this method might be useful in providing a clear understanding of the relationship between educational planning and development, and economic growth.

3.5 Summary

This Chapter has considered the factors that help to make demand effective and the allocation of resources to higher education fair and efficient. Higher education is a mixed-good. From the point of view of the Government and the economy as a whole, expenditure on higher education can be seen mainly as an investment that can be appraised in the same way as other investment. From the point of view of the individual, higher education is both an investment and a consumption good but, especially for the relatively poor, it is mainly an investment good with incidental consumption aspects. The view of education is central to deciding on an appropriate method of finance by the Government. In the case of Malaysia, although higher education is crucial to support economic growth, constraints on government resources necessitate to finding alternative resources to expand further the provision of higher education services. We discuss this aspect in the following chapter.

CHAPTER 4

HIGHER EDUCATION AND ECONOMIC DEVELOPMENT IN MALAYSIA

4.1 Introduction

This chapter provides an overview of the higher education system in Malaysia and discusses the impact it has on the national economic development. It begins with an overall review of the socio-economic background of the country. The main focus is on the Malaysian educational system, looking at its enrolment and expenditure, in particular at the higher level. Discussion then continues with some international comparisons, which attempt to evaluate Malaysia's educational efforts and attainment within a broader international context. Next, this chapter proceeds to look at the two diverse systems of public and private provision of higher education in more detail. Close attention will be given to the costs of provision and financing issues that are likely to have serious consequences on the efficiency, equity and the quality of the higher education provision.

4.2 The background information of Malaysia

4.2.1 An economic outlook

Malaysia has experienced several years of rapid economic growth and has been recognised as a fast growing economy along with other successful East Asian economies. This growth has been complemented by low rates of inflation, rising per capita income and a reduction in the

incidence of poverty. In 1997, per capita income of the population reached RM12051 (US$4284). Job opportunities grew by 3.4 per cent, resulting in a total of 265,000 new jobs being created. But job creation exceeds the growth in labour supply (at 3.2 per cent) by 0.2 per cent. The unemployment rate was around 2.6 per cent in 1996 and 1997. The average wage of the manufacturing sector rose by 8.6 per cent during the first seven month of 1996 (Malaysia 1999b).

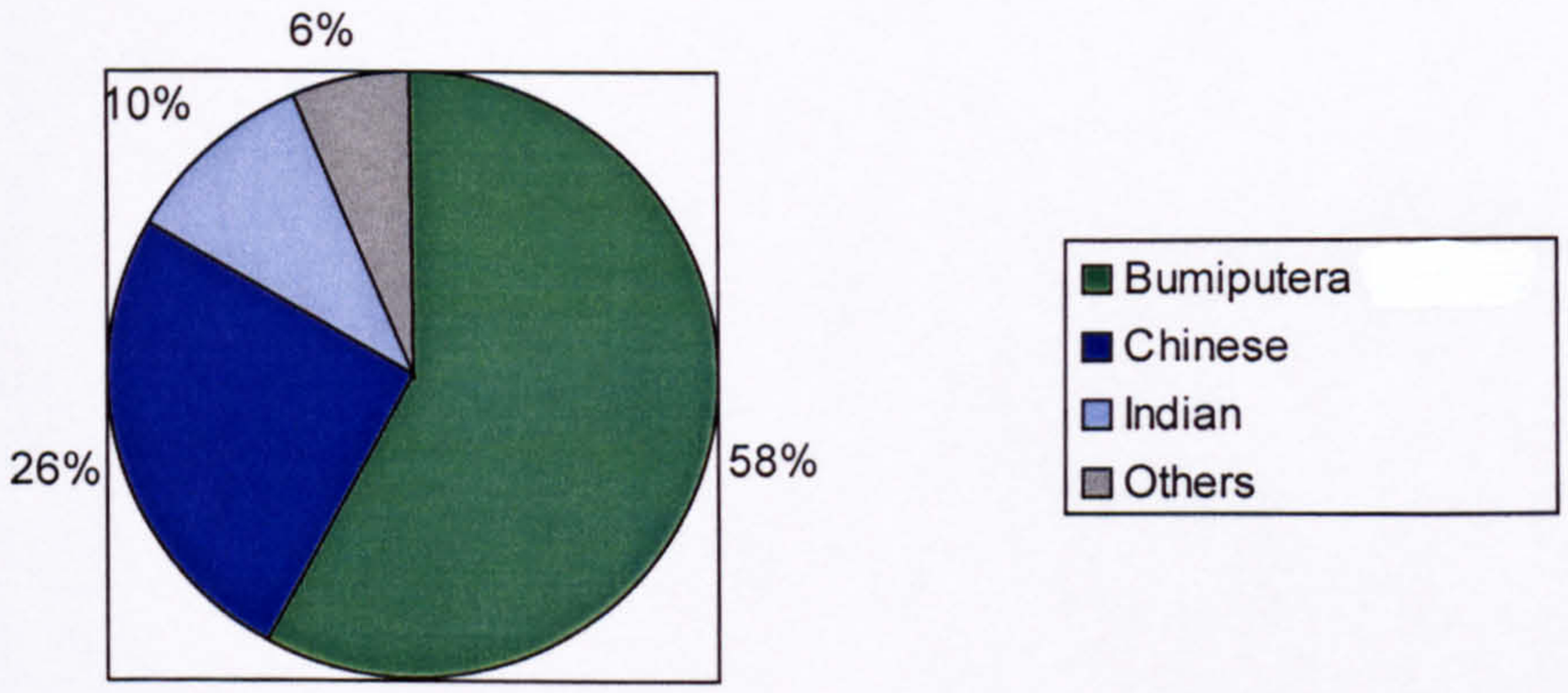
Prior to the Asian economic crisis, which in 1998 devastated several successful economies in the region, Malaysia achieved a real Gross Domestic Product (GDP) growth of 8.5 per cent between 1991-1997. During same period, the per capita income increased two-fold, in terms of US dollars, by 1997 and the incidence of poverty fell from 16.5 to 6.1 per cent (Malaysia 1999a). The high growth in the economy led to a tremendous structural transformation that resulted in the gradual shift from a reliance on the production and exports of primary commodities to a more modern industrial economy.

Clearly, economic indicators show that Malaysia is moving towards becoming an industrialising economy. The contributions of this economic performance and the transformation process towards greater industrialisation will depend not only on technological development and capital resources but equally important on the quality of available human resources. If Malaysia were to stay competitive in the world economy, the quality and number of its educated people is vital. Consequently, the adequacy and effectiveness of its education and training system are fundamental towards meeting the need for higher level skilled work force. The inability to achieve this quickly and effectively would be a major obstacle for Malaysia's future development.

4.2.2 The population

Malaysia comprises the Malay Peninsula and, Sabah and Sarawak on the Island of Kalimantan (Borneo). On independence, Malaysia inherited from the British a multi-racial country broadly categorised by the ruling government into two main categories, namely the bumiputera[1] groups and the non-bumiputera groups. The Bumiputera groups are those with cultural affinities indigenous to the region and to one another, comprising the aborigines, the Malays and Malay-related ethnic groups. Whilst the non-Bumiputera groups are those whose cultural affinities lie outside, comprising the Chinese, the Indians and other smaller communities made up of Arabs, Sinhalese, Eurasians and Europeans. Figure 4.2.2a shows the population size of the major ethnic groups living in Malaysia in 1997.

Figure 4.2.2a Malaysian population by ethnic groups, 1997



Source: Malaysia (1999b)

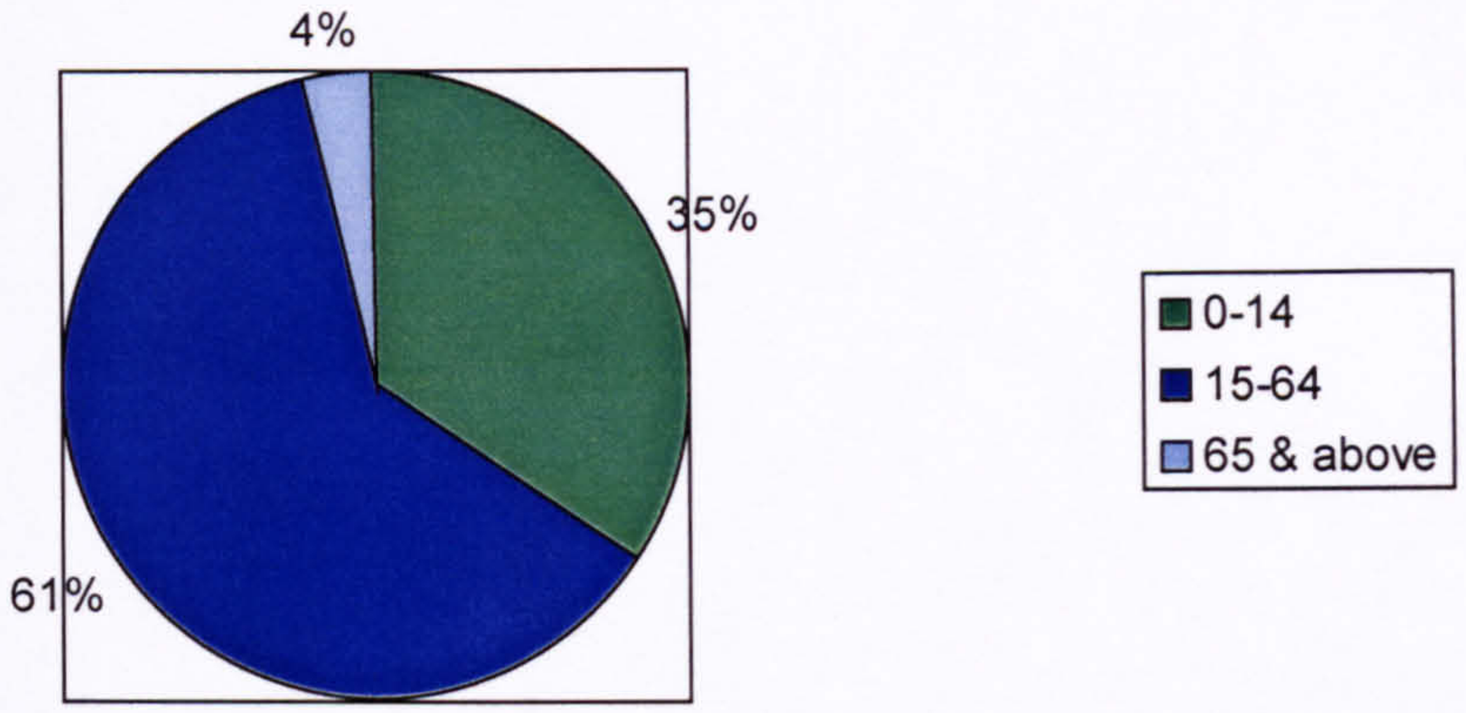
[1] *Indigenous*

Within the Bumiputera groups, the Malays form the predominant ethnic group in the Malay Peninsular, a substantial minority in Sarawak and a smaller group in Sabah. Generally, a large majority of them live in the rural areas and have been left out of the mainstream of development. On the other hand, the Chinese and the Indians, dominating the non-Bumiputera groups, have better access to development since the majority of them live in the urban areas. Historically, the British brought them into the country in large numbers in the nineteenth century as labourers in the tin mining industries (Chinese) and rubber plantation (Indians).

The nature of divisive participation in economic activities has consequently resulted in an economic imbalance between the Bumiputera and the non-Bumiputera community that brought about a major racial riot on 13 May 1969. This social resentment caused the Malaysian government to play a leading role in the development of the national economy, to try to redress what it sees as inequalities in the Malaysian social order. This has been emphasised in many of the government's development plans.

Figure 4.2.2b shows the age structure of the population in 1997. The median age of the population during this period is at 22 years reflecting a youthful population. It is anticipated that by the end of the decade, the working-age group 15-64 is expected to increase to 63 per cent of the total population. This indicates the continued availability of a relatively large size of the economically driven population or potential labour force. The median age of the population during that period is expected to be at some 24 years. It is estimated that 79 per cent of the population are living in Peninsular Malaysia, 12 per cent in Sabah and 9 per cent in Sarawak.

Figure 4.2.2b Malaysian population by age groups, 1997



Source: Malaysia (1999b)

4.2.3 The Development Plans

Since independence, the general path of economic progress has been mapped out in a series of five-year development plans[2] and, since 1971, guided by the philosophy of the New Economic Policy (1971-1990)[3]. The New Economic Policy (NEP) was introduced in response to the racial riots in 1969, to promote growth with equity with the objective of fostering national unity among various races. It was the aim of this policy to reduce and eventually to eradicate poverty by raising income levels through increasing employment opportunities, irrespective of race. It was also aimed at accelerating the process of restructuring Malaysian society to

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[2] 1st Malaysia Plan (1966-1970); 2nd Malaysia Plan (1971-1975); 3rd Malaysia Plan (1976-1980); 4th Malaysia Plan (1981-1985); 5th Malaysia Plan (1986-1990); 6th Malaysia Plan (1991-1995); 7th Malaysia Plan (1996-2000)

correct economic imbalance, so as to reduce and eventually to eliminate the identification of race with economic function.

Following the end of NEP, the government formulated its Second Outline Perspective Plan[4] (OPP2) known as the National Development Policy (NDP), covering the period of 1991 until the year 2000. Under this policy, the NDP will maintain the basic strategies of the NEP, despite giving special emphasis to the following aspect (Malaysia 1991a):

(a) to shift the focus of the anti-poverty strategy towards eradication of hard-core poverty while at the same time reducing relative poverty;

(b) to focus on employment and the rapid development of an Bumiputera Commercial and Industrial Community (BCIC) to increase Bumiputera participation in the modern sectors of economy;

(c) to rely more on the private sector being involved in the restructuring objective by creating greater opportunities for its growth; and

(d) to focus on human resource development as a fundamental requirement for achieving the objectives of growth and distribution.

In line with OPP1 and OPP2, the government vision is to transform Malaysia into a fully industrialised nation by the year 2020. This futuristic vision[5] acts as a platform for a radical transformation of the Malaysian economy in the 1990s and the twenty-first century that requires a

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[4] Consist of the 6th Malaysia Plan (1991-1995) and the 7th Malaysia Plan (1996-2000)
[5] Generally known as "Vision 2020".

strategic shift in the overall development policy. According to the "Vision 2020", Malaysia aspires not only to achieve economic success but also to be a nation that is fully developed along all dimensions: economically, politically, socially, spiritually, psychologically and culturally.

In order to realise these policies, it is important to develop the available human resources within the country. It has been emphasised that human resource development through education and training has become a dominant engine for future economic growth and national development. Previously in this country, education was perceived as a key instrument to overcome the deep-rooted socio-economic divisions. For instance, since the occurrence of the 1969 social unrest, the educational strategy has enabled many members from the disadvantaged groups to move into better jobs that has led them towards upwards social mobility, hence, bringing about greater national unity.

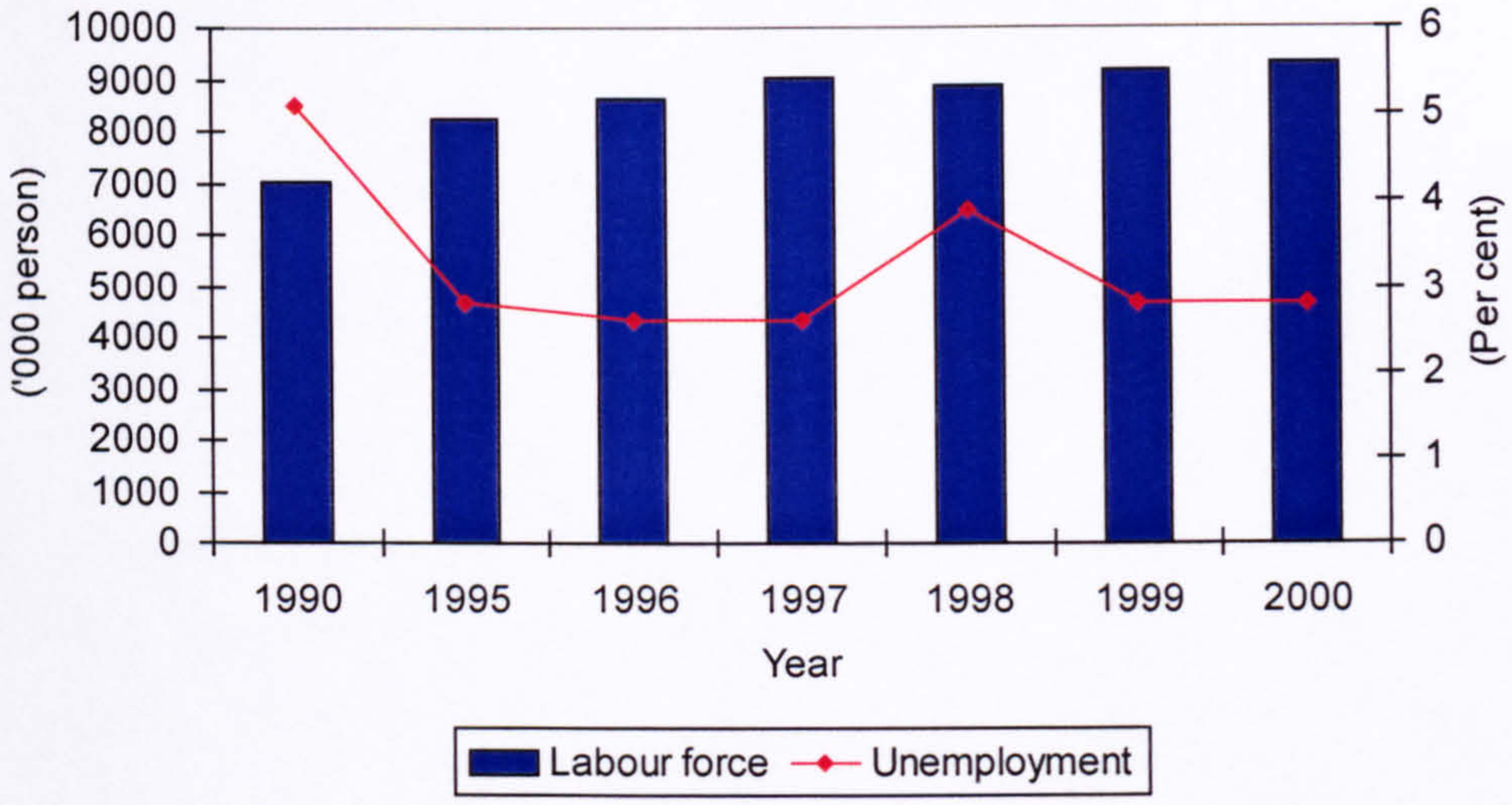
4.3 Economic growth and the labour market

4.3.1 Labour force

As mentioned, the population trend shows that the working-age group is increasing. This would be likely to have a significant impact on the supply of the labour. Figure 4.3.1 shows the labour force structure for the ten years period of 1990 and 2000. In the Sixth Malaysia Plan (1990-1995), the supply of labour increased gradually from 65.9 per cent (7.043 million) in 1990 to 66.9 per cent (8.140 million) in 1995. During this period of the Plan, the labour force increased at an average of 2.9 per cent annually. However, the figures include over half a million of foreign workers who had entered the labour market. In 1995, the labour participation rate was

64.5 per cent, with the rates for male and female labour force 86.8 per cent and 44.3 per cent, respectively.

Figure 4.3.1 Labour force and unemployment rate, 1900-2000



Source: Malaysia (1996), Malaysia (1999b)

During the Seventh Malaysia Plan (1996-2000), the labour force is projected to grow at a rate of 2.8 per cent per annum to reach 9.3 million by the year 2000. The participation rate of the labour force is expected to increase to 67.1 per cent during this period. The female participation rate will also be raised to 47.5 per cent. The trends in the labour supply shows that the labour force will continue to have a young profile with 60 per cent of it aged between 15-34 years.

Figure 4.3.1 also suggests that the unemployment rate is declining from 5.1 per cent 1990 to 2.8 per cent in 1995. The unemployment rate, an indicator of labour utilisation stands unchanged at 2.8 per cent in 1996,

reflecting a near full employment situation, but increased to 3.9 per cent in 1988 because of the economic crisis. Nonetheless, the rate is expected to stabilise at about 2.8 per cent by the year 2000. Projection made until the year 2000 shows that employment would grow at 2.8 per cent creating more than 1.2 million new jobs. The major thrust of the Seventh Malaysia Plan is that to shift the economy towards higher capital intensity and to increase efficiency of the use of human resources. This strategic shift would also result in less dependence on foreign labour (Malaysia 1996, p 120-133).

In 1995, about 55 per cent of the labour force had undergone secondary education compared with 52 per cent in 1990. However only 6.3 per cent of the population had pursued college or university education. For those in the 19-24 age group, the number enrolled at the first-degree level in local public higher institutions was at about 3.5 per cent, a rate that was very much lower than that in the developed countries. Recent statistical data show that the share of the highly educated remains relatively low, indicating the need to intensify effort to increase the highly educated manpower. Under the Seventh Malaysia Plan (1995-2000), it is aimed to increase the enrolment rate in higher education for this age group to 5.6 per cent at the end of the planned period.

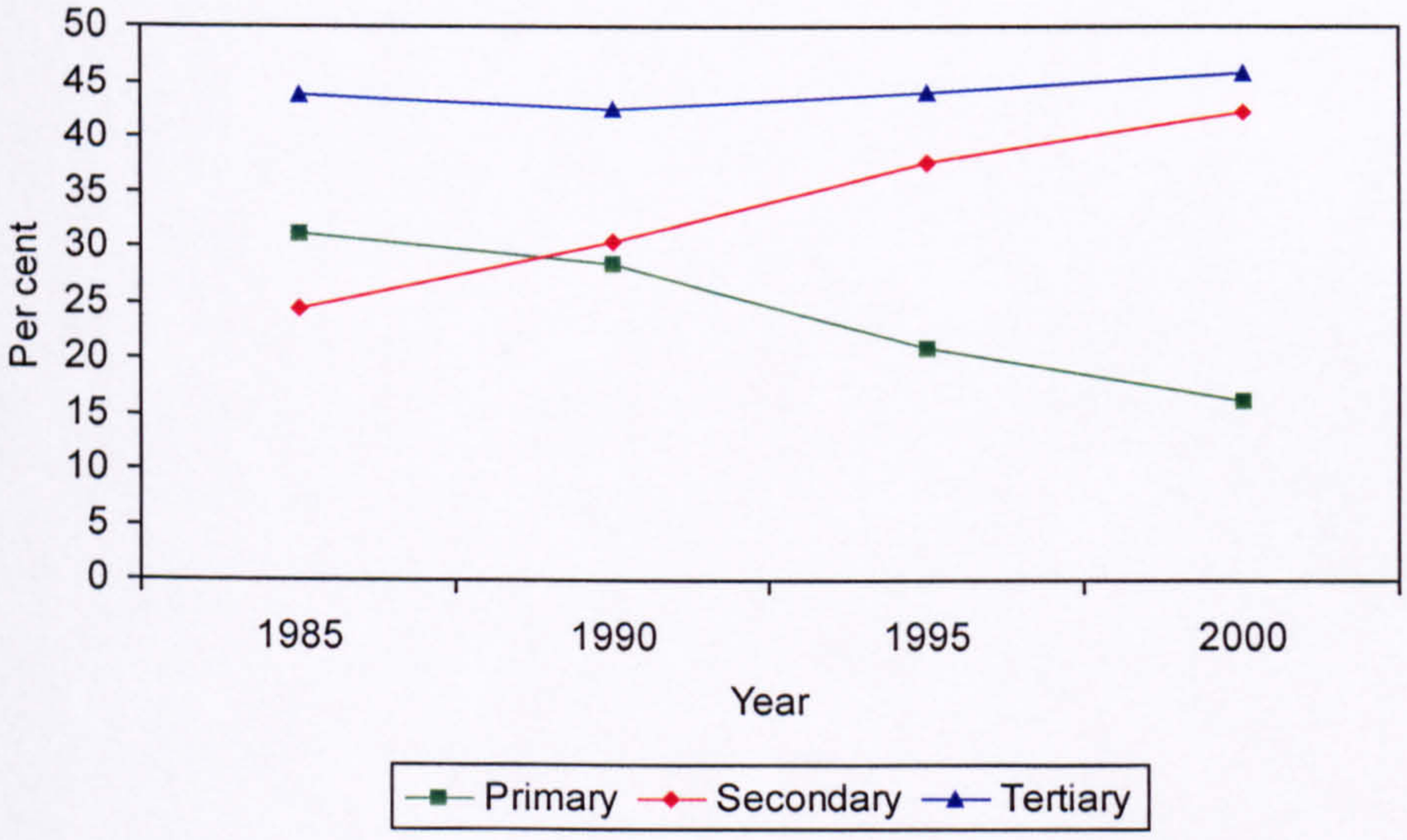
4.3.2 Economic transformation and employment structure

In the three decades before 1990, Malaysia's economic structure gradually changed from a reliance on agriculture and mining to a more industrialised base, where the contributions of manufacturing and services sector are becoming more important. It is forecast that the contributions of agriculture and mining, which used to be the backbone of Malaysian economy, will be drastically reduced by the year 2000. Thus,

the manufacturing and services sectors are the two sectors most likely to take the lead in Malaysia's industrialisation drive in the next two and half decades.

Figure 4.3.2a and 4.3.2b show the structural transformation of Malaysia's economy in terms of the contributions of industries to GDP and exports. The contributions of both the manufacturing and service sectors of the economy expanded from 26.9 per cent to 33.1 per cent, and from 42.4 per cent to 44.1 per cent of the GDP respectively between the years of 1990-1995. It is expected to increase to 37.5 per cent and 45.8 per cent respectively by the year 2000.

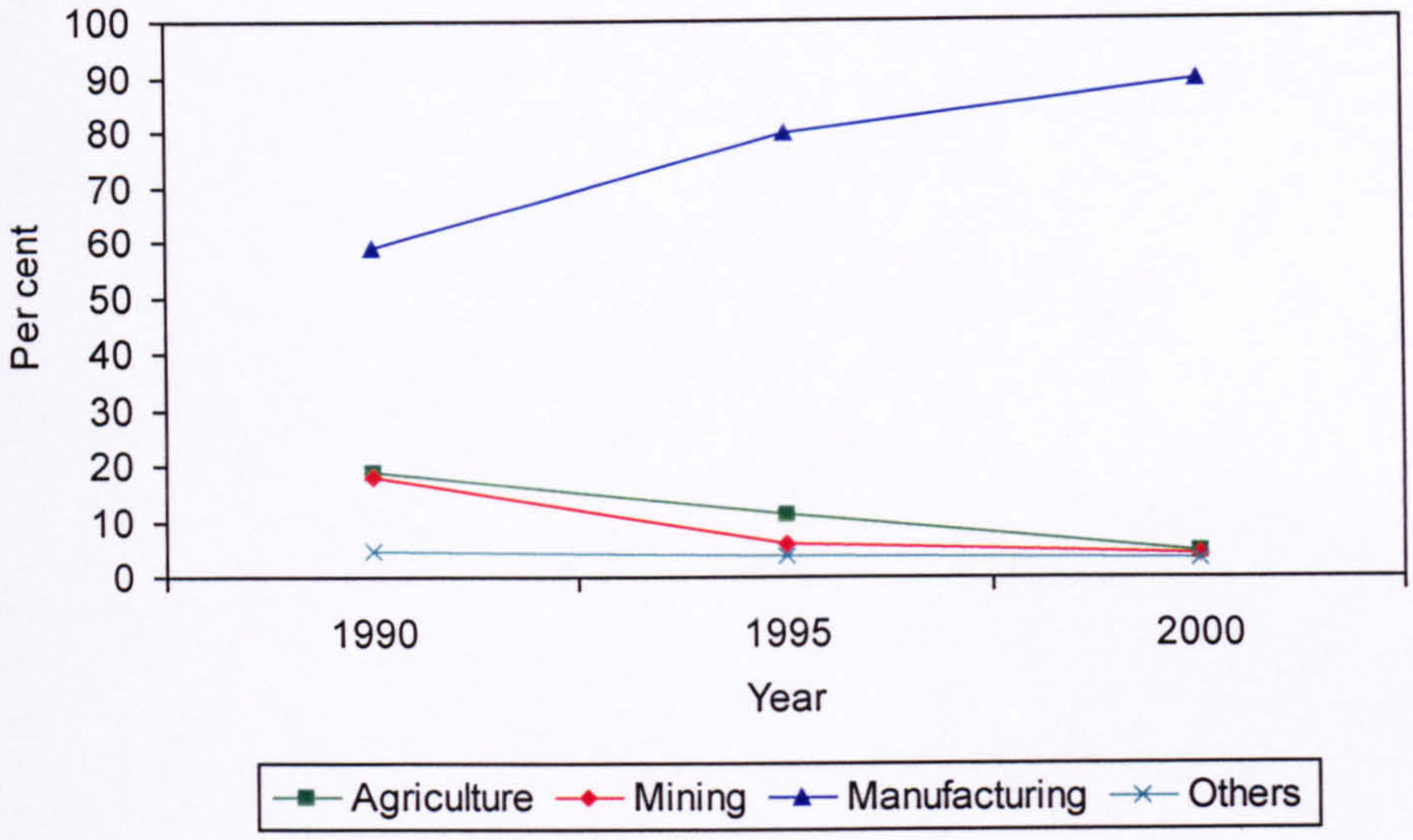
Figure 4.3.2a Share of GDP by industry (percentage of contributions)



Source: Malaysia (1996)[6]

[6] Detailed statistics for this figure is in Appendix Chapter 4 (Table 1)

Figure 4.3.2b Share of exports by industry
(percentage of contributions)



Source: Malaysia (1996)[7]

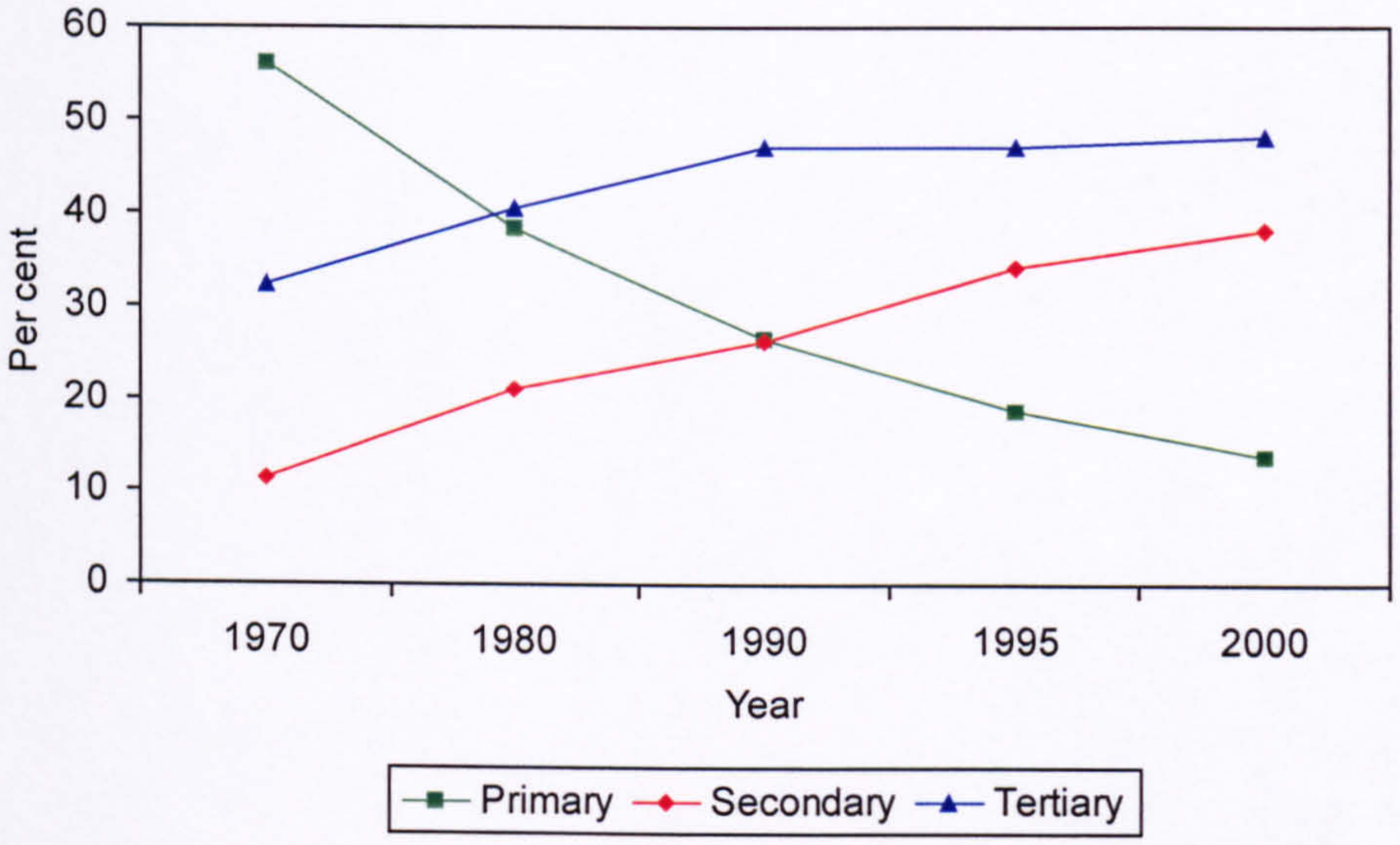
Similarly, manufacturing exports have increased from 58.8 per cent (1990) to 79.6 per cent (1995) and expected to further increase by the year 2000 to 88.7 per cent. On the other hand, the contribution of agriculture to the GDP and exports is projected to decline to 10.5 per cent and 4.4 per cent respectively within the same period. Such a transformation in the economic structure is likely to have significant influence on the future human resource requirements, and hence demands for education and training.

The structural transformation of the country's economy points to the need to re-deploy the labour force to the emerging sectors of the economy. Figure 4.3.2c shows the trend of redeployment of labour from the primary sector to the secondary and tertiary sectors. Table 3 (in Appendix

[7] Detailed statistics for this figure is in Appendix Chapter 4 (Table 2)

Chapter 4) shows that total employment would increase from 6.7 million in 1990 to 9.0 million in 2000. From this, 4.3 million (or 48 per cent) will be in the tertiary sector (services) and 3.4 million (or 38 per cent) in the secondary sector (manufacturing and construction), while the primary sector comprises only 1.2 million (or 13 per cent).

Figure 4.3.2c Employment by economic sector



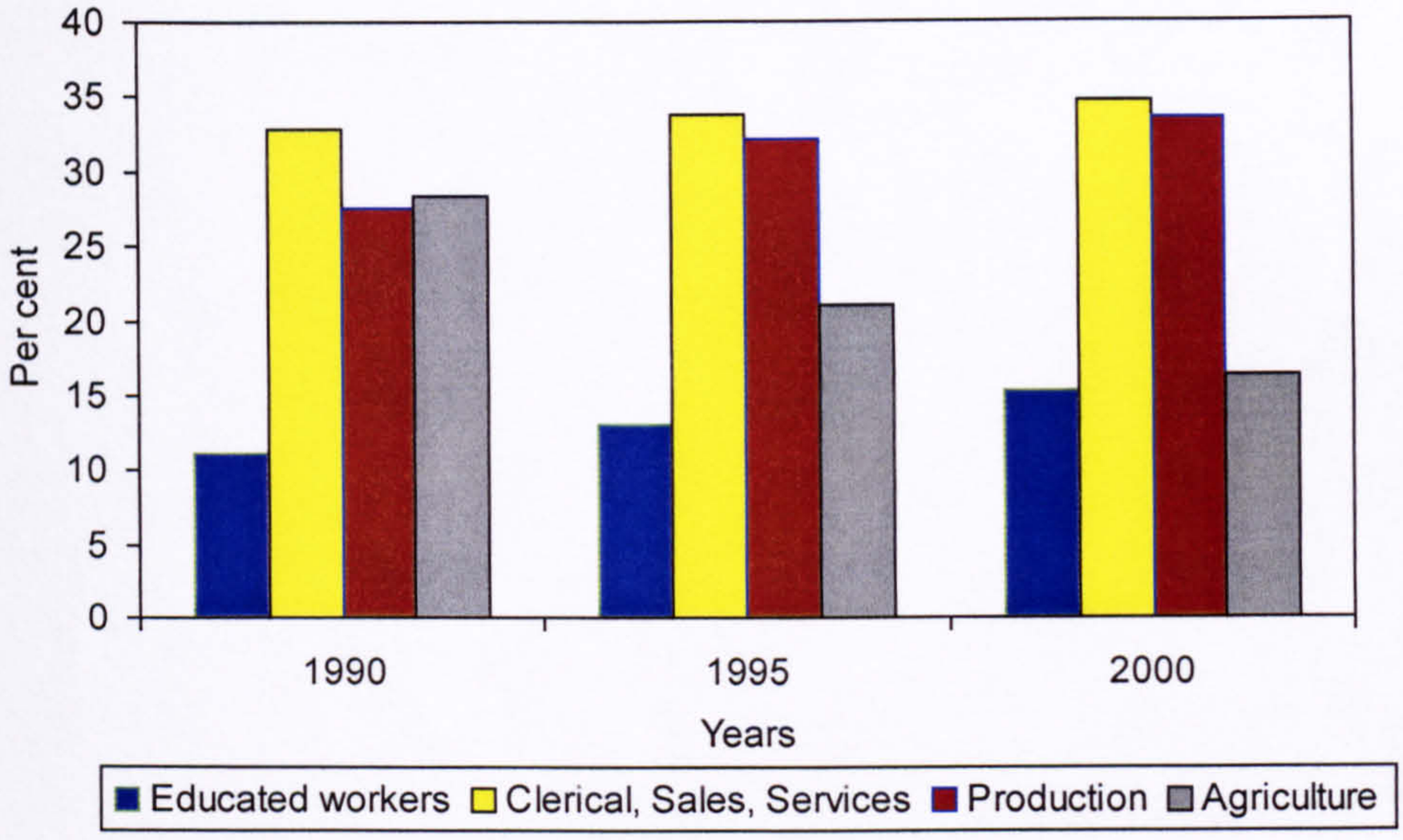
Source: Malaysia (1991a), Malaysia (1991b), Malaysia (1996)[8]

Greater emphasis towards modern economic and automated processes has led to a growth in the use of educated workers (i.e. professional, technical, administrative, managerial and production categories - see Figure 4.3.2d below). It is obvious that these types of occupation are highly skilled and require a minimum qualification of at least a post-secondary or tertiary education. It was estimated that by 2000, the total skilled labour force would increase to 1.1 million (or 12.1 per cent) in

[8] Detailed statistics for this figure is in Appendix Chapter 4 (Table 3)

technical areas, 290 thousands (or 3.2 per cent) in administrative and managerial area (see Table 4 in Appendix Chapter 4).

Figure 4.3.2d Employment by occupation, 1990-2000



Source: Malaysia (1996)[9]

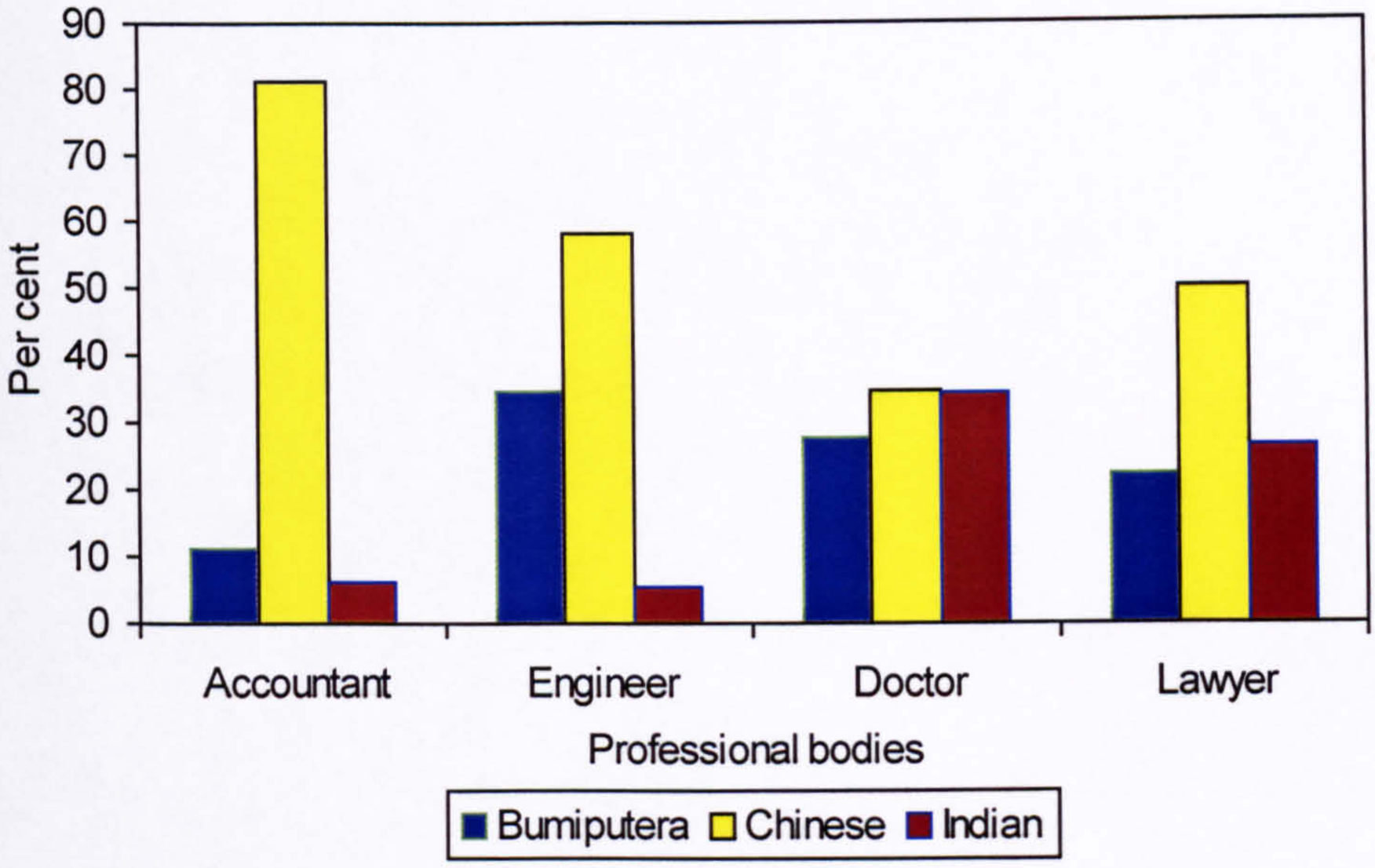
Rapid economic growth has resulted in an overall increase in the demand for labour and a further tightening of the labour market. The unemployment rate declined to 2.6 per cent in 1997. Shortages of both skilled and unskilled workers became prevalent as the numbers of jobs created outpaced the number of new entrants into the labour market. At present, the government has allowed the use of foreign labour as a temporary policy in dealing with labour shortages. At the same time, several measures have been undertaken to upgrade skills as well as to make better use of labour through greater automation and the development of more capital- and technology-intensive industries.

[9] Detailed statistics for this figure is in Appendix Chapter 4 (Table 4).

In relation to providing an adequate skilled labour force, the concern for the accelerated economic growth entails plans to increase the ratio of scientists to the general population. Since research and development is considered a catalyst for accelerated economic growth, it is felt necessary to increase the ratio of scientists from 400 per million population in 1990, to a ratio equivalent to those in the developed countries ranging from 3,500 per million to 6,500 per million. By the year 2000, it is hoped that a target of 1,000 per million could be achieved. Once an adequate pool of scientists is created, Malaysia will be able to shift its role from being a consumer of technology to a contributor and a creator of technology (Malaysia 1996 p. 47).

In addition to creating a pool of workforce able to sustain economic growth, there is also a need to create opportunities for the active participation of all Malaysians regardless of their ethnic origin. Current statistical figures show that the Malay community is still under-represented in certain occupations and key professions. This can be seen in Figure 4.3.2e below. Hence education and training will have to focus on increasing the number of Malays and perhaps other ethnic groups in the professional, and technical and managerial areas. In addition, there is also a need to develop opportunities for those in rural areas to enable them to enter a labour market that is becoming more sophisticated and technologically oriented.

Figure 4.3.2e Membership of registered professional bodies in 1990



Source: Malaysia (1996)

4.3.3 Economic growth and demand for education

Studies on high performing Asian economies conducted by the World Bank have shown that there is a significant correlation between enrolment ratios and the GDP per capita. The study found that, an increase of 10 percentage points in the primary or secondary school enrolment rate would raise per capita income growth by 0.3 per cent (World Bank 1993). Additionally, rapid growth also affects the supply side of the market for educational services by increasing the potential resources available for education.

In the recent Sixth Malaysia Plan (1990-1995), the economy recorded an average growth of 8.7 per cent per annum which surpassed the original target plan of 7.5 per cent (Malaysia 1996, p. 36). This rapid economic

growth has resulted in an increase in per capita income from RM6099 (or US$2162) in 1990 to RM9786 (or US$3470) in 1995.[10] With rising incomes, the demand for higher education is expected to increase further in the 1990s. It is apparent that applications to enter public higher education are increasing yearly.

The government has recognised the importance of education and training in all development plans, especially towards producing higher level of skilled manpower. As industry moves towards more capital, skill and knowledge-based production processes, and as more sophisticated new technology moving into the country, the demand for higher level skilled manpower will be on the rise. Thus, this will have significant impact on the demand for educational services, especially at the higher level. In view of the large financial resources required to provide this locally, the government therefore has to review the existing system of financing higher education and introduce new measures towards providing more places for higher education.

Owing to restricted public funding and limited capacity of public institutions, the government is inviting and encouraging the private sector to become involved in the education sector. Although greater participation from the private sector will help ease public funding, we have seen that the literature which been reviewed in the previous chapters also suggests that private sector involvement may contribute to problems that relate to questions of efficiency, equity, suitability and the quality of education. Therefore, these problems require further investigation to ensure that private sector involvement will be effective. It is crucial to ensure that no adverse effects affect the system, but instead impart positive

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[10] The exchange rate of 1 US Dollar to the Malaysian Ringgit before the 1997 economic crisis in Asia was RM2.82. After the crisis the rate was fixed at RM3.87 (The Government implement fixed exchange rate against US Dollars aimed at stabilising the Ringgit).

contributions towards furthering future economic growth and national development.

In the next section we will discuss the Malaysian educational system and critically evaluate the role of private higher education in responding to the increasing demand for tertiary education.

4.4 The Malaysian educational system

4.4.1 An overview

Education in Malaysia comes under the jurisdiction of the Ministry of Education and is governed by the Educational Act 1996, which replaces the Education Act 1961. As stated in the section 15 of the Act, national education system comprises of five levels: pre-school education, primary education, secondary education, post secondary education and higher education. (Figure A in Appendix Chapter 4 shows the structure of public education system).

The basic educational structure in Malaysia consists of six years of primary schooling, three years of lower secondary, two years of upper secondary, and, another one to two years of either form six or the matriculation level. In order to enrol in higher education, one must achieve appropriate minimum qualification as required by relevant institution of higher learning. The first six years of primary education are compulsory for all children. Thereafter, the children are screened every few years through the national examination board in order to proceed to the next level of education. Under the current Education Act, children are entitled to a free education until they have completed their upper

secondary level. At this stage they can decide whether to enter the labour market, or if qualified, to continue tertiary level of education.

Under section 16 of the Act, there are three categories of educational institutions or schools in the national education system, namely:

(a) Government education institutions/schools which are established and fully maintained by the government;

(b) Government-aided educational institutions/schools which are not established by the government but received full grant from the government; and

(c) Private educational institutions/schools that are privately funded and do not receive any types of grant from the government.

The third category of the educational institution under this Act is of special interest to the study, and therefore, shall be given special emphasis.

4.4.2 The private system of education

Since the 1950s, private education has started merely to cater for dropouts and to serve minority groups through the establishment of missionary and religious schools. By the early 1970s private education had become more structured, being involved mostly in primary, secondary and vocational schools. During this period, there was a paramount shift of roles and functions of private education system where the private education providers started to place importance on pre-university courses.

Likewise the public system, the private system of education inherited a similar structure as exhibit in Figure B (see Appendix Chapter 4). The levels of education provided by the private sector in Malaysia ranged from pre-school education to tertiary education. At the pre-school educational level, there are Child Care Centres and Private Kindergartens offering pre-school education for children between ages of 3 and 6 years. Usually, private providers follow programmes and activities based on pre-schooling curriculum guidelines provided by the Ministry of Education. There are also private primary schools following the national curriculum for the children between aged 7 and 12 years. Although primary schools are free in the public sector, it is observed that there are various reasons for parent sending their children to this type of private schools. This may includes religious, language, and to some extent, for better quality of education.

At the secondary and post secondary levels of education, private schools, besides providing various choices of education for the society, also act as an alternative means for continuing education for those who are not able to continue education in the public system of education. For instance in 1975, statistics from the Ministry of Education revealed that total enrolments in the private schools had increased from 57,391 in 1970 to 74,527. It was argued that the increasing number of private secondary and post-secondary schools largely contributed to the increase in the enrolment during that time. It is observed that these types of schools were important as an alternative to continue education for those who have dropped-out (failed) from the mainstream of public educational system. Within the public system of education, the children are required to pass in the national schools examination in order to qualify for the next level of education (i.e. lower to upper secondary) in public sponsored schools.

The structure of the educational assessment system at the secondary level has also acted as a push-factor for continuous expansion in the private secondary and post-secondary schools. In the mid 1980s there has been significant changes in the role and responsibilities played by private colleges as providers for tertiary education, particularly, in conducting courses leading to foreign qualifications at certificates, diploma and professional levels. It was during this period that the private educational system provided an alternative access to university education for those who were unable to gain entry into local public universities.

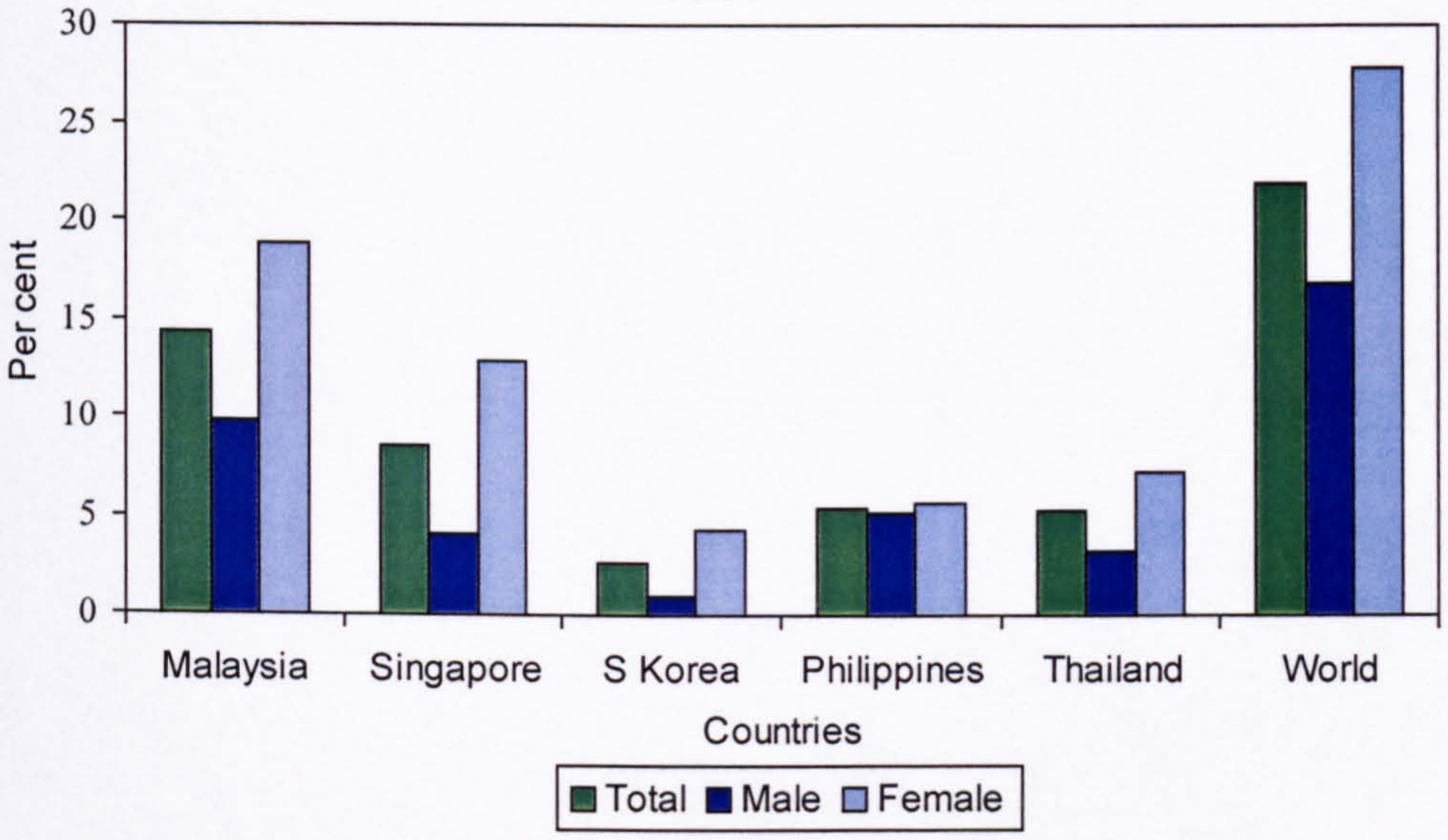
4.4.3 Some international comparisons

Admittedly, the government has always accorded high priority to education as was reflected in the extensive coverage in all its previous five-year development plans. On the average, education expenditure accounted for more than 19 per cent of the total government expenditure, or in terms of Gross Domestic Product (GDP), it was around 6 per cent. This ratio is relatively high when compared to other developed nations, including the newly industrialising economies in the Asia region with an average of only 3 per cent (UNESCO 1996). However, Malaysia's educational attainments are still lagging far behind those countries, especially at the tertiary level. In 1995, almost 2.8 million children were enrolled at the primary level; 1.1 million at the lower secondary level; 0.51 million at the upper secondary level; 80 thousand at post secondary level, and another 90 thousand at the tertiary level (Malaysia 1996).

In order to evaluate Malaysia's educational achievement, it is crucial to make some comparison with the international statistics. First and foremost at a very basic level it is crucial to look at the illiteracy rate. As for every country, the primary task of any education system is to eliminate

illiteracy and produce a literate population. It is obvious that literacy and numeracy are basic pre-requisites for the functioning of a modern economy. Undoubtedly for Malaysia, since achieving its independence, there have been substantial reductions in illiteracy. However according to the recent World Education Report 2000 (UNESCO 2000), the rate of 14.3 per cent of adult illiteracy is still relatively high if compared with the neighbouring countries as shown in Figure 4.4.3a. From the figure, it is observed that adult illiteracy is relatively high in Malaysia, especially among women.

Figure 4.4.3a Adult illiteracy rates aged 15 and over, 1997

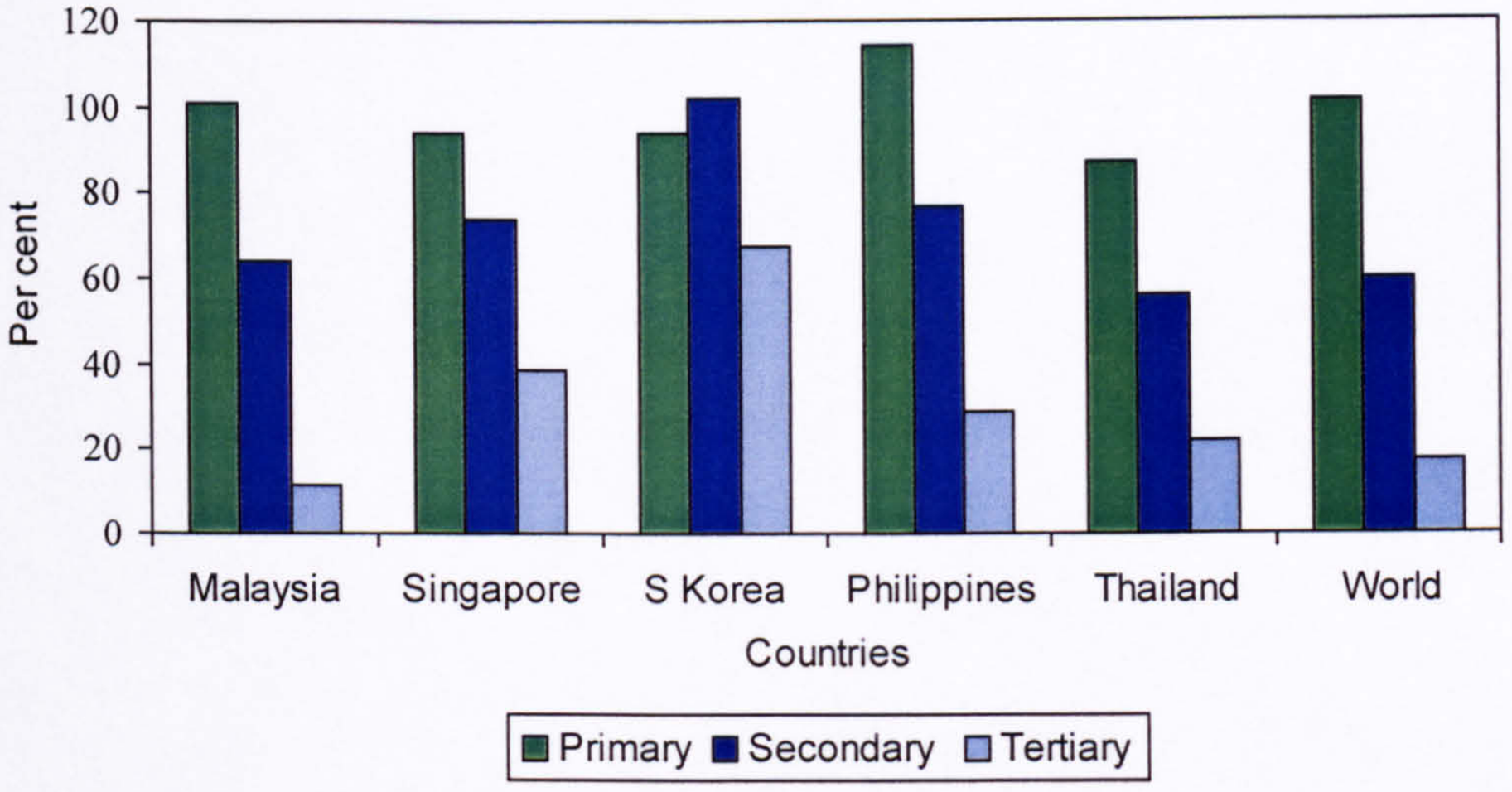


Source: UNESCO (2000)

Closely related to the illiteracy issues is the enrolment rate. Figure 4.4.3b shows a recent international comparison with respect to enrolment. The above figure shows that at the primary level, Malaysia has achieved the world standard of universal education. This indicating that the relatively high levels of illiteracy among adult population as noted in Figure 4.4.3a earlier will fall steadily as the younger population with higher literacy rates

leave schools. However at the secondary level, Malaysia's achievement is among the lowest, except for Thailand and the World. At the tertiary level, Malaysia once again shows a relatively low enrolment rate compared with all other comparable countries.

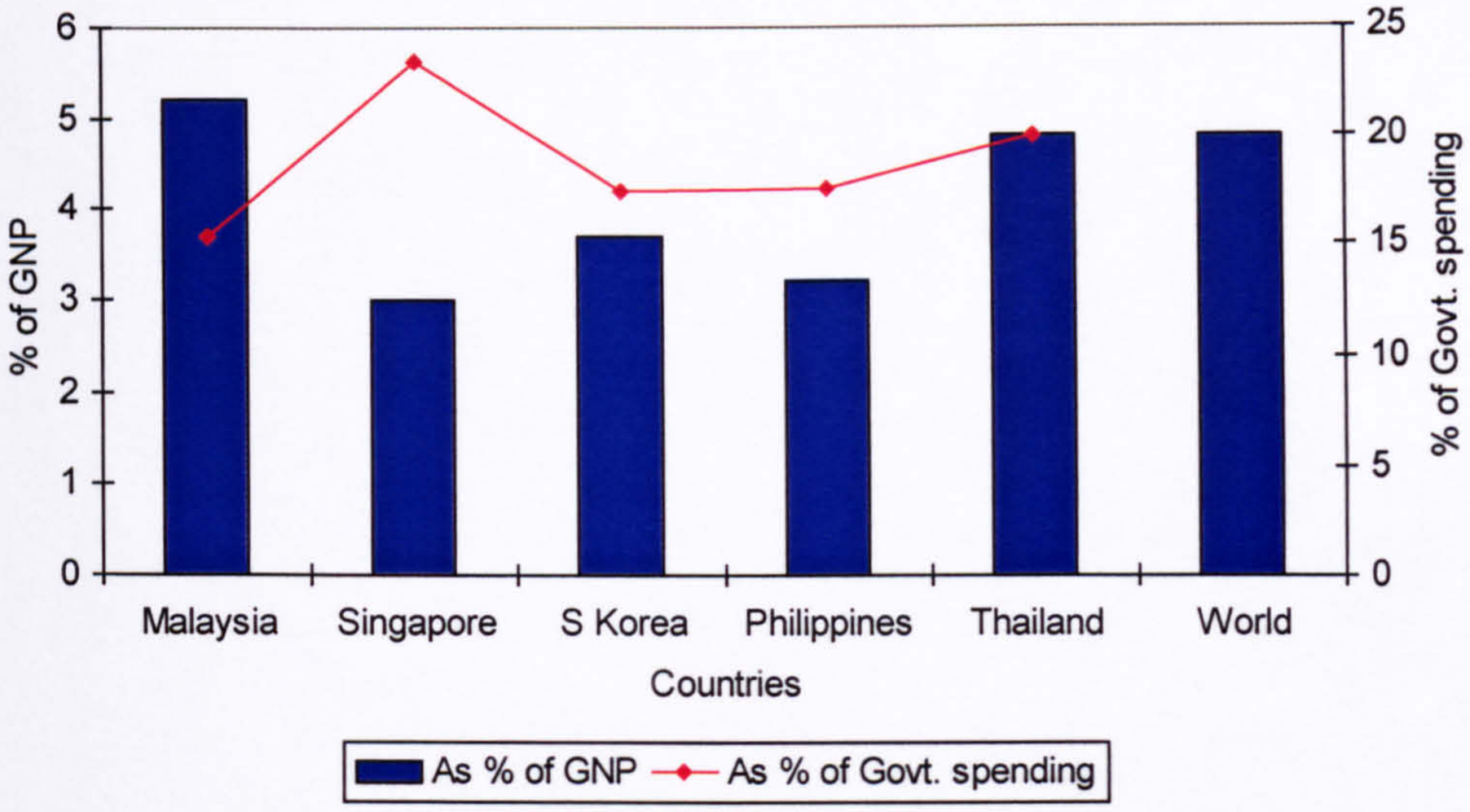
Figure 4.4.3b Enrolment ratios by level of education, 1997



Source: UNESCO (2000)

If we put public spending on education in context, it does not indicate any relative lack of commitment to education in Malaysia. As can be seen in Figure 4.4.3c, public spending on education in Malaysia, as a percentage of GNP, is amongst the highest. However, in terms of overall government spending (as in percentage), the figure still shows that Malaysia spent relatively less than other neighbouring countries. Thus, this might suggest that if Malaysia wants to expand it s tertiary education, then more resources should be channelled to this level of education.

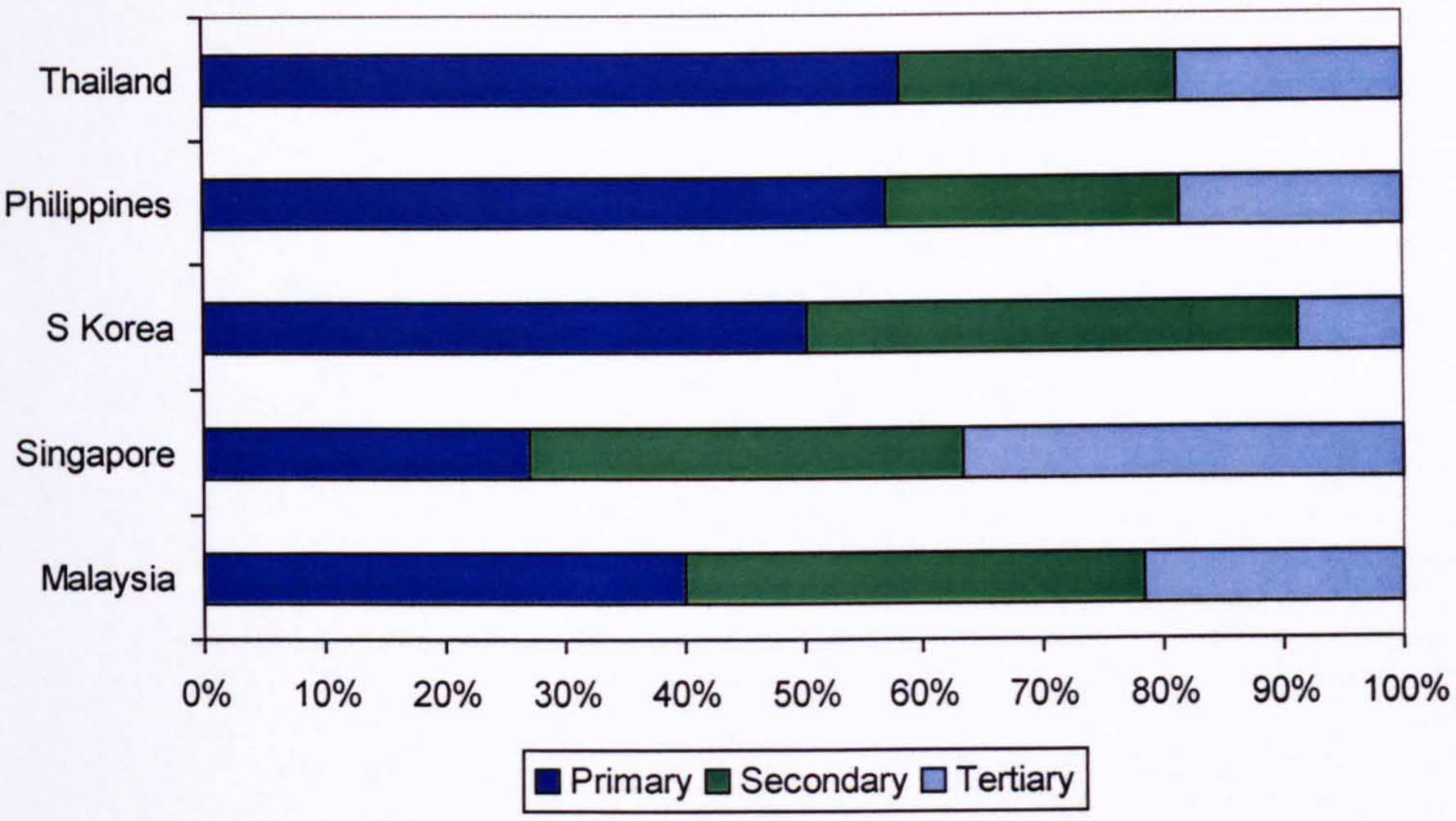
Figure 4.4.3c Public expenditure on education (as % ofGNP and as % of Govt. spending), 1997



Source: UNESCO (2000)

Nevertheless, if we examines the broad structure of spending by educational level, Figure 4.4.3d shows that except for Singapore, Malaysia compared with other countries, has spent a relatively large proportion of its public resources in the education sector on higher education. Yet, the enrolment ratio at the tertiary level, as shown earlier in Figure 4.4.3b, is still relatively low. Thus, to expand higher education further, there is a need to pull resources from the private sector in order to complement the existing public resources.

Figure 4.4.3d Percentage distribution of public expenditure by level, 1997



Source: UNESCO (2000)

4.5 Higher education development in Malaysia

Higher education in Malaysia is a term used to mainly refer to post-secondary education leading to the award of certificates, diplomas and degrees. However, for the purpose of this study higher education refers only all tertiary education that confers a degree, in particular the first-degree programme. Although the Education Act 1961 allows for the setting up of private schools and colleges in this country, higher education has traditionally been provided merely by public sector enterprise. There has been restrictive government regulation regarding the setting-up of private higher education. To-date only public universities are allowed to function in the country[11]. Overall, these universities provide only about 112,000 places for courses of study at the first-degree level.

[11] At present, nine such universities haven been established. Information about output of these universities is in Table 5 (Appendix Chapter 4).

In addition to the degree level, tertiary education also involves teacher's training programmes conducted by teacher training colleges. Until recently there have been 33 colleges set up all over the country to provide training courses for teachers entering the education service in the public sector. These colleges provide about 35,000 places for enrolment in their programmes annually.

At the certificate and diploma level, the government has also established a total of 7 polytechnics to provide courses of study mainly in technical and engineering fields at the sub-professional level. One of these institutions however was converted into a Polytechnic Staff Training Centre in 1993 to produce future staff. Currently, the six remaining polytechnics provide an annual enrolment of about 15,500 students. In addition, there are four new polytechnics in process of being built.

4.5.1 Demand for higher education

As mentioned elsewhere, Malaysia is experiencing high economic growth and increasing per capita income. Relatively, Malaysia is one of the richest ASEAN countries. Malaysia was categorised as an upper-middle income country with a per capita income of US$4,530 (figures in 1997 - UNESCO 2000). This is relatively high compared to other ASEAN member countries such as Thailand (US$2,740), the Philippines (US$1,200), Indonesia (US$1,110) and Vietnam (US$310). Although it was far lower than that of Singapore (US$32,810), at that level, it had recently influenced the demand for higher education in the country. Furthermore, at a continuously higher income level and economic growth, people's attitudes towards education are changing favouring higher levels of educational achievements. This has had a significant impact on the amount and structure of demand on higher education.

The structural transformation of the Malaysian economy also has significant impact on demand for higher education. The structural change which has taken place since 1970's is expected to continue, and since the 1998 economic crisis, there are signs of national economy recovery and positive indicators that economic growth is expected to be even more rapid in the period leading to the year 2000 (Malaysia 1999a). The rapid economic growth (7 and 8 per cent) in recent years has resulted severe shortages of skilled labour at all levels and all sectors. On the supply side, the labour force is projected to grow at about 2.9 per cent annum, increasing from 7 million in 1990 to about 9.3 million in the year 2000. Whereas, on the demand side, employment is expected to increase by 3.1 per annum, thus outpacing labour supply.

The largest contributors to employment creation are the manufacturing, construction and the service sectors. Projections made up to the year 2000 reveal that manufacturing is expected to create about 1.3 million new jobs between 1990 to the year 2000, while the construction and service sectors generate 421,400 and 1.2 million jobs respectively. In contrast, employment in the agriculture sector is expected to reduce 542,800 jobs along that period. If we refer to Table 4 (in Appendix Chapter 4), it shows that within 1990-1995, the average annual rates of growth of jobs in the professional and technical, and administrative and managerial categories were 6.8 per cent and 5.5 per cent per annum, respectively. For the period of 1996-2000, it was projected that both these categories of jobs will further rise with an annual increase of more than 6 per cent. This indicates that currently, there is a strong demand for educated workers, especially those who graduate from tertiary education. Projections up to the year 2000 showed there is a gap of 7,291 engineers, 31,676 engineering assistants and 10,884 medical and health assistants (see Table 4.5.1).

Table 4.5.1 Employment By Selected Occupation, 1990-2000 (persons)

Occupation	6MP (1990-1995)			7MP (1996-2000)			Output		Demand-Supply Gap (Shortage/Surplus)	
	Stock 1990	Employment 1995	Net Increase	Stock 1995	Employment 2000	Net Increase	6MP (1990-1995)	7MP (1996-2000)	6MP (1990-1995)	7MP (1996-2000)
Engineers	**18,904**	**55,254**	**36,350**	**49,729**	**83,590**	**33,861**	**13,092**	**26,570**	**-23,258**	**-7,291**
Civil	6,429	16,695	10,266	15,026	24,051	9,025	1,707	4,110	-8,559	-4,915
Electrical & Electronics	6,151	15,759	9,608	14,183	24,566	10,383	2,696	7,123	-6,912	-3,260
Mechanical	2,989	12,583	9,594	11,325	19,488	8,163	2,367	5,904	-7,227	-2,259
Chemical	1,037	1,708	671	1,537	2,452	915	649	1,113	-22	198
Others	2,298	8,509	6,211	7,658	13,033	5,375	5,673	8,320	-538	2,945
Engineering Assistants	**43,276**	**92,082**	**48,806**	**78,269**	**151,844**	**73,575**	**26,581**	**41,899**	**-22,225**	**-31,676**
Civil	18,752	25,971	7,219	22,075	37,754	15,679	6,432	9,717	-787	-5,962
Electrical & Electronics	16,492	40,023	23,531	34,020	65,459	31,439	9,573	14,361	-13,958	-17,078
Mechanical	5,106	18,706	13,600	15,900	36,345	20,445	5,768	9,282	-7,832	-11,163
Chemical	333	1,425	1,092	1,211	2,641	1,430	239	440	-853	-990
Others	2,593	5,957	3,364	5,063	9,645	4,582	4,569	8,099	-1,205	3,517
Medical & Health Professionals	**9,722**	**14,903**	**5,181**	**12,917**	**21,328**	**8,411**	**3,865**	**5,941**	**-1,316**	**-2,470**
Physicians & Surgeons	7,012	10,346	3,334	9,504	15,510	6,006	2,728	4,525	-606	-1,481
Dentists & Dental Surgeons	1,471	2,586	1,115	1,791	2,909	1,118	677	452	-438	-666
Pharmacists	1,239	1,971	732	1,622	2,909	1,287	460	964	-272	-323
Allied Health Professionals	**39,131**	**51,588**	**12,457**	**44,750**	**75,016**	**30,266**	**10,947**	**21,852**	**-1,510**	**-8,414**
Physiotherapists	234	517	283	410	911	501	225	401	-58	-100
Radiographers	508	758	250	537	1,297	760	187	512	-63	-248
Health Inspector	1,007	1,647	640	1,418	2,695	1,277	335	601	-305	-676
Med. Assts & Med. Lab Techgst	4,903	6,750	1,847	5,392	9,842	4,450	1,064	2,895	-783	-1,555
Dental Paramedics	2,137	3,235	1,098	2,720	6,361	3,641	779	1,377	-319	-2,264
Pharmaceutical Assistants	1,410	2,172	762	1,872	3,359	1,487	497	655	-265	-832
Nurses	28,932	36,509	7,577	32,401	50,551	18,150	7,860	15,411	283	-2,739
School Teachers	**172,164**	**244,188**	**72,024**	**222,890**	**322,807**	**99,917**	**66,771**	**99,917**	**-5,253**	**0**
Primary	104,098	144,191	40,093	135,790	197,835	62,045	38,268	62,045	-1,825	0
Secondary	68,066	99,997	31,931	87,100	124,972	37,872	28,503	37,872	-3,428	0

Source: Malaysia 1991a

Apart from this, Malaysia's plan to develop information technology through the Multimedia Super Corridor[12] (MSC) projects is likely to increase further the pressure for demand on higher education. Under the current Seventh Plan, Malaysia has embarked on an ambitious plan to leap into the Information Technology Age. MSC is a 15 kilometre wide and 50 kilometre long area, that starts at the Kuala Lumpur City Centre and continues down south to the site of the region's largest international airport, the Kuala Lumpur International Airport (KLIA). According to the plan, MSC will bring together, the first time ever, an integrated environment with all the unique elements and tributes necessary to create the perfect global multimedia climate (Malaysia 1995). However, one of the critical factors for its success is the availability of skilled and knowledge workers across the various specialisation of information technologies which higher education has the important role to play.

In addition to the economics-related factors, social factors also have significant impact on demand for higher education. The population trends are showing that there are increasing numbers of the population in the age group between 19 and 25. This is likely to lead to a demand for more places in higher education, especially if the enrolment rate were to be increased.

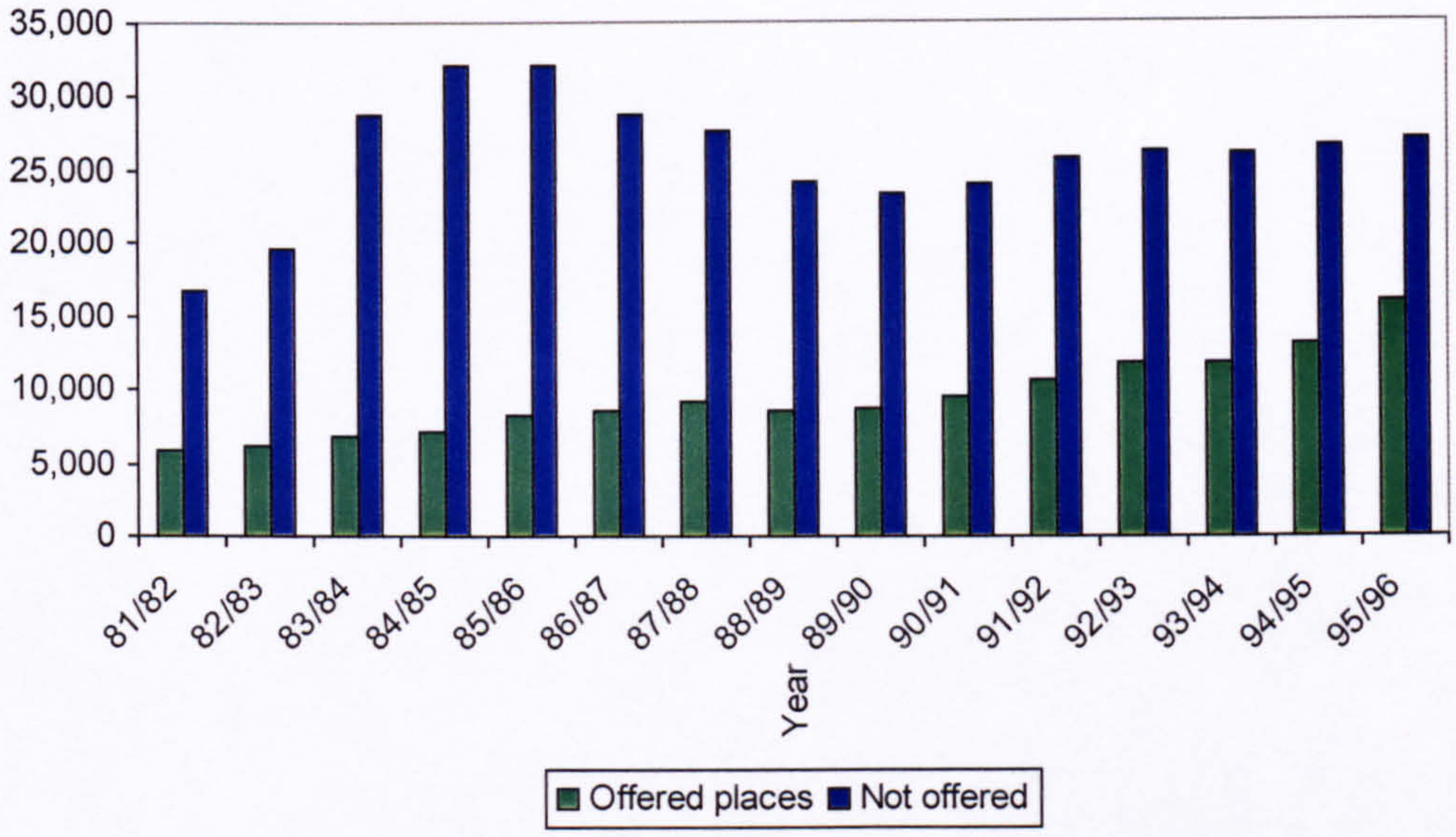
4.5.2 The capacity of existing public sector higher education

Currently, only 10 or 11 per cent of the population whose age between 19 and 25 are able to pursue higher education in local public universities and colleges. This figure is relatively low if compared with many developing and developed countries, where the ratio ranges between 25 and 50 per cent. One of the important factors that leads to the relatively low

[12] The plan is to develop 'silicon valley' within the central region of the country.

enrolment rate is the limited capacity of the public sector higher learning institutions to absorb students. For instance at degree level, on average it was estimated that, for every 100 qualified applicants, less than half are offered places in local public universities or colleges (see Figure 4.5.2). Subsequently, there are a large number of students who, although well qualified, fail to enter the public sector institutions.

Figure 4.5.2 Trends in students' intake at local public universities



Source: Department of Higher Education, Ministry of Education

It is obvious from the above that the current university system is unable to meet the increasing demand for tertiary education locally. It is estimated that each year, more than 20,000[13] students have to pursue their university education overseas. In 1995, about 50,600 students were

[13] Approximately, this represent two-thirds of the number of Malaysians who are seeking further education in universities annually.

enrolled at the degree level overseas, in which 39.5 per cent were government-sponsored students (Malaysia 1996).

However, recently the cost of overseas tertiary education has increased (see Table 4.5.2). For example, today it would cost about RM33,000 per year (inclusive of fees and living expenses) for a Malaysian student to further his or her studies in Australia for an arts course compared with about RM18,000 in 1981.

Table 4.5.2 Estimated annual cost of overseas education, 1981-1992
(in Malaysian Ringgit)

Country/Course		1981	1985	1992
Australia:	Arts	17,400	23,114	33,000
	Science	16,000	55,368	47,000
Great Britain:	Arts	26,875	24,956	41,550
	Science	44,375	41,594	50,625
Canada:	Arts	7,786	17,195	27,918
	Science			36,190
United States:	Arts	15,492	31,762	41,600
	Science	-	-	58,500

Source: Malaysia, Ministry of Education

This represents an increase of about 83 per cent. The cost of science education is very much higher, and even worse for medical students. The minimum cost to the individual medical student (whether with scholarship or family funded) including tuition fees and living expenses, range from RM450,000 in the UK to RM500,000 in Australia (Young 1996). This has caused overseas education to become too expensive, even for the upper middle income class of Malaysians. Therefore, in view of its increasing

cost, the government is trying to provide as many places as it can locally by encouraging the private sector to take an active role in providing tertiary education.

4.5.3 The financing of public sector higher education

It was estimated that on average, more than 30 per cent of the Ministry of Education development budget is spent on programmes for higher education. In practice, public universities and colleges receive funding from the government in terms of annual grants based on the number of students enrolled and staff employed. In addition, substantial amount of financial resources is also allocated to the public sector institutions for research and development programmes[14].

Table 4.5.3 shows that tertiary level of education receives the highest proportion of public resources compared with other levels. Students are required to pay tuition fees within the public sector institutions. However, income from tuition fees contributes less than 15 per cent of the annual budget. This is because the fees are highly subsidised, and therefore, are less significant for funding purposes. On average, more than 60 per cent of students in the public sector institutions received financial support, either in terms of scholarships, education grants or special loans. This financial support has been provided either by the federal or state governments, or, government corporations or companies[15].

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[14] This is mainly from the Ministry of Science, Technology and Environment which provides funding for special research projects (IRPA - Intensified Research in Priority Areas).

[15] These are previously government departments, but become private or corporate organisation through privatisation programmes. Although been privatised, but the government still have control over these companies, especially in terms of legal and financial management.

Table 4.5.3 Allocation of public resources by level of education, 1991-2000 (RM million)

Programme	6th Malaysia Plan		7th Malaysia Plan	
	Allocation	Per cent	Allocation	Per cent
Education:	*7,409.8*	*92.3*	*8,437.2*	*83.5*
Pre-school	61.8	0.8	1074	1.1
Primary Education	1,184.7	14.8	1,396.0	13.8
Secondary Education	2,050.7	25.6	2,447.9	24.2
Tertiary Education	3,139.3	39.1	2,961.8	29.3
Teacher Education	180.1	2.2	458.8	4.5
Other Programmes	793.2	9.9	1,065.3	10.5
Training:	*615.4*	*7.7*	*1,661.6*	*16.5*
Industrial Training	387.4	4.8	1,303.3	12.9
Commercial Training	14.0	0.2	66.3	0.7
Management Training	214.0	2.7	292.0	2.9
Total	*8,025.2*	*100.0*	*10,098.8*	*100.0*

Note: 6th Malaysia Plan covers the period of 1991-1995 whilst 7th Malaysia Plan is for the period of 1996-2000.

Source: Malaysia 1996, Seventh Malaysia Plan 1996-2000, page 339.

4.6 The role of private sector higher education

In the early years after independence, the establishment of private sector education in this country was merely to cater for dropouts or to serve minority groups for language and religious education. Only in the early 1990's the private sector began to take a more vigorous role in the development of the educational system. Since then, private educational institutions have been involved in tertiary education offering various courses and programmes including professional, technical and managerial. The majority of these institutions offer programmes under the "twinning concept" which award degrees or diplomas. Currently, some 500 are now registered with the Ministry of Education with an annual enrolment of more than 115,000 students[16].

[16] This is an unofficial estimate from Department of Private Education, Ministry of Education (1998). Official figure was estimated at 271 institutions with total enrolment of 41,000.

Private sector involvement in the tertiary level of education that brought about the proliferation of private institutions of higher education in this country in the early 1990's, is still a new phenomenon. They were established to accommodate the high demand for university training in fields in which employment opportunities are higher. The private sector has proved that it can accommodate the increasing demand for higher education, which is currently not met by public institutions of higher learning locally. The emergence of private higher education institutions also helps to reduce the total public subsidy to higher education as well as protecting foreign exchange by limiting the outflow of students for overseas education. In recognition of their reduced capacity to fund further expansion of public higher education and realising the important role the private sector can play, the government is encouraging the development of private higher education.

Formerly, the government restricted the setting-up of private higher education institutions, although there were some being established in the early 1990s. During this period, private institutions of higher learning are not allowed to confer degrees. These institutions are authorised only for certificate and diploma courses. At the first-degree level, foreign universities through special linkage programmes confer the degrees. However, realising the importance of the private sector contribution in the provision of tertiary education, the government has encouraged its expansion through the passing of the 1996 Private Higher Education Act which allows local private institutions of higher learning to offer courses that can confer degrees. This education bill also allows selected foreign universities to establish their branch campuses locally. This is a big shift in the national educational policy from that of the government being the sole provider of higher education to a rapidly expanding and diverse private sector provision.

4.6.1 The nature of higher education in the private sector

Basically, there are two categories of private higher education institutions, depending on their status granted under the Private Higher Educational Institutional Act 1996. Firstly, there are those without University or University College status, popularly known as private colleges. Secondly, there are those with University or University College status, which are referred to as private universities. Under this new act, only private higher education institutions with the University or University College status are allowed to confer degrees. In this study, the focus is on the private colleges alone because private universities are too new to have established themselves within the system.

4.6.1.1 Private Colleges

Although private colleges are not allowed to confer degrees, their role in providing tertiary education is crucial. Basically, courses offered by these private colleges can be differentiated into three main categories. First, courses leading to qualifications awarded by either local or foreign external examination bodies. Under this category, private colleges conduct courses to prepare students to sit for external examinations set by both local and foreign examination bodies leading to professional and semi-professional qualifications in the area of accounting, business management, engineering law and others[17].

Second, internal programmes of private colleges for certificates and diploma levels. In this category, curriculum and examinations are set by

[17] Some examples of the local examination bodies are CLP, MACPA, IBBM. Whilst examples of the foreign examination bodies are AIA, AAT, ABE, CIM, IAM, IDPM, BCS, ACCA, CIMA, ICSA, CGLI.

local private colleges, and confer the qualifications accordingly. Although these colleges are allowed to conduct those courses independently, it is necessary for them to fulfil all guidelines as enforced by the Ministry of Education. Students can either study full time or part time at the private colleges' premises. However, under the new Private Higher Educational Act 1996, private colleges are also allowed to conduct their programmes by way of distance learning.

A wide range of fields of study are offered by these private colleges at certificate and diploma level, which includes business and commercial studies; technical, vocational and engineering; creative studies; tourism and hospitality; information technologies and computer studies; fashion designing; architectural and building studies; and many other high technology programmes. Many of these certificates and diplomas are validated by renowned overseas higher educational institutions. Subsequently, many reputable foreign universities accepted these qualifications as the entry qualification of their degree programme. Students who graduated from private colleges' internal qualifications are also given substantial exemptions by many established external professional examination bodies, both local and foreign.

Third, bachelor degree programmes are offered through arrangements with overseas or local public universities. Under these programmes, private colleges conduct courses leading to bachelor degrees within an inter-institutional arrangement through special linkage programme with either overseas or local public universities. Since this is the only programme that currently confers degrees on students in the private sector, most of the discussion and analysis in this study will focus on this type of programme.

According to the official figures released by the Ministry of Education, the number of private colleges for tertiary education has increased from 172 (1992) to about 282 (1996) with an annual enrolment of more than 41,000 students. This is estimated to be over 40 per cent of the total tertiary enrolment in the country. As mentioned earlier, although there are colleges that offer bachelor degree courses, the degrees are conferred by foreign universities through special linkage programmes. After taking basic courses, students from these colleges are sent abroad to complete their degree programmes under various twinning arrangements.

These twinning arrangements either can be on a 1+2 arrangement (i.e. one year at local private college and two years in overseas twinning university), or 2+2 (i.e. two years local and two years overseas), or 2+1 (i.e. two years local and one year overseas). Recently (in 1998), the Ministry of Education had approved other types of twinning programme that allow students to complete their whole twinning programme locally. Under the new 3+0 degree programmes, there is no requirement for the students to go abroad, which reduces substantially the costs of education. Table 6 (in Appendix Chapter 4) shows ten private colleges that were initially approved by the Ministry of Education and, the amount of saving per year in terms of tuition fees only. If living and travelling expenses were included, the amount of saving would be much higher.

4.6.1.2 Private Universities

This category of private higher educational institution is granted University or University College status by the Ministry of Education under the Private Higher Educational Institutions Act 1996 and are allowed to confer their own degrees. In 1997, only three private universities had been established, that is, University Telekom Malaysia (owned by Malaysian

Telecommunication Company); University Tenaga Nasional (owned by Malaysian Electricity Company); University Teknologi Petronas (owned by Malaysian Petroleum Company).[18]

These three new private universities offer specialised courses in the field of engineering and computer studies. Degree programmes in business and accounting are also offered. These private universities had their first intake of students in July 1997. The summary of the degree programmes, fees, entry requirements and their first intake for the year of 1997 are shown in Table 7 of Appendix Chapter 4.

Tuition fees for a degree course are much higher at private universities compared with the public universities. Currently the tuition fee in public universities is between RM1,200 and RM1,500 per annum compared with between RM10,000 and RM13,000 for the private universities. The general entry requirement for admission into degree programmes at public universities is a STPM/HSC qualification (Higher School Certificate)[19], or completed a matriculation programme, while the intake into private universities are based on SPM/MCE qualification (Malaysian School Certificate)[20].

4.6.2 The financing of private sector higher education

Most the private colleges operate through companies and rely heavily on tuition fees. Thus, we may observe that tuition fees in the private sector institutions are substantially higher than that in the public sector. Since private companies own most of these colleges, they do not receive any

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[18] These are previously government agencies, which turn to private companies through the privatisation programmes.
[19] This is a higher secondary school certificate.
[20] This is an ordinary secondary school certificate.

financial support from the government. In practice, only private institutions which have been established through societies, for either language or religious education, receive some of financial support from the government, and frequently these institutions appears to be at primary and secondary levels of education, but not at the tertiary level.

In addition, it was estimated that less than 10 per cent of the students in the private sector receive financial support. The majority who enrolled in the private colleges is privately funded, either by their family or through bank loans. Thus, we may observe that most students who enrolled in the private sector are from wealthier family backgrounds. However, in July 1997, the government established the National Higher Education Fund (NHEF) to provide education loans for students who enrol in both the public or private sector higher learning institutions. Under this loan programme, students are required to pay their loans after graduation at a subsidised rate of interest.

4.7 Summary

In this Chapter, we have shown the role of education and its relationship with the national economic growth. It is clear that rapid economic growth has brought about changes in the structure of demand of the labour force. The demand for graduates-workers is increasing, which consequently augmented the demand for more places at higher education. In addition, the demographic factor and the relatively high per capita income also further increased the pressure for more places at the university level. But, it is observed that universities are not expanding to keep pace with the demand because of constraints of government resources, and moreover it is expensive to purchase education abroad. As an alternative, Malaysia is encouraging the establishment of private sector higher education to

meet the excess demand for university education. However, although private sector higher education provides more places at the tertiary level, there has been fear that the places are accessible only to students from wealthier family backgrounds due to relatively high tuition fees and lack of financial support from the government. Furthermore, it is also feared that private sector provision lacks in quality since many of the private colleges have been established by commercial companies whose main objective are to maximise profits. Thus, if this is the case, it is necessary to investigate this phenomenon and explore available policy options that are likely to improve the existing provision of higher education.

CHAPTER 5

THE MARKET FOR HIGHER EDUCATION: A THEORETICAL FRAMEWORK

5.1 Introduction

The review of the literature in Chapters 2, 3 and 4 suggests several theoretical propositions about the provision of, and demand for, higher education in a country like Malaysia. The purpose of this Chapter is to bring these propositions within a single simple theoretical framework that can be used to generate hypotheses. We shall use these hypotheses to analyse and interpret our data on the market for higher education in Malaysia, the results of which are presented in Chapters 7, 8, 9 and 10.

5.2 A market theory of higher education

The literature review has shown that formerly the government has been solely responsible for the supply of higher education. As the economy has developed, the demand on public provision has increased dramatically. However, the government's ability to finance further expansion of higher education is restrained by its resources due to the competing demands from other sectors of the expanding economy. Thus, an excess demand has developed which the private sector now seeks to supply. Although many studies, including those of the World Bank, have suggested that private provision is likely to be more efficient, more equitable and to offer

a better quality of education, the literature review shows that there is conflicting evidence on these issues.

From the profit seeking supplier's point of view, the private market for higher education exists because there is a residual demand that provides the possibility of making profits. Thus, the supply-side has come into existence to satisfy this demand. Since the private sector institutions are profit motivated, the price of higher education is likely to be relatively high, and thus, there is a possibility of exclusion of those who are financially less able. There is also the possibility that the private sector reduces the costs of provision in order to maximise profit. Although reducing the costs of provision sounds technically efficient, it could have some effect on the quality of the provision. If this is correct, the private sector is likely to be relatively inferior to the public in many respects.

From both the individual and societal point of view, the demand for higher education exists because spending on higher education is considered as investment that brings future benefits, in terms of pecuniary and non-pecuniary returns. Since the benefits are relatively high, especially to the individuals and their families, this has increased the demand for higher education. From the literature, we learn that human capital theory provides an explanation of the contribution of educational investment to productivity and economic growth. It is argued that investment in education will increase lifetime earnings through increased productivity and thus, it contributes to economic growth and national development. It also provides a private, as well as a public, incentive to invest in higher education.

The pressure of demand has increased the competition to enter the limited number of places at public universities and has consequently

excluded a substantial number of qualified students. Those who fail to gain entry to the public universities tend to seek higher education in the private sector or abroad. However, since we argued that the costs for higher education in the private sector and abroad are relatively high, only those from wealthy families are able to take advantage of such opportunities. In Malaysia, public universities are the first preference because they offer a better quality of education and are highly subsidised. Thus, only those with the highest abilities are selected, leaving those with lower abilities to enter the private sector.

Consequently, we propose that there is a great divergence between the public and private provision of higher education in Malaysia. To investigate this proposition, it essential to identify and examine the characteristics of the supply- and the demand-side of the provision in both sectors.

5.3 The market framework

Since there is a private market for higher education in Malaysia, we may analyse it in terms of the conventional market framework as follows:

Supply is a function of price and other variables $x_1.....x_n$,

$$S = s(x_1.....x_n)$$

Demand is a function of price and other variables $y_1.....y_n$,

$$D = d(y_1.....y_n)$$

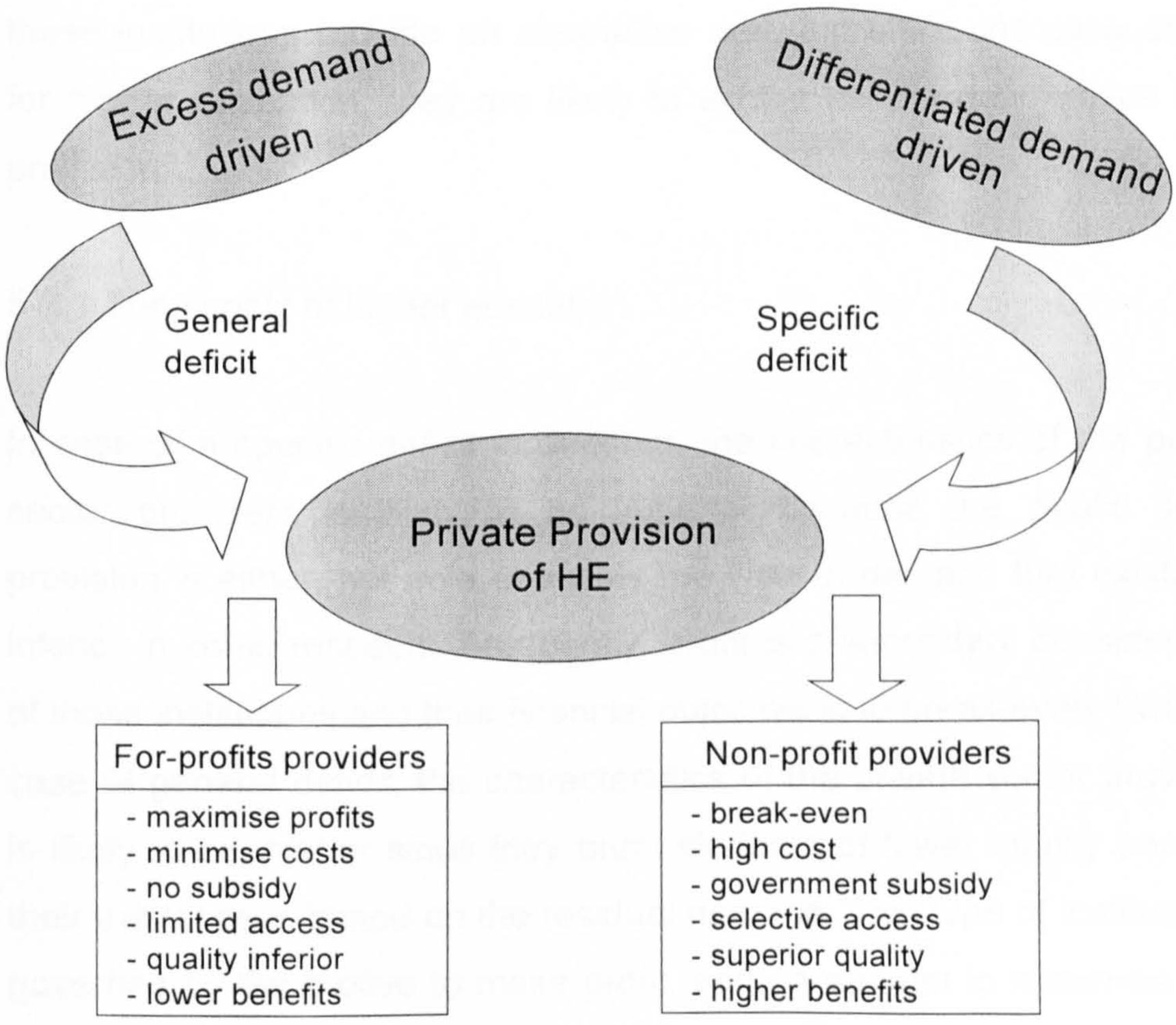
And, in equilibrium,

$$S = D$$

Thus, in the private sector the price level developed by private providers will, ceteris paribus, balance supply and demand and clear the market.

The free market demand for private higher education, as we have seen in Chapter 2 (p. 55-57), may be divided into two components: excess demand and differentiated demand, the former indicating a general deficit in provision, the latter, a specific deficit in provision. A general deficit may arise because of the limited public resources to provide sufficient places, and subsequently excluded a substantial number of qualified students. Whilst specific demand may arise from the desire for specific forms of higher education, either, to seek special skills and knowledge which include technical or social-cultural aspects, or, to seek better quality. Thus theoretically, the providers of private higher education can be separated according to whether they are seeking to supply a specific or general demand (see figure 5.3 below).

Figure 5.3 A market framework of private provision



First, institutions whose main motives are to satisfy special needs and, or, to acquire prestige. Such institutions focus on providing specific religious, language and cultural or technical education. For example in Malaysia, private universities, which are established by private government agencies, offer specialised technical courses that are less or not offered in the public universities. These institutions have a selective intake of students, and thus, may compete with the public universities. Second, the for-profit providers, as we observed in the literature, offer courses in subjects that are in high demand by the market. In Malaysia, this category comprises the private colleges, which are the focus of this study, mainly established by private sector companies. These institutions are likely to complement the public provision since they enrol mostly students who failed to gain entry to the public universities. We observed in the review of literature that this type of institution offers degree courses at a relatively high price, and, sometimes, at a relatively low quality. Hence, although these institutions provide an alternative and, therefore, increase access for higher education, they are likely to exhibit certain deficiencies in its provision.

5.3.1 The supply of higher education

In case of a specific deficit in demand, the characteristics of the private sector providers is likely to be superior because the public sector provision is either, not able to satisfy the type of demand that exists, or, inferior in some respects. Frequently, profit is a secondary consideration of these institutions and their financial objective is to break-even. Whilst in case of general deficit, the characteristics of the private sector providers is likely to be inferior since they enrol students of lower quality because their existence is based on the residual demand. This type of institution is governed by the motive to make profit, and, in attempt to maximise their

profit, they often try to minimise the costs of provision which thus may affect its quality. From the literature, we also have seen that some institutions increase their prices which results in the exclusion of the less wealthy families from higher education.

Since this study focuses on the expansion of private colleges in Malaysia, and, since their main aim is to make profit, it is reasonable to assume that they are motivated by profit maximisation objective. If we define profit (π) as the difference between total revenue (R) and total cost (C), then we can write the profit function as follows:

$$\pi = R - C$$

In this, we assume that:

(i) Total revenue, $(R) = p, n$ — Where p is the average level of fee and n is the total student enrolment.

(ii) Total cost, $(C) = c, n$ — Where c is the average cost per student.

To maximise profit per student the gap between R and C has to maximised:

$$\text{Maximise } \pi = R - C$$
$$= p - c$$

Thus, the colleges will seek to maximise the fee per student (p) compatible with maintaining demand (n) and to minimise costs per student (c). Using this theory we can hypothesise that:

H_1: The private colleges are likely to offer only courses that are in high demand by the market, compared with the public universities which offer a wider range of courses. **[See analyses on page 156-161]**.

H_2: In relation to H_1 we may expect that demand for higher education is likely to be much stronger in those institutions that provide technical and vocational courses which offer reasonable return within a short-term period. Hence, we may observe that private colleges, in attempt to maximise profits, are likely to concentrate on courses like Engineering, Information Technology and Business Studies. **[See analyses on page 156-161]**.

H_3: Since we have shown earlier in the literature that demand for private higher education is strongly related to the level of family income (in particular for relatively lower income family)[1], it is therefore reasonable to assume that the elasticity of these demands is likely to be less than one. Hence, since demand is a function of the price of higher education, in order to maximise demand, the private sector providers are more likely to indulge in cost cutting behaviour than to seek to raise price. Thus, the cost per student (c) in the private colleges is likely to be lower compared with those in the public universities. **[See analyses on page 161-168]**. If the elasticity condition is satisfied and H_3 appear to be true, then may further hypothesise that:

H_{3a}: the private colleges are likely to employ junior and less qualified teaching staff, and, are likely to have higher student-staff ratio compared with the public universities in attempt to minimise their cost; **[See analyses on page 168-176]**.

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[1] See literature review in Chapter 2 (p. 58-62) and Chapter 3 (p. 64-66).

and,

H_{3b}: the private colleges are also likely to spend less on teaching facilities compared with the public universities in attempt to reduce further the cost of provision. **[See analyses on page 177-187]**.

Using the supply-side function, we identify variables that can be use to compare the private with the public sector provision in order to examine these hypotheses. These variables are been discussed further in Chapter 6.

5.3.2 The demand for higher education

We have seen above that the demand for higher education is based on the view that education is an investment which brings future benefits in terms of monetary and non-monetary rewards. From an individual perspective, investment in higher education will increase the chances to get employed, to receive a higher lifetime income and, to enjoy substantial social benefits and respect. From a societal perspective, the externalities and spill-overs benefits are so immense that it is justifiable to use public resources to finance the expansion of higher education. The knowledge of one educated worker is likely to have some effect on the level of productivity of other non-educated workers. Similarly, a significant research finding will bring benefit to the entire society. From the literature, we have seen various approaches have been used to try to estimate these benefits, especially on the monetary returns. Many studies seem to show that the benefits are exclusively high, and this explains the high demand. In many countries, since the demand is so high, the public sector is unable to provide sufficient places and this has created an excess demand for higher education.

We have shown earlier that the first preference is for the public provision because of its better quality of education and its subsidised cost. Since places in public universities are insufficient, many seek education either in the private sector or (in case of rich families) abroad. We also argued that those who enrolled in the private colleges are likely to be on average, of lower ability and achievements than those in the public sector. Also, since we argued that public universities offer relatively better quality of education, we would anticipate that those who enrol in the public universities are likely to have greater satisfaction compared with those in the private.

In order to examine these issues we need to analyse and to compare the characteristics of demand for both sectors. Since in case of excess demand the public provision is preferable, we would argue that the characteristics of demand in the public compared with the private sector are likely to be superior in many respects. If we assume that the decision to enrol in higher education (N) depends on the level of qualification for entry (e), the price for access (p), family socio-economic background (s), the expected return (r) and the quality of the degree programmes (q), then we can write the demand function as:

$$N = f(e, p, s, r, q)$$

In this we assume that,

i) $p = p1, p2$ Where $p1$ is the direct cost (i.e. tuition fee, books and learning materials, living and travelling expenses, and other types of expenditure that are directly related to

education), and $p2$ is the indirect cost (i.e. income forgone while in higher education).

ii) $s = s1, s2, s3$ Where $s1$ refers to parental income, $s2$ for parental occupation, $s3$ for family education backgrounds (i.e. parental level of schooling, the number of siblings in higher education).

iii) $r = r1, r2$ Where $r1$ refers to expected monetary returns (i.e. increase in lifetime earnings), and $r2$ refers to expected non-monetary returns (i.e. gaining required knowledge and skills, job security and satisfaction, the enjoyment of attending college education, and increased level of social status and respects).

Using this demand function, we can identify variables that are likely to reflect the characteristics of demand in both sectors for the comparison purposes. The main aim is to throw light on equity, efficiency and quality issues raised earlier in the literature.

5.3.2.1 Equity and access

To analyse this issue we hypothesise that:

H_4: Students who enrol in the private colleges are likely to come from wealthier family backgrounds compared with the public universities. **[See analyses on page 201-205]**.

H_5: The category of parental occupation is likely to differ according to the sector in which their children are enrolled. **[See analyses on page 206-211]**.

H_6: Family educational background of students enrolled in the private colleges is likely to be superior from those who enrol in the public universities. **[See analyses on page 212-217]**.

5.3.2.2 Economic efficiency

To analyse this issue we hypothesise that:

H_7: The private cost is likely to be higher in the private colleges compared with that in the public universities. **[See analyses on page 221-233]**.

H_8: The benefits (both monetary and non-monetary benefits) of higher education are likely to be higher in the public colleges compared with the private colleges. **[See analyses on page 234-246]**.

H_9: Private colleges' students are likely to receive less financial assistance compared with students in the public universities. **[See analyses on page 247-250]**.

H_{10}: Private resources for financing higher education in the private colleges are likely to differ from those in the public universities. **[See analyses on page 251-252]**.

5.3.2.3 Quality aspects

To analyse this issue we hypothesise that:

H_{11}: The types of entry qualification will differ between the two sectors. **[See analyses on page 256-257]**.

H_{12}: The public universities enrol better-qualified students compared with the private colleges. **[See analyses on page 258-260]**.

H_{13}: Contact of hours in the academic activities in public universities is likely to be greater than in the private colleges. **[See analyses on page 261-263]**.

H_{14}: The public universities offer well-structured degree programmes compared with those in the private colleges **[See analyses on page 263-265]**.

H_{15}: The public universities offer well-prepared degree programmes compared with the private colleges. **[See analyses on page 266-267]**.

H_{16}: Academic activities are better presented in the public universities compared with the private colleges. **[See analyses on page 268-269]**.

H_{17}: Public universities' students have greater level of satisfaction compared with those in the private colleges. **[See analyses on page 270-274]**.

Since the main aim of these hypotheses is to investigate whether the characteristics of supply and demand in the private differ from the public, the null hypothesis in each case is that there is no difference between the two sectors.

5.4 Summary

This Chapter has provided a theoretical framework that provides the analytical basis for empirical work. The framework helps us to identify the supply- and the demand-side variables that are crucial for the purpose of analyses. From the supply-side, we observed that the private sector providers are motivated to maximise their profit, and therefore, it is likely that the characteristics of the private sector to differ from that the public sector. Since they aim at maximising profit, the private providers are more likely to be technically more efficient compared with the public through costs reduction and maximum utilisation of inputs. However, we argued that if the reduction in costs is too much, it may affect the quality of the provision. From the demand-side, since the existence of the private sector is based on the residual demand, we argued that the characteristics of demand in the private sector is likely to be inferior to that the public in many respects. Furthermore, in case of excess demand, the public provision is the first preference. In the following chapters we attempt to evaluate these propositions in the context of Malaysia.

CHAPTER 6
RESEARCH METHOD

6.1 Introduction

In this Chapter we set out the statistical methods used to collect and evaluate evidence on the relative performance of the public and private sectors of higher education in Malaysia.

6.2 Research question

We have discussed the background and rationale for this research above in Chapter 1, and so will only briefly review it here. The research questions formulated were based on the current situation where the expansion of higher education in Malaysia is being undertaken mainly in private sector institutions. The government viewed these institutions as complementing public sector provision since public universities have limited capacities to offer more places to meet the increasing demand for higher education. To individuals and their families (representing the private demand), the high demand for higher education is motivated by the high rates of expected returns measured in terms of better jobs opportunities and higher lifetime earnings. Whilst to the economy (representing the social demands), more educated workers are required to sustained high economic growth. Recent statistics provide sufficient

evidence that the country is short of highly educated workers in all sectors of the economy. Substantial numbers of students are sent abroad to overcome these shortages, and this is likely to be a burden to the economy because of the increased cost of higher education abroad.

Thus, there is a need to expand the existing higher education provision locally. Since public expenditure to finance further expansion of higher education is limited, it is left to the private sector to provide an alternative means of supplying and financing the expansion of higher education. However, there is a growing concern in society regarding the shift towards private sector provision of higher education in the country. Mostly business conglomerates are establishing private higher education institutions in Malaysia, and therefore they are highly profit motivated. There is also great concern about the escalating cost and the deteriorating quality of higher education within the private sector provision.

In the literature review we observed that governments in many parts of the world are facing constraints on public resources to provide financial support for higher education expansion. Many have suggested that one way to cut public spending, and yet maintain greater access to higher education is through the privatisation of educational provision (Psacharopoulos and Woodhall 1985; Patrinos 1990; World Bank 1994, 1995a, Sanyal 1998). Theoretically, private sector provision would result in more resources flowing to education, the more efficient use of such resources, the more equitable access to education, and consequently could offer a better quality of higher education. It is argued that, as the private sector has to compete with the public sector, the efficiency of the former and, equally important, the efficiency of all higher education, including the public, has improved significantly.

However, from previous studies there is sufficient evidence to show a contradictory outcome (James 1991a, 1991b; Tilak 1991). In countries where there is excess demand, and mass private sector prevails mainly in the form of for-profit institutions, the private sector may turn out to be technically efficient; however, from point of view of the consumer and the public interest, they are less efficient. Their programmes are at relatively high cost, and relatively inferior to those of the public system. In addition, since the cost of higher education is more expensive in the private sector compared with the public sector, only students from wealthier family backgrounds are likely to gain access. Thus, raises the critical issue of equity.

Therefore, the main question to be addressed is whether the expansion of higher education through private sector provision in Malaysia is efficient, equitable and high quality. Through investigating the case of Malaysia, it was hoped also to shed lights not only on specific issues surrounding the private sector provision in Malaysia but also on the wider issues affecting the overall development of higher education in general.

6.3 Sources of information

This study has drawn on wide range of information as follows:

1. Literature on the economics of education, in particular, higher education development and economic growth, compiled and reviewed from journals, textbooks, monographs, reports, theses and dissertations. In this we provide the general picture of the subject area and the main concerns of this study.

2. Information on the Malaysian economy and, in particular, data from the Ministry of Education, the Economic Planning Unit, Statistics Department and Registrar of Companies. In some cases, unpublished materials have also been used to complement these official reports.

3. Data on the supply of higher education were collected from selected public and private higher learning institutions. The aim was to throw light on the efficiency, equity and quality of provision of higher education in Malaysia.

4. Data on the demand-side were collected from samples of the student body enrolled in selected public and private sector institutions. The purpose of this exercise was to ascertain whether it lent support to the supply-side findings.

6.4 Sampling Procedure

Sampling methods are often used if the entire population is too big to survey entirely. The simple reason for using these methods is because of time and costs constraints. However, sometime sampling methods are adopted to ensure that the quality of data that being collected is satisfactory. Babbie (1990 p. 65-67) claimed that the quality of data collected in a very large survey might be lower than that obtained in a smaller and more manageable research project, provided the technique of sampling employed is appropriate. Through establishing appropriate sampling procedures sample surveys can provide very accurate estimates about the population because sampling errors can be specified precisely and controlled, and other survey errors which arise in all questionnaire studies, reduced to a minimum.

Although there are many sampling methods, these methods can simply be divided into two types: probability sampling and, non-probability sampling (Blalock 1979; Babbie 1990; Bailey 1994). Many claimed that probability sampling provides better estimates of the population because it reduces bias and sampling errors. This method also allows us to estimate the extent of sampling errors using statistical inference. The quality of probability sampling is that every member of the population has an equal and known chance of being selected in the samples. However, this method requires complete information about the population to enable us to create an appropriate sampling frame for the selection process.[1] Without a complete sample frame (for example, a proper listing of sampling units), unbiased probability sampling cannot be guaranteed.

Alternatively, samples can be selected on the basis of our own knowledge of the population using non-probability-sampling procedures. Under this method, samples might be selected based on our own knowledge about the population. This is known as judgmental or purposive sampling method (Babbie 1990, p. 97).

In this study we found difficulty in investigating the whole population of higher education system not only because of time and cost factors, but more importantly, of problems in getting access to the sources of required information. Therefore, for practical reasons, a decision had to be made on the scope of the survey, viz., to cover only the first-degree programmes. Since the focus of this study is on the limited supply of places for first-degree programmes in higher education, it is therefore justifiable to concentrate only to this type of programmes.

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[1] The sampling frame is the actual list of sampling units from which the sample is being selected.

In this study we analyse both the demand- and the supply-side of higher education. Thus, we selected appropriate private higher educational institutions for the supply-side analysis, and samples of students for the demand-side analysis. Since the study compares private sector provision with the public system, similar sampling designs were applied when selecting samples from the public institutions.

6.4.1 Sampling design I - institutional sampling

In sampling design, it is crucial to define clearly the population sample and the sampling frame used in the selection process. In this study, although currently there are more than 500 private higher learning institutions and total enrolment exceeds 100,000 students[2], only 10 per cent offer first-degree programmes. Professional and semi-professional programmes comprise more than 80 per cent of what is being offered. These programmes offer courses mainly at certificate and diploma levels.[3] Thus, a simple probability sampling technique would select some private colleges that offer programmes mainly at certificate and diploma levels, which are not relevant to this study.

We further limited the scope of research to colleges recently approved by the Ministry of Education under the 3+0 degree programmes. In doing so, we are confident that the selected colleges offered most of their programmes at first-degree level. At the time of conducting this fieldwork, only 10 ten colleges had been approved by the Ministry of Education to offer 3+0 degree programmes[4].

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[2] This is an unofficial estimate by the Ministry of Education.
[3] We discuss this aspect in Chapter 4 earlier.
[4] See Table 6 in Appendix Chapter 4 for details of these colleges.

Since the population of colleges is quite small, it was planned to survey all ten colleges. However, during the first stage of the fieldwork in summer 1998 (July - September), we encountered problems. One major problem encountered was that many of the private colleges, treat all information required as confidential. They claimed that it reveals their business strategy, and therefore, it is confidential. However, three of the colleges were willing to co-operate, but they requested anonymity. Thus, in this study we shall use C1, C2 and C3 to represent these colleges.

For purposes of comparison, and also for practical reasons, we carefully selected two public universities. The selection was made after serious consideration of several factors to ensure that they are comparable and best represent the public system. Selecting typical samples within the public system is much easier since institutions are homogenous in many respects. Public universities generally receive equal proportions of government grants, offer similar degree programmes and enrol the same proportion of students in terms of socio-economic background. But to ensure that the selected institutions are fully representative of the public system, several other criteria were also included, such as total enrolments, programmes and area of study offered.

To ensure that the data are truly representative, and since the study focused on first-degree programmes, the sampled universities should have most of their students enrolled in this type of programme. In addition, the range of courses offered at first-degree level by sampled universities should at least cover all courses that are currently being offered by the private sector. This was to ensure that all fields of study could later be compared satisfactorily.

Currently there are 14 public universities, and based on the selection criteria specified earlier, we sampled two: the University of Malaya (U1) and the National University of Malaysia (U2).

6.4.2 Sampling design II - student sampling

In order to select samples of students, we used stratified sampling with systematic random selection. The target population included all students registered in first-degree programmes in each selected institution. These populations were divided into two strata: fields of study, and, the year of studies. Then samples were selected systematically based on appropriate sampling fractions, that is 1/50 for both public universities and 1/20 for all the private colleges. A bigger fraction was chosen for the private colleges because student populations in these colleges are much lower than in the public universities. Furthermore, it was anticipated that the response rate amongst private colleges' students might be lower. Table 6.4.2 shows the sample sizes required from universities and colleges.

Table 6.4.2 Sample sizes

Institutions	Student Populations	Sampling Fraction	Number of Samples
U1	15,462	1/50	310
U2	13,238	1/50	265
C1	4,375	1/20	220
C2	4,069	1/20	203
C3	2,540	1/20	127
Total	39,684		1,125

Source: Fieldwork 1999

In systematic random sampling, the first unit must be selected at random, and the rest are selected according to the sampling fraction. Although it is sometimes claimed that systematic sampling is slightly more accurate

than simple random sampling, it has to be executed with caution. One must ensure that sampling frame used in the selection process should not conform to any kind of fixed pattern which could lead to biased samples (Babbie 1990, p. 84). For example, a list of students' names should not be arranged in alphabetical order because in a country like Malaysia, this might result in bias within ethnic group. Therefore it was crucial to use an appropriate sampling frame to ensure that the sample were representative.

In this study the sampling frame available was the student registration record maintained by every university and college. Almost all institutions use a computerised data base system to administer their student records. This made the task of creating appropriate sampling frames much easier. Thus, to summarise, the sampling frames used in this study were the lists of all first-degree students registered in each sampled institution, arranged according to their fields and year of studies.

6.5 Data collection

There were two sets of data to be collected. The first, on the supply-side, was obtained through a questionnaire to the institutions and interviews with management personnel. Published and unpublished reports from individual institution were also used to supplement the questionnaire and interviews. The second data set was obtained by a questionnaire to students.

6.5.1 Questionnaire surveys

Questionnaires to be completed by the selected individual rather than an interview represent a cost-effective method of collecting information from

a large group of respondents. Although there are several disadvantages associated with the use of questionnaires, if designed appropriately, it is capable to measure all variables that are required in a study. In this study, we designed institution questionnaire to collect the supply-side data and student questionnaire for the demand-side data.

6.5.1.1 The questionnaire to institutions

The structure of questions in this questionnaire was open-ended and can be found in Appendix Chapter 6a. The questionnaire was distributed to the selected sampled institution in July and September 1998.

The questionnaire was divided into 4 sections. The first section is on institutional background, which provide information on the characteristics of enrolment that included types of course offered, the number of students enrolled in each courses and students' family background. However, not all the sampled institutions were willing to reveal information on students' family background. The second section was related to teaching staff attributes in terms of numbers, qualifications and the level of appointment (position). The third section comprised questions on institutional expenditure, in particular on staff salaries, managerial and teaching facilities, and research. The final section was on institution's graduates and their career opportunities.

6.5.1.2 The questionnaire to students

An example of the student questionnaire used in this study is given in Appendix Chapter 6b. In contrast to the previous institution questionnaire, the questions designed in this questionnaire are in close-ended form. Although it is argued that close-ended questions might not provide other

types of information that are closely related to the issues that we seek to investigate, there are also several advantages attached to this type question. For instance, it helps the researcher to perform the analysis task much easier, especially in coding, computing and performing quantitative analysis. Furthermore, since we decided to use the mail method of distributing the questionnaires, closed-ended types of questions are likely to help respondents to answer all questions more easily. This questionnaire was distributed through mail to respondents in respective sampled institutions in August 1999.

There are altogether 6 sections in this questionnaire. The first and second sections concerned the respondent's personal details and family background. These were used extensively to provide indicators on equity aspects of higher education provision by both public and private sectors. The third and fourth sections concerned the respondent's course of study and its finance. The main purpose was to examine and compare the level of efficiency in the education provision. The fifth and the final sections were on the benefits of education and respondent's evaluation on the quality of the education provided.

6.5.2 Interviews

To supplement the questionnaire method, we also conducted several interviews with the management in the sampled higher education institutions and with government officials in the Ministry of Education. Research interviews can take various types and can vary from structured interviews at the one hand to unstructured interviews at the other. According to Robson (1993), it is most appropriate to use a semi-structured interview. Although it is relatively less efficient to use this method compared with a structured interview, it has the advantage of

allowing the interviewer to follow issues seen as significant by the respondent through facilitating a greater range of responses. In this study, we use interviews to validate information that been provided by the institution questionnaire. Thus, interviews were carried-out during the same period as the first part of the fieldwork in July and September 1998.

6.5.3 Published and unpublished reports

During the fieldwork, we also collected published and unpublished reports from our sampled institutions and the Ministry of Education. We used information from these reports to validate, and sometimes, to supplement the information provided by the questionnaires and interviews.

6.6 Method of analyses

Since the purpose of this study is to compare public and private provision, we compared selected variables from the supply- and demand-side data of the private sector with public sector provision.

6.6.1 The supply-side data analysis

Data on the supply-side were gathered, as explained above, from questionnaires distributed to three private colleges and two public universities. Data included in this part of analysis are as follows:

1. Data on student enrolment – these data show the number of students enrolled in each field of study offered. This would reflect emphasis of each sampled institution on the types of courses offered. It is argued in the literature that the private sector is likely to emphasise fields such as management or social sciences, which could be taught in

large classes with low capital requirements (James 1991a). The private sector is not likely to offer courses that require expensive laboratory equipment and high capital investment because it is difficult to cover such costs through tuition fees.

2. Data on institutional expenditures – these data show various types of expenditure of private and public sector provision of higher education. For comparing purposes, we grouped these expenditures into three main categories, which is, the academic staff salaries, managerial expenses and teaching facilities. Since we argued that the main objective of the private is to maximise profits, these expenditures are likely to be relatively low compared to those in the public sector. This raises question on the related concept of efficiency (Scitovsky 1952, Psacharopoulos and Woodhall 1985, World Bank 1994, 1995a)[5].

3. Data on the attributes of teaching staff – these data contain information on the level of seniority and the qualifications of teaching staff in public and private institutions. Literature has revealed that private sector higher education tends to employ part-time, less experienced and less qualified teaching staff (Tilak 1991, James 1991a). Through examining these data, we can ascertain whether the case of private sector provision in Malaysia lends support to these previous findings.

From these data we are able to compute several indicators of efficiency and quality in private sector provision, and to compare them with those in the public sector.[6] Literature has suggested that ratio indicators can be

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[5] See earlier discussions on this aspect in Chapter 3 (p. 67-68)

[6] In this part of analysis, we are not able to compute indicators for equity because of inadequate data.

used to reflect the level of efficiency and quality of an education provision (Fuller 1986; Johnes and Taylor 1990, UNESCO 1999, World Bank 2000). Therefore, in this study, we have used several cost-ratio indicators to compare the cost-effectiveness of public and the private sector. In addition, other related indicators like the amount of expenditure on research, the level of qualification of teaching staff and the availability of teaching facilities and equipment may also shed light on the level of efficiency and quality of the provision.

6.6.2 The demand-side data analysis

Data describing demand were collected from a student questionnaire distributed to selected student samples in both public and private sector institutions. Some preliminary work was essential before the raw data can be analysed. Data from close-ended questions in the student questionnaires were coded appropriately and analysed using the Statistical Package for Social Sciences (SPPS). The data that were included were as follows:

1. Family background – includes data on parents' level of income, types of occupation and family levels of education. Theoretically, it is argued that urban, higher income, more wealthy, more educated, and more professional or managerial families are likely to spend much more on their children's education compared with rural, lower income, less wealthy, less educated and agriculture household (Tsang and Kidchanapanish 1992, Tsang and Taoklam 1992). Subsequently, it would be likely that only students from the former group are likely to attend private higher education because private costs of higher education are relatively high in the private sector compared with those in the public sector. Thus, the main aim of investigating these data is

to examine the extent of private sector provision affecting the equity aspect.

2. Student characteristics – these data show the types and levels of qualification required by students as entry qualifications to both the public and private sector institutions. The main aim was to reflect the quality of students who enrolled in these institutions.

3. Private costs – includes two types of cost, the direct and indirect private costs. Direct private costs refer to all expenditures made either by parents and/or students themselves on tuition fees and other non-fee expenditure such as book and learning materials, living and travelling expenses, and other costs that are directly related to education. While, indirect private costs refer to the economic value of the forgone opportunities due to schooling. This is normally measured by the amount of income forgone. It is argued that if higher education is being provided by the private sector, the costs of access to higher education will most likely to increase (Andrian 1983, Psacharopoulos and Woodhall 1985, Glytsos 1989). Although it is claimed that private returns to higher education are much higher than the social returns, increase in private costs would subsequently reduce returns of the private sector students. To ascertain this, we needed to compare the cost data with the benefits of higher education investment.

4. Private benefits – includes two types of benefits, viz., monetary benefits and the non-monetary benefits. Monetary benefits usually refer to the additional income received by educated workers as compared to those who are less educated. In this study, we use respondents' expectation of income to estimate the level of income received. In addition, we also use the public sector income schedule

to ascertain whether there is variation between respondent's expectation and the actual income paid by the public sector employment. In this study, we also selected seven variables that have been used by the Dearing Report 1997[7] as indicators to show the extent of the non-monetary benefits between the two groups of respondents in our sampled institutions. These variables are the following; the development of new skills; the experiencing of intellectual development; learning and discussing new ideas; broadening horizons; increasing self-esteem and confidence; meeting new people; and experiencing pleasure in the student life.

5. Sources of funding – includes the name of grant provider and the amount of grants and/or loans received. In addition, we also estimate the amount of parents and family's contribution towards financing of their children higher education. The purpose of this part of analysis was to examine all financial resources that are made available to students in both the public and private institutions.

6. Academic programmes – these data evaluate five aspects of main academic activities (i.e. lectures, seminars/tutorials, laboratory/workshops, practical/projects, and mentoring/guidance sessions). We assess each of these aspects based on the contact of hours (i.e. how many hours per week it involved), the structure (i.e. how well it is been structured), the preparation (i.e. how well it is been prepared) and the presentation (i.e. how well it is been presented). The aim was to reflect the quality level of higher education provision in both sectors.

[7] The National Committee of Inquiry into Higher Education in the UK.

Statistical tests such as the t-test, chi-square and Mann-Whitney U test were used to compare the differences in characteristics that between the public and private sector provision of higher education, and between the characteristics and attitude of students in each sector. The specific hypotheses that were developed earlier in Chapter 5 will be tested in Chapter 7, 8, 9 and 10 below. In addition, we also used the Internal Rate of Return method (IRR) to estimate and compare the profitability of investment to higher education between students in the private sector with those in the public sector.

6.7 Research problems and experience

The main obstacle to this research was to obtain data on the private sector provision of higher education. Data on higher education in Malaysia, especially with regard to the costs of the provision, are not recorded systematically. Thus, fieldwork surveys were required to collect the data required for this study.

During the first stage of fieldwork, our main difficulty was in getting the private sector higher education institutions to participate. Many of these institutions treated all information, especially on the costs of the provision, as classified. Notwithstanding this, we manage to persuade three of these institutions to co-operate and provide us with the required information. In contrast, it was much easier to gather information from public institutions not least because the author is employed in this.

In the second stage of fieldwork, the main problem arose from the survey being conducted through the mailing method. We anticipated that the rate of response was likely to be low, especially amongst the private sector students. To overcome the problem, we distributed all questionnaires

through the institution's management. The task was made easier since we had personal contacts with the management personnel of sampled institutions established during the first stage of fieldwork.

6.5 Summary

In this Chapter we have explained how the study was conducted. We chose the survey procedure since in Malaysia, data on higher education, in particular the private sector provision, are scarce. The most challenging part of this research was the lack of data on both public and private institutions, a situation made worse by the secrecy of private colleges. It is clear that the type of data collected are fundamental for monitoring and planning higher education and should be part of the Government's policy. It is to be hoped that this study will help to point the way for the development of statistics for higher education in Malaysia.

CHAPTER 7
THE SUPPLY-SIDE ANALYSIS

7.1 Introduction

We have argued that the private sector has an important part to play in the provision of higher education in Malaysia. In this Chapter we shall compare public and private sector higher education providers to discover how far they compete with or complement one another, and to throw some light on the relative efficiency and quality of their provision.

7.2 The reliability of the samples

The data on which the comparisons are based relate to two public universities and three private colleges. The data were collected through questionnaires, interviews and correspondence during July and September 1998, and refer to the 1997/1998 academic calendar year. The sample data have been supplemented by published and unpublished reports from both types of sampled institutions, the Registrar of Companies, the Ministry of Education and other related government departments responsible for higher education and national development.

The study was confined to institutions that offer full first-degree programmes. As may be seen in Table 7.2a below, there are eleven public universities and ten private colleges in this category. The Ministry of Education has approved the latter to offer full first-degree programmes under the 3+0-twinning concept.[1] The institutions selected as samples are typical of their groups in all respects.

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[1] This refers to twinning degree programmes which do not require student to go abroad (see Chapter 4, p. 119)

Table 7.2a Public Universities and 3+0 Privates Colleges, 1997/98

Type of institutions	Number of institutions	Number of selected cases
Public Universities	11[1]	2
3+0 Private Colleges	10[2]	3

[1] Seventh Malaysian Plan (1996-2000)
[2] Ministry of Education (1997)

Source: Fieldwork 1998

In terms of enrolment, approximately one-fifth of the total are represented by these institutions. Table 7.2b below shows that the overall enrolment in these institutions represents 22 and 18 per cent of the total national entry respectively.

Table 7.2b Students' enrolment in sampled institutions, 1997/98

Types of Institutions	Sample's Enrolment (Per cent)	Percentage of Total National Enrolment [1]
Public:		
U1	13,238 (46.1)	10.3
U2	15,462 (53.9)	12.0
Total Public	28,700 (100.0)	22.3
Private:		
C1	4,375 (39.8)	7.2
C2	4,069 (37.0)	6.7
C3	2,540 (23.1)	4.2
Total Private	10,984 (100.0)	18.2

[1] Based on statistics in the Seventh Malaysian Plan (1996-2000)

Source: Fieldwork 1998

These institutions are also typical in respect of the faculties that comprise them and the range of courses offered. Thus, the sampled institutions represent a substantial proportion of the flow of students through all parts of the higher education sector and are likely to give a representative picture of the sector as a whole. In what follows, we shall compare public and private sector provision on the basis of key indicators of efficiency and quality.

7.3 The characteristics of student enrolments

In this section, using the supply-side data we seek to examine the first two hypotheses developed earlier in our theoretical framework in Chapter 5. We hypothesise that the private colleges are likely to offer only courses that are in high demand by the market, compared with the public universities which offer a wider range of courses (H_1 – see Chapter 5, p. 129). In relation to the first hypothesis (H_1), we may expect that demand for higher education is likely to be much stronger in those institutions that provide technical and vocational courses which offer reasonable return within a short-term period. Hence, our second hypothesis is that the private colleges, in attempt to maximise profits, are likely to concentrate on courses like Engineering, Information Technology and Business Studies (H_2 – see Chapter 5, p. 129). We used the characteristics of student enrolments to examine these hypotheses.

From the supply-side data, Table 7.3 shows the distribution of enrolment over fields of study in the sampled institutions. It can be seen that Education, and Applied and Pure Sciences are not being offered by the private sector. This is likely to result from a lack of demand for these kinds of course because first, sufficient places have been supplied by public universities, and second, their relatively low rates of return compared to other degree programmes. The Ministry of Education has recently announced that there is an excess of non-graduate teachers enrolled in

public universities under Distance Learning Programmes. Statistics in 1998 show that under this programme there are some 14,198 non-graduate teachers enrolled in full first-degree courses in public universities (Utusan Malaysia, 2000). Moreover, in Table 4.5.1 (p. 110), we have shown that there is no predicted shortage of graduate teachers for the planning period of 1996-2000. Similarly, the job market requires fewer people with Applied or Pure Science qualifications, so that demand in this area of studies is relatively small. Experience in the past has shown that there are instances where Applied and Pure Science graduates from abroad were then offered positions as language teachers because there were insufficient job openings in science.

Table 7.3 Students enrolment in sampled institutions by fields of study, 1997/98

Fields of study	Public		Private		Difference in percent (e)=(b)-(d)
	Enrolment (a)	% (b)	Enrolment (c)	% (d)	
Arts and Social Sciences	10,838	37.76	674	6.14	31.63
Economics & Business Studies	4,915	17.13	1,991	18.13	(1.00)
Education	1,788	6.23	0	0.00	-
Law	848	2.95	157	1.43	1.53
Medicine and Dentistry	3,091	10.77	100	0.91	9.86
Engineering & Technology	2,670	9.30	3,384	30.81	(21.51)
Information Technology	1,122	3.91	4,678	42.59	(38.68)
Applied and Pure Sciences	3,428	11.94	0	0.00	-
Overall Total Enrolment	28,700	100.00	10,984	100.00	

Source: Fieldwork 1998

We can also see that Law has the smallest intake in both sectors though, as shown in Table 7.3 above, public institutions enrol twice as many students as the private. Amongst eleven Public Universities, only three offer Law. Out of these three, two are still new to the subject, and this may be a factor in enrolments. Another reason for lower intake in this subject is that students may prefer to study abroad because of the requirement for recognition from international professional bodies. Currently, only few local institutions have been recognised by these professional bodies as satisfactory and qualified to teach law.

Table 7.3 also shows that public sector intake far exceeds the private in Arts and Social Sciences, and Medicine and Dentistry. The percentage share of total enrolments in Arts and Social Sciences is six times greater in the public sector than in private. This is a consequence of established policy on higher education through which most students are sent abroad for science and technical courses leaving local public universities to concentrate only on arts and social sciences. However, realising that the job market requires fewer graduates from Arts and Social Sciences, the Government is now allocating more resources to increase the intake in science and technical subjects. Furthermore, it is more expensive to send students abroad nowadays than to educate them at home.[2] Currently the ratio of arts and social sciences to science and technology in the public system is 70:30 but Government aims to reduce the ratio to 40:60. However, since the public system is so well established, efforts to reduce the ratio are likely only to be achieved over a longer period.

For Medicine and Dentistry, the percentage share of total enrolments in the public sector is ten times more than the private sector. We have shown in Table 4.5.1 (p. 110) that there is high demand for medical and health professionals in Malaysia. But Medicine and Dentistry require

[2] We have shown this earlier in Chapter 4 (see Table 4.5.2, p. 113).

expensive investment in staff training and equipment. Nonetheless, there are some efforts made by the private sector to offer these subjects despite the higher costs. For these subjects to be offered would require higher enrolments to take advantage of the scale economies. Initial investment will necessarily be high and if costs are to be reduced, number of enrolments must increase. Recently, a private university (the International Medical University) has been established offering full first-degree programmes purely in medicine and health related subjects. This shows that the private sector is willing to invest in higher education if there is high demand, and through expanding to take advantage of scale economies, they could still achieve satisfactory profits in expensive subjects.

In contrast, Table 7.3 also shows that the private sector intake exceeds the public in Engineering and Technical (by three times), and Information Technology (by ten times). It has been hypothesised earlier, on the basis of our theoretical model that private colleges offer more places in areas where there is high market demand (see H_1, p. 129). If we refer to Table 4.5.1 (p. 110) once again, it shows that engineers and engineering assistants are in high demand in the labour market. Nonetheless, due to the limited availability of resources, public universities are able to offer only a limited number of places in these subjects. Public universities because are so well established, are slow to respond to this demand compared with the private. In doing so, would possibly entail a considerable reallocation of resources. As shown in Table 7.3, places for Engineering and Technical in public universities amount to only between 9 per cent. In contrast, recent statistics shown in Table 4.5.1 (p. 110) demonstrate that shortages for professionals in this area are considerable. Whether this really reflects the inability for public universities to adjust to changes in demand quickly because of managerial and/or costs constraints is a matter for speculation. On other

hand, the relatively low numbers could also result from public universities require higher exam results, particularly in Maths and Science subjects, for Engineering than for Arts and Social studies.

We can also see that Information Technology is mainly offered by private colleges, some 43 per cent compared with only 4 per cent by public universities. This might also indicate that private demand for first degree courses in this area is also substantial, and likely to be the result of the Malaysian National Policy of developing computing technology through establishing the Malaysian Multimedia Super-Corridor Programme[3]. It is forecast that the plan is capable of generating a substantial number of new job opportunities in the computing and information technology industry in the near future.

Only in Economic and Business Studies do both sectors seem to have the same relative intake. In the public sector, it appears to be the second highest to be offered after Arts and Social Sciences, while in the private, the subject is the third largest intake after Information Technology, and Engineering and Technical. The relatively high intake in Economic and Business studies is likely to be due to broader job opportunities amongst graduates in this area. Furthermore, to study these subjects requires only basic higher school qualifications compared with other vocational and technical subjects.

Thus generally, the patterns on the characteristics of student enrolments which based on the supply-side data seems to lend support our hypotheses (H_1 and H_2). Nonetheless, it is noteworthy that the preceding discussion also shows that there is a certain degree of complementarity between the two sectors in the provision of higher education. In areas

[3] This aspect is discussed in greater detail in Chapter 4 (see p. 111)

where there is insufficient supply of places by the public sector, the private sector offers places to meet the market demand. Nonetheless, it is still not clear whether private colleges are complementing public universities efficiently in terms of utilising all resources available for higher education development. It is also unclear whether the provision of higher education is equitable, and also to what extent the quality of education is of a comparable quality to that of the public sector. An examination of the costs of provision for each sector will possibly throw some light on some of these questions.

7.4 The patterns of institutional costs of provision

To examine the costs, we hypothesise that the cost per student in the private colleges is likely to be lower compared with those in the public universities (H_3)[4]. This hypothesis is based on the literature that demand for private higher education is strongly related to the level of family income, especially amongst relatively lower income family. If this is true, it is therefore reasonable to assume that the elasticity of demand for private higher education is likely to be less than one. Since we have shown earlier in Chapter 5 (see p. 129) that demand is a function of the price of higher education, in order to maximise the demand, the private sector providers are more likely to indulge in cost cutting behaviour than to seek to raise price.

If the elasticity condition is satisfied and H_3 appear to true, we may expect that the private colleges are likely to employ junior and less qualified teaching staff, and, are likely to have higher student-staff ratio compared with the public universities in attempt to minimise their costs (H_{3a})[5]. We may also expect that the private colleges are likely to spend less on

[4] Refer Section 5.3.1 on page 127 regarding the development of this hypothesis.
[5] See also page 129-130

teaching facilities compared with the public universities to further reduce their costs of provision (H_{3b})[6].

7.4.1 The general patterns

In terms of institutional costs, Table 7.4.1 shows that the general pattern in private colleges corresponds well with the students' intake in all fields, while for public universities, it corresponds only in certain areas.[7]

Table 7.4.1 The costs of provision by fields of studies in sampled institutions, 1997/98

Fields of Study	Public (a)	% (b)	Private (c)	% (d)	Difference In Percent (e) = (b)-(d)
Arts and Social Sciences	52,488,531.00	24.7	1,244,628.00	4.9	19.8
Economics and Business Studies	16,250,478.00	7.7	4,106,116.00	16.2	(8.6)
Education	9,253,528.00	4.4	0	-	-
Law	4,626,798.00	2.2	1,074,498.00	4.3	(2.1)
Medicine and Dentistry	62,924,936.00	29.6	735,547.00	2.9	26.7
Engineering and Technology	21,198,787.00	10.0	10,447,713.00	41.3	(31.3)
Information Technology	7,218,980.00	3.4	7,668,300.00	30.3	(26.9)
Applied and Pure Sciences	38,381,482.00	18.1	0	-	-
Overall Total Expenses	212,343,520.00	100.0	25,276,802.00	100.0	

Source: Fieldwork 1998

[6] See also page 130.
[7] Note that Education and Applied and Pure Sciences are not represented in the private sector.

For example, the above table shows that private colleges, relative to public universities, spent more in Engineering and Technical, Information Technology and Economic and Business because of their higher intake. On other hand, the private colleges spent less in Medicine and Dentistry, Law and Arts and Social Sciences because their intake is relatively low. But public universities, despite having a higher intake in Arts and Social Sciences and Economics and Business Studies, relative to private, also spent more in Medicine and Dentistry. Public universities also spent highly in Applied and Pure Sciences relative to their intake. This would suggest that Medicine and Dentistry, and Applied and Pure Sciences are costly subjects to establish as well as to run.

However in Economic and Business Studies, it is interesting to note that, despite having a higher intake, the spending of public universities is relatively lower than the private colleges. This could possibly result from economies of scale in these areas. A rough correspondence in the costs proportions with students intake exists only in Law, Information Technology and, Engineering and Technical fields.

7.4.2 Types of expenditure

In broader terms, the cost of providing higher education includes staff salaries, managerial expenses and teaching facilities. It is argued that in higher education provision, a large amount is spent on academic staff salaries rather than on teaching facilities (Fuller 1986). As can been seen in Table 7.4.2, for both types of institutions, expenditure on academic salaries exceeded other types of expenses in all fields. This indicates that, despite the fact that higher education might be an expensive investment, a substantial proportion of the costs are related to paying teaching staff salaries, rather than on teaching facilities.

Table 7.4.2 The costs of provision by types of expenditure in sampled institutions, 1997/98

Fields of study	Public		Private		Difference in percent
	Amount (a)	% (b)	Amount (c)	% (d)	(e)=(b)-(d)
Arts and Social Sciences:					
(a) Academic Staff Salaries	30,149,712.00	57.44	1,089,373.00	87.53	(30.09)
(b) Managerial Expenses	4,807,984.00	9.16	71,203.00	5.72	3.44
(c) Teaching Facilities	17,530,835.00	33.40	84,052.00	6.75	26.65
Economics & Business Studies:					
(a) Academic Staff Salaries	10,908,111.00	67.12	3,539,192.00	86.19	(19.07)
(b) Managerial Expenses	1,292,210.00	7.95	175,323.00	4.27	3.68
(c) Teaching Facilities	4,050,157.00	24.92	391,601.00	9.54	15.39
Education:					
(a) Academic Staff Salaries	6,471,684.00	69.94	0	0	0
(b) Managerial Expenses	857,053.00	9.26	0	0	0
(c) Teaching Facilities	1,924,791.00	20.80	0	0	0
Law:					
(a) Academic Staff Salaries	3,082,411.00	66.62	1,038,136.00	96.62	(30.00)
(b) Managerial Expenses	437,053.00	9.45	5,383.00	0.50	8.95
(c) Teaching Facilities	1,107,334.00	23.93	30,979.00	2.88	21.05
Medicine and Dentistry:					
(a) Academic Staff Salaries	55,317,332.00	87.91	490,248.00	66.65	21.26
(b) Managerial Expenses	4,633,363.00	7.36	21,496.00	2.92	4.44
(c) Teaching Facilities	2,974,241.00	4.73	223,803.00	30.43	(25.70)
Engineering & Technology:					
(a) Academic Staff Salaries	11,863,548.00	55.96	8,347,105.00	79.89	(23.93)
(b) Managerial Expenses	5,819,508.00	27.45	481,243.00	4.61	22.85
(c) Teaching Facilities	3,515,731.00	16.58	1,619,365.00	15.50	1.08
Information Technology:					
(a) Academic Staff Salaries	2,698,626.00	37.38	6,223,611.00	81.16	(43.78)
(b) Managerial Expenses	2,251,755.00	31.19	316,675.00	4.13	27.06
(c) Teaching Facilities	2,268,599.00	31.43	1,128,014.00	14.71	16.72
Applied and Pure Sciences:					
(a) Academic Staff Salaries	22,532,960.00	58.71	0	0	0
(b) Managerial Expenses	2,618,681.00	6.82	0	0	0
(c) Teaching Facilities	13,229,841.00	34.47	0	0	0
Overall Total Expenses:					
(a) Academic Staff Salaries	143,024,384.00	67.36	20,727,665.00	82.00	(14.65)
(b) Managerial Expenses	22,717,607.00	10.70	1,071,323.00	4.24	6.46
(c) Teaching Facilities	46,601,529.00	21.95	3,477,814.00	13.76	8.19

Source: Fieldwork 1998

With exception of Medicine and Dentistry, private institutions spent a larger proportion of their total expenditure on the salaries of teaching staff compared with the public. On the whole, private sector costs exceeded the public sector's by almost 15 percentage points with the biggest difference being in Information Technology (44 percentage points), followed by Arts and Social Sciences, Law (30 percentage points), Engineering and Technical (24 percentage points) and Economic and Business Studies (19 percentage points). The exception is Medicine and Dentistry in public institutions; this is presumably because the public sector has to hire highly qualified and more senior academic staff, and to pay higher salaries in order to retain them. In Malaysia, medical and health professionals fall under the category of a "critical profession" and operate on a higher pay scale. However, with respect to teaching facilities, Table 7.4.2 shows that a reverse pattern exists where except for Medicine and Dentistry, the expenditure of public institutions exceeds that of the private.

From the table above we observed that on the whole, public universities spent almost 22 per cent of their expenditure on teaching facilities compared with only 14 per cent in the private. These figures might be taken as an indication of greater efficiency in the private sector or on other hand, higher quality provision in the public sector. For Medicine and Dentistry, it is noteworthy that private colleges spent six times more than the public. This may indicate that the private sector is willing to invest if the subjects are in high demand. The much lower expenditure on teaching facilities in the public sector might indicate the existence of economies of scale as facilities are spread over more students. The private sector is still new to offering this subject and so has to make an initial investment in facilities, which the public sector does not.

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7.5.1 The cost-student ratio

Table 7.5.1 shows per student expenditure in both types of sampled institutions by field of study. The table shows that, except for Law, per student expenditure in all disciplines is higher in the public sector. Thus our hypothesis H_3 regarding the cost cutting behaviour amongst the private colleges is likely to be true. In terms of technical efficiency, the cost per student ratio indicates that private colleges are able to be more efficient in higher education provision relative to public universities by maximising their output per unit of input. Law however, is more expensive in the private sector because the lower intake causes it to operate below the efficient scale. As mentioned earlier, this is the result of the course requiring international recognition and, consequently, the greater likelihood of students studying abroad.

Table 7.5.1 Cost per student in sampled institutions, 1997/98 (weighted by student enrolment)

Fields of study	Public (in RM) (a)	Private (in RM) (b)	Difference (c)=(a)-(b)	Percentage Difference (d)= (c)/(a)
Arts and Social Sciences	4,843.01	1,846.63	2,996.38	61.9
Economics & Business Studies	3,306.30	2,062.34	1,243.96	37.6
Education	5,175.35	-	-	-
Law	5,456.13	6,843.94	(1,387.81)	(25.4)
Medicine and Dentistry	20,357.47	7,355.47	13,002.00	63.9
Engineering &Technology	7,939.62	3,087.39	4,852.23	61.1
Information Technology	6,434.03	1,639.23	4,794.80	74.5
Applied and Pure Sciences	11,196.46	-	-	-
Overall Ratio	7,398.73	2,301.24	5,097.49	68.9

Source: Fieldwork 1998

Private colleges, relative to public universities, might be technically efficient in producing graduates because of their higher level of output per unit of input. But if the unit of input is too small, this likely to have some impact on the quality of output. For instance, the ratios of cost per student between public universities and the private colleges are as follows: 4:1 for Information Technology, and roughly 2.6:1 for Medicine, Arts and Engineering. The low per student expenditure might be technically (cost) efficient without satisfying the precise nature of demand or maintaining high level of quality. On contrary, higher per student expenditure might indicate superiority in quality as well as attention to the nature of demand.

The concept of economic efficiency takes account not only of the level of average unit cost but also of whether demand is fully satisfied and resources allocated precisely to the satisfaction of demand. Thus economic efficiency is achieved when consumer demands are satisfied precisely at minimum costs. Table 7.5.1 above reveals that, except for Law, private colleges might be more efficient in terms of utilising educational resources, but public universities in contrast, might be superior in quality and the nature of provision. It might be interesting to explore how far this is the case through further examination of other relevant indicators.

7.5.2 Student-staff ratios

As our model assumed that the aim of the private sector is to maximise profit, it might be expected that private colleges would have a higher student-staff ratio and would employ substantial numbers of juniors and presumably less qualified academic staff in attempt to reduce their cost (H_{3a}). In contrast, public universities in spite of minimising the costs of provision need to maintain a minimum level of quality in attempt to maximise the number of graduates. Consequently, public universities

would be expected to have lower student-staff ratios and possibly to employ substantial numbers of senior academic staff with relatively better qualifications compared to those in the private sector.

Comparisons of student-staff ratios between and within institutions can be use as indicators of efficiency and quality of the education provision (Fuller 1986; Johnes and Taylor 1990; UNESCO 1999; World Bank 2000). So we can compare faculties within an institution and also faculties across institutions to give a guide to efficiency, and possibly quality. The ratios could also be compared with world standards; for instance in Britain, the average student-staff ratio amongst its 100 top universities is 17.37[8]. The ratios in Social Sciences are even higher, up to 20 students per one academic staff. Thus, a comparison by faculty would be safer.

Table 7.5.2 shows that there is considerable variation in the average student-staff ratio between public and private institutions in Malaysia. Overall, the ratio in private colleges is more than double the ratio in public universities, which seems to agree with our hypothesis H_{3a}[9]. This gap might demonstrate the different degree of efficiency in terms of economies of scale, and also quality in both types of institutions. The higher student-staff ratio in private colleges might indicate that these colleges are more efficient than the public universities because of the scale economy. Nonetheless, considerable variation in the ratio might also indicate that these colleges are offering an inferior quality of education. However, Malaysian public universities are operating at much lower ratios compared to the British standards. This indicates that the public universities may be less efficient, or they might be superior in quality due to lower proportion of students assigned to one member of staff. In case of high demand, such a pattern would suggest that public

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[8] Higher Education Statistics Agency (HESA), 1998

[9] In this hypothesis we expect that the private colleges are likely to have higher student-staff ratio in attempt to minimise their cost.

universities are capable of providing more places for higher education since they operate below the world standards.

Table 7.5.2 Student staff ratio in sampled institutions, 1997/98 (weighted by students' enrolment)

Fields of study	Public (a)	Private (b)	Difference (c)= (a)-(b)	Percentage Difference (d)=(c)/(a)
Arts and Social Sciences	14	18	-4	-25.1
Economics & Business Studies	18	20	-3	-15.2
Education	12	-	-	-
Law	13	4	8	64.5
Medicine and Dentistry	4	10	-6	-145.3
Engineering and Technology	12	25	-12	-100.2
Information Technology	18	27	-9	-50.9
Applied and Pure Sciences	6	-	-	-
Overall Ratio	10	23	-13	-129.0

Source: Fieldwork 1998

In terms of fields of study, except for Law, public universities have lower student-staff ratios than private colleges. A much lower ratio for Law in private colleges might possibly explain why cost per student in this faculty (as we saw earlier) is higher in the private sector than in public. This may also indicate that, in Law, private institutions might be less efficient than public due to the higher cost involved. This may suggest that it is more efficient for the private colleges to concentrate only on courses that are in high demand and where places in the public sector are very limited, rather

than offering courses like Law that could sufficiently and efficiently be met by public universities.

7.5.3 Seniority and qualifications of the teaching staff

Presumably in seeking to maximise profits, private colleges also employ substantial numbers of junior and possibly less qualified teaching staff, although both types of institution might be using a different scheme of appointment and salary scales for their academic staff (H_{3a}). In broad terms, academic staff can be divided into four main categories, viz., professor, associate professor or senior lecturer, lecturer and assistant lecturer or tutor. Private colleges have fewer professors and associate professors or senior lecturers as compared with public universities. Table 7.5.3a shows that private colleges employed less than 1 per cent professors and not more than 6 per cent associate professors or senior lecturers. The figures are much higher in public universities, that is 8 and 23 per cent respectively. The senior staffs in private colleges are also appointed from retired academic staff from public universities. There are also a few cases where some opted for private colleges due to attractive pay and fringe benefits.

If we assume that professors and associate professors or senior lecturers are superior in teaching and research experience, then it is obvious from Table 7.5.3a that most teaching staff in private colleges is inferior to those in the public sector. Thus our hypothesis H_{3a} on the kind of teaching staff that the private colleges have is likely to be true. It is to be expected that public universities will have many senior lecturers and professors compared to the private. A university's role as a centre for research, knowledge and cultural development requires substantial expertise in all areas. Furthermore, a university also formulates its own degree programmes. Private colleges on the other hand, do not do research and

do not originate degree programmes, but simply implement courses designed by parenting universities under the twinning concept.

Table 7.5.3a Number of academic staff by categories in sampled Institutions, 1997/98

Fields of study	Public		Private		Difference in percent (e)=(b)-(d)
	Staff (a)	% (b)	Staff (c)	% (d)	
Professor	244	8.4	2	0.4	
Assoc. Prof./Senior Lecturer	669	22.9	29	5.8	17.1
Lecturer	1,484	50.9	452	90.6	(39.7)
Assistant Lecturer/Tutor	519	17.8	16	3.2	14.6
Total Number of Staff	2,916	100.0	499	100.0	

Source: Fieldwork 1998

Table 7.5.3b illustrates the distribution of academic staff by fields of study in further detail. In almost all faculties in private colleges, except for Medicine and Dentistry, the number of lecturers far exceeds the number of professors and associate professors or senior lecturers. The types of degree programme conducted by both institutions would best explain the difference in the superiority of academic staff between private and public institutions.

The fact is that private colleges are not research-based institutions and they do not have their own degree programmes. On the other hand, they only offer twinning degree programmes that require no expertise on their part in designing the curriculum. The roles of private colleges are just to conduct and implement programmes that been designed by the parent university, either from abroad or locally. It is unlikely for the college to

invest in research and development in attempt to discover new knowledge and improve the subject contents.

Table 7.5.3b Number of academic staff by categories according to fields of study in sampled institutions, 1997/98

Fields of study	Public		Private		Difference in percent
	No. of Staff (a)	% (b)	No. of Staff (c)	% (d)	(e)=(b)-(d)
Arts and Social Sciences:					
(a) Professor	42	5.38	0	0.00	5.38
(b) Assoc. Prof./Senior Lecturer	142	18.21	3	7.69	10.51
(c) Lecturer	473	60.64	35	89.74	(29.10)
(d) Assistant Lecturer/Tutor	123	15.77	1	2.56	13.21
Economics & Business Studies:					
(a) Professor	28	9.96	0	0.00	9.96
(b) Assoc. Prof./Senior Lecturer	47	16.73	7	7.07	9.66
(c) Lecturer	168	59.79	88	88.89	(29.10)
(d) Assistant Lecturer/Tutor	38	13.52	4	4.04	9.48
Education:					
(a) Professor	11	6.79	0	0.00	0.00
(b) Assoc. Prof./Senior Lecturer	38	23.46	0	0.00	0.00
(c) Lecturer	86	53.09	0	0.00	0.00
(d) Assistant Lecturer/Tutor	27	16.67	0	0.00	0.00
Law:					
(a) Professor	6	8.33	0	0.00	8.33
(b) Assoc. Prof./Senior Lecturer	10	13.89	1	2.86	11.03
(c) Lecturer	43	59.72	32	91.43	(31.71)
(d) Assistant Lecturer/Tutor	13	18.06	2	5.71	12.34
Medicine and Dentistry:					
(a) Professor	76	9.61	1	10.00	(0.39)
(b) Assoc. Prof./Senior Lecturer	184	23.26	1	10.00	13.26
(c) Lecturer	400	50.57	7	70.00	(19.43)
(d) Assistant Lecturer/Tutor	131	16.56	1	10.00	6.56
Engineering & Technology:					
(a) Professor	20	9.05	1	0.70	8.35
(b) Assoc. Prof./Senior Lecturer	47	21.27	12	8.39	12.88
(c) Lecturer	111	50.23	125	87.41	(37.19)
(d) Assistant Lecturer/Tutor	43	19.46	5	3.50	15.96
Information Technology:					
(a) Professor	4	6.45	0	0.00	6.45
(b) Assoc. Prof./Senior Lecturer	6	9.68	5	2.89	6.79
(c) Lecturer	41	66.13	165	95.38	(29.25)
(d) Assistant Lecturer/Tutor	11	17.74	3	1.73	16.01
Applied and Pure Sciences:					
(a) Professor	57	10.42	0	0.00	0.00
(b) Assoc. Prof./Senior Lecturer	195	35.65	0	0.00	0.00
(c) Lecturer	162	29.62	0	0.00	0.00
(d) Assistant Lecturer/Tutor	133	24.31	0	0.00	0.00
Total Number of Academic Staff:					
(a) Professor	244	8.37	2	0.40	7.97
(b) Assoc. Prof./Senior Lecturer	669	22.94	29	5.81	17.13
(c) Lecturer	1,484	50.89	452	90.58	(39.69)
(d) Assistant Lecturer/Tutor	519	17.80	16	3.21	14.59

Source: Fieldwork 1998

In contrast, public universities put greater emphasis on research and development, which requires substantial numbers of expertise in all areas. Furthermore, the universities themselves initiate all degree programmes being offered. Such a divergent situation would seem to explain why private colleges are inferior in terms of their teaching staff when compared to public universities.

7.5.4 Per student expenditure on teaching staff salaries

The higher student-staff ratio and the employment of fewer seniors and less qualified academic staff, is reflected in private colleges' per student expenditure on teaching staff salaries. Although the proportion of their expenditure on teaching staff salaries as shown in Table 7.4.2 earlier is much higher than in public universities, the ratio[10] to the student enrolment is much lower than the public. Table 7.5.4 shows that for all faculties, except for Law, the ratio is lowest in private colleges compared with that in public universities. Although this might indicate that private colleges are more efficient than public universities in terms of using their teaching staff, one might nonetheless question the quality of its provision since many less senior and presumably less qualified staff are being used in the teaching purposes.

Public universities on other hand, except for Law, have a higher teacher cost ratio because of the larger proportion of senior and better-qualified staff. This indicate that public universities, relative to the private, might not appear to be technically efficient in terms of teacher cost per student but they offer courses with relatively higher quality in terms of teaching skills and experience. However in the case of Law, the teacher cost ratio is higher in the private. This indicates that the private colleges might be less efficient because they have lower students' intake. This means that, in

[10] Total expenses on teaching staff's salaries divided by number of students enrolled.

this subject, an efficient scale of operations has not yet been reached by the private sector. Such a pattern could also possibly explain why cost per student in Law is much higher in the private than in the public as shown earlier.

Table 7.5.4 Teacher cost per student in sampled institutions, 1997/98 (weighted by students' enrolment)

Fields of study	Public (in RM) (a)	Private (in RM) (b)	Private costs as a % of public costs
Arts and Social Sciences	2,781.85	1,616.28	58.1
Economics & Business Studies	2,219.35	1,777.60	80.1
Education	3,619.51	-	-
Law	3,634.92	6,612.33	181.9
Medicine and Dentistry	17,896.26	4,902.48	27.4
Engineering and Technology	4,443.28	2,466.64	55.5
Information Technology	2,405.19	1,330.40	55.3
Applied and Pure Sciences	4,422.24	-	-
Overall Ratio	4,983.43	1,887.08	37.9

Source: Fieldwork 1998

7.5.4.1 Academic staff average salaries

Since we hypothesise that private colleges aim at minimising their cost (H_3), we would expect that academic staff in private colleges are likely to receive a much lower average salary compared with those in public universities. If this is the case, then it supports our earlier assertion that private colleges, relative to the public, employ substantial numbers of

junior and presumably less qualified teaching staff (H_{3a}). We can see in Table 7.5.4.1 that for all faculties, except for Engineering and Technical, the average salaries of academic staff per year in private colleges are much lower than that in public universities.

Table 7.5.4.1 Teaching staff's average salary in sampled institutions, 1997/98 (weighted by number of teaching staff)

Fields of study	Public (RM/year) (a)	Private (RM/year) (b)	Private costs as a % of public costs
Arts and Social Sciences	38,653.48	27,932.64	72.3
Economics & Business Studies	38,818.90	35,749.41	92.1
Education	39,948.67	-	-
Law	42,811.26	29,661.03	69.3
Medicine and Dentistry	69,933.42	49,024.80	70.1
Engineering and Technology	53,681.21	58,371.36	108.7
Information Technology	43,526.23	35,974.63	82.7
Applied and Pure Sciences	27,713.76	-	-
Overall Ratio	49,048.14	41,538.41	84.7

Source: Fieldwork 1998

In terms of percentage point differences from the public, Medicine and Dentistry and Law demonstrate the highest variation with 30 percentage points. This followed by Arts and Social Sciences, Information Technology, and Economics and Business studies with 28, 17 and 8 percentage points respectively. However, the average salary for Engineering and Technology is much higher probably reflecting the higher

demand in the labour market for engineers. Thus, the private colleges have to pay more to attract teaching staff to teach in their college.

7.5.5 The availability of teaching facilities

Many scholars suggest that the availability and the quality of physical inputs could also provide some indication of efficiency and quality of an educational provision (Fuller 1986; Johnes and Taylor 1990). One way of measuring the physical inputs is to examine the amount spent on those inputs. If we consider classrooms, library, laboratory and computer facilities as critical inputs in providing superior teaching, then we could examine and compare the proportion of money spent in providing those facilities by both public and private sectors.

7.5.5.1 Total expenditure on teaching facilities

Table 7.5.5.1a demonstrates the amount spent by sampled institutions on classroom, library, laboratory and computers per year. About 87 per cent of the public universities' expenditures went on classroom and library facilities compared with 20 per cent for private colleges. The reverse was true for laboratories and computers: some 13 per cent of the public universities expenditures went on these item compared with about 80 per cent of the private colleges expenditure.

We can only speculate on the reasons for this pattern. It could possibly indicate that the public, either provides better classroom facilities, or they might be inefficient in the use of their building space compared with the private. It is typical that public universities are superior to private colleges in terms of campus areas and buildings. It could also be seen in Table 7.5.5.1a that public universities spent four times as much on library facilities, indicating that the quality of the library in public sector is superior to that of the private. To private colleges, it might be expensive to run a

well-established and quality library, because attempts to compete with the public might increase the costs of provision, thus reducing profits. Furthermore the types of twinning programmes that are being offered are heavily based on prepared lecture notes and possibly require only a limited number of textbooks which students are encouraged to buy. In the case of the private sector, the investment in physical equipment is close to being an initial outlay, whereas in the public universities being well established, it is possibly only a marginal addition. If this is the case the pattern can be expected to modify a little over time.

Table 7.5.5.1a Expenditure on types of teaching facilities in sampled institutions, 1997/98

Types of Teaching Facilities	Public		Private		Percentage Difference (e)=(b)-(d)
	Amount (RM) (a)	Percent (b)	Amount (RM) (c)	Percent (d)	
Classroom	19,112,489	41.01	344,998	9.92	31.09
Library	21,369,039	45.85	365,436	10.51	35.35
Laboratory	3,411,578	7.32	1,315,965	37.84	(30.52)
Computers	2,708,423	5.81	1,451,415	41.73	(35.92)
Total Expenditure	46,601,529	100.00	3,477,814	100.00	-

Source: Fieldwork 1998

Private colleges in contrast, spent five times more on laboratory, and seven times more on computers compared to public universities. This, to some extent is in contrast with our hypothesis H_{3b}[11]. This might result from a relatively low proportion of public university students (less than 25 per cent) are in Medicine, Engineering and IT, which all use laboratories and computers, compared with 75 per cent of students in the private colleges. On the other hand, a relatively lower expenditure in the public universities on these facilities could also be taken as the level of scale economies achieved by this sector since we assumed earlier in our model that the

[11] H_{3b}: Private colleges are likely to spend less on teaching facilities compared with the public universities.

public is required to maintain a minimum level of quality. Whilst for the private colleges, they are more flexible in meeting the substantial costs in laboratory and new computing facilities since many of these colleges have just recently been established. Thus, relative to the public, private colleges would possibly be able to adjust to and accommodate newer demand. In terms of teaching facilities by fields of studies, a similar pattern emerges as shown in Table 7.5.5.1b below.

Table 7.5.5.1b Types of teaching facilities' expenditure by fields of study, 1997/98

Fields of study/ Types of expenses	Public		Private		Difference in percent (e)=(b)-(d)
	Amount (in RM) (a)	Percent (b)	Amount (in RM) (c)	Percent (d)	
Arts and Social Sciences:					
(a) Classroom	8,029,339	45.80	22,721	27.03	18.77
(b) Library	8,897,708	50.75	31,176	37.09	13.66
(c) Laboratory	197,834	1.13	12,441	14.80	(13.67)
(d) Computers	405,954	2.32	17,714	21.08	(18.76)
Economics & Business Studies:					
(a) Classroom	2,055,913	50.76	59,406	15.17	35.59
(b) Library	1,793,518	44.28	66,441	16.97	27.32
(c) Laboratory	12,411	0.31	31,964	8.16	(7.86)
(d) Computers	188,315	4.65	233,790	59.70	(55.05)
Education:					
(a) Classroom	889,031	46.19	-	-	-
(b) Library	809,242	42.04	-	-	-
(c) Laboratory	174,387	7.66	-	-	-
(d) Computers	79,131	4.11	-	-	-
Law:					
(a) Classroom	425,988	38.47	3,589	11.59	26.88
(b) Library	538,174	48.60	1,794	5.79	42.81
(c) Laboratory	96,324	8.70	16,625	53.67	(44.97)
(d) Computers	46,848	4.23	8,971	28.96	(24.73)
Medicine and Dentistry:					
(a) Classroom	1,127,313	37.90	5,353	2.39	35.51
(b) Library	1,371,356	46.11	8,268	3.69	42.41
(c) Laboratory	331,179	11.13	163,020	72.84	(61.71)
(d) Computers	144,393	4.85	47,162	21.07	(16.22)
Engineering & Technology:					
(a) Classroom	1,328,276	37.78	128,287	7.92	29.86
(b) Library	1,532,537	43.59	150,187	9.27	34.32
(c) Laboratory	376,079	10.70	1,009,470	62.34	(51.64)
(d) Computers	278,839	7.93	331,421	20.47	(12.53)
Information Technology:					
(a) Classroom	705,904	31.12	125,642	11.14	19.98
(b) Library	848,016	37.38	107,570	9.54	27.84
(c) Laboratory	174,489	7.69	82,445	7.31	0.38
(d) Computers	540,190	23.81	812,357	72.02	(48.20)
Applied and Pure Sciences:					
(a) Classroom	4,550,725	34.40	-	-	-
(b) Library	5,578,488	42.17	-	-	-
(c) Laboratory	2,075,875	15.69	-	-	-
(d) Computers	1,024,753	7.75	-	-	-

Source: Fieldwork 1998

For nearly all faculties, the public sector spent more on classrooms and library, while the private spent more on laboratory and computing facilities. Thus, H_{3b} is only true in the case of classroom and library, but not for laboratory and computing facilities.[12]

7.5.5.2 Per student expenditures on teaching facilities

Comparisons of relative efficiency and quality in teaching facilities can also be examined through expenditure per student. On the whole, Table 7.5.5.2 shows that, except for Medicine and Dentistry, per student expenditure on teaching facilities is much higher in public universities than that in private colleges. This seems to agree with our hypothesis H_{3b}[13]. As can be seen in the table, there is a considerable gap in per student expenditure on teaching facilities between public and private sector provision, indicating that the extent of differences in relative efficiency and possibly quality. Higher per student expenditure in the public, relative to the private sector, might possibly indicate that the public provides sufficient and superior quality of teaching facilities to the students. But such a pattern could also indicate that the public sector is less efficient in providing these facilities compared to the private because of the higher costs involved.

On the other hand, lower per student expenditure in the private sector, despite the fact that they are more efficient, could also indicate that inadequate and inferior quality of teaching facilities. However for Medicine and Dentistry, a relatively lower per student expenditure in the public compared to the private is possibly because of the scale economies. Whilst in the private, higher per student expenditure is due to the subject is still new to be offered with relatively small intake. These issues of costs

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[12] This is however exceptional in the case of laboratory expenditure for IT, where the spending is roughly the same in both sectors.
[13] H_{3b}: Private colleges are likely to spend less on teaching facilities compared with the public universities.

verses quality can only be resolved by investigating opinion of both participants (students) and users (employers). This we discuss elsewhere.

Table 7.5.5.2 Per student expenditure on teaching facilities in sampled institutions, 1997/98

Fields of study	Public (RM) (a)	Private (RM) (b)	Difference (RM) (c)= (a)-(b)	Percentage Difference (d)= (c)/(a)
Arts and Social Sciences	1,617.53	124.71	1,492.83	92.29
Economics & Business Studies	824.04	6.59	824.04	99.20
Education	1,076.51	-	-	-
Law	1,305.82	197.32	1,108.50	84.89
Medicine and Dentistry	962.23	2,238.03	(1,275.80)	(132.59)
Engineering and Technology	1,316.75	478.54	838.22	63.66
Information Technology	2,021.92	241.13	1,780.79	88.07
Applied and Pure Sciences	3,859.35	-	-	-
Overall Ratio	1,623.75	316.63	1,307.12	80.50

Source: Fieldwork 1998

(a) Per student expenditures on classroom facilities

With respect to classroom's expenditures, Table 7.5.5.2a shows that per student expenditures on classroom's facilities in public universities exceed that in the private sector considerably. Such a pattern is consistent with our theoretical hypothesis H_{3b}. Classroom's expenditures besides providing sufficient spaces may also include all spending on tables, chairs, board, chalks and audio-visual materials. In terms of building

space, a much lower expenditure by the private sector possibly indicates that the private might be relatively more efficient in the use of their building spaces compared to the public. Public universities on the other hand, being well established should require only minimal addition to their classroom spaces. If this is the case, then the figures in Table 7.5.5.2a show that the public sector is less efficient compared to the private.

Table 7.5.5.2a Per student expenditure on classroom & teaching in sampled institutions, 1997/98

Fields of study	Public (in RM) (a)	Private (in RM) (b)	Difference (in RM) (c)= (a)-(b)	Percentage Difference (d)= (c)/(a)
Arts and Social Sciences	740.85	33.71	707.14	95.45
Economics & Business Studies	418.29	29.84	388.46	92.87
Education	497.22	-	-	-
Law	502.34	22.86	479.48	95.45
Medicine and Dentistry	364.71	53.53	311.18	85.32
Engineering and Technology	497.48	37.91	459.57	92.38
Information Technology	629.15	26.86	602.29	95.73
Applied and Pure Sciences	1,327.52	-	-	-
Overall Ratio	665.94	31.41	634.53	95.28

Source: Fieldwork 1998

In Malaysia, it is typical for public universities to be established in bigger buildings within larger campus areas compared to the private colleges. Therefore, relative to the private, there might be substantial wastage in terms of spaces in the public sector as could be seen in Table 7.5.5.2a, where the difference in terms of percentage points is between 85 to 95 points in all faculties.

On the other hand, if we consider expenditure on classrooms to be mainly variable expenditures, then classroom facilities in the public sector, relative to the private, are superior either in terms of both quantity and quality. The private sector on the other hand, provides only minimal classroom facilities since it's per student expenditure is relatively lower compared to the public. This pattern also strongly supports the earlier hypothesis in our theoretical model that the private sector seeks cost reductions and economies in the supply of higher education to maximise their profit (H_3)[14]. Their focus is mainly on the efficiency of the provision.

(b) Per student expenditure on library resources

With respect to library resources, lower per student expenditure in private colleges supports our earlier argument that the private sector spent less for library resources since the nature of the degree programmes offered under the twinning concept relies heavily on prepared lecture notes and specific textbooks. If we consider that library expenditures are related to buying new books, journals and other forms of academic publications, then the private sector's expenditure for these items is much lower compared to what the public sector spends[15]. As could be seen in Table 7.5.5.2b, the difference in terms of percentage points is substantial (between 80 to 90 points). This also indicates that it is too expensive for

[14] See Chapter 5, page 129.
[15] This finding is also consistent with the theoretical hypothesis H_{3b}.

private colleges to run a well-established library, and in doing so might possibly affect their profits.

Table 7.5.5.2b Per student expenditure on library resources in sampled institutions, 1997/98

Fields of study	Public (in RM) (a)	Private (in RM) (b)	Difference (in RM) (c)= (a)-(b)	Percentage Difference (d)= (c)/(a)
Arts and Social Sciences	820.97	46.26	774.72	94.37
Economics & Business Studies	364.91	33.37	331.54	90.86
Education	452.60	-	-	-
Law	634.64	11.43	623.21	98.20
Medicine and Dentistry	443.66	82.68	360.98	81.36
Engineering and Technology	573.23	44.38	529.60	92.27
Information Technology	755.81	22.99	732.81	96.96
Applied and Pure Sciences	1,627.33	-	-	-
Overall Ratio	744.57	33.27	711.30	95.53

Source: Fieldwork 1998

However, if we take the British standards as a comparison, both sectors of higher education in Malaysia spend substantially less on their library resources compared with the international standards. The average per student expenditures on library resources for 100 top British universities in 1998 was estimated at Sterling 245 per year (HESA 1998)[16]. If we use the 1998 exchange rate to convert this amount into the Malaysian currency, the amount is estimated at RM 1,470[17]. The comparison shows that per student expenditures in library resources is about half this in the public

[16] HESA – Higher Education Statistics Agency
[17] The average exchange rate in 1998 is estimated at RM6 to £1

universities and almost one-fortieth in the private colleges. Thus, although the standards of both sectors are inferior to British standards in terms of their library resources, the private sector is very much worse. This could possibly have significant consequences on the quality of the provision.

(c) Per student laboratory expenditures

Table 7.5.5.2c shows that public universities spending per student on laboratories exceeds that of private colleges only in Law and Information Technology with 7 and 89 percentage points respectively. This could indicate that the private colleges, though inferior in their library resources and possibly also classroom facilities, are relatively superior in terms of laboratory equipment. This seems to be inconsistent with our hypothesis H_{3b}.

Table 7.5.5.2c Per student expenditure on laboratory in sampled institutions, 1997/98

Fields of study	Public (in RM) (a)	Private (in RM) (b)	Difference (in RM) (c)= (a)-(b)	Percentage Difference (d)= (c)/(a)
Arts and Social Sciences	18.25	18.46	(0.20)	(1.12)
Economics & Business Studies	2.53	16.05	(13.53)	(535.78)
Education	82.43	-	-	-
Law	113.59	105.89	7.70	6.78
Medicine and Dentistry	107.14	1,630.20	(1,523.06)	(1,421.52)
Engineering and Technology	140.85	298.31	(157.45)	(111.79)
Information Technology	155.52	17.62	137.89	88.67
Applied and Pure Sciences	605.56	-	-	-
Overall Ratio	118.87	119.81	(0.94)	(0.79)

Source: Fieldwork 1998

However, higher per student expenditure might not necessarily indicate superior quality if a substantial amount of money is only allocated at the initial set-up of the laboratory facilities. This is true in the case of private colleges since most of these colleges are newly established institutions. In fields that rely heavily on lab-based learning, such as Engineering, Medicine and Dentistry, adequate and up-to-date laboratory facilities are critical. As could be seen in Table 7.5.5.2c above, the different in terms of percentage points between the two sectors for both fields of studies is considerable.

In the case of public universities, a relatively lower per student expenditure on laboratory equipment, in particular for Engineering, and Medicine and Dentistry could also indicate the existence of economies of scale. This could presumably be the case for public universities since its has long being established compared to the private colleges. As mentioned elsewhere, public universities, being long and well established require relatively small additional expenditure on the laboratory facilities, especially if it is related to the longer-term types of fixed laboratory equipment. However, we could not compare these figures with the British standards since statistics are not available.

(d) Per student expenditures on computers

Table 7.5.5.2d shows that overall per student expenditures on computing facilities in the private sector is much higher than in the public. However, the breakdown by fields of study shows that the private sector exceeds the public only in Economic and Business Studies, Law, and Medicine and Dentistry.[18]

[18] This is inconsistent with our hypothesis H_{3b}, where we expect that the private colleges are likely to spend less on teaching facilities compared with the public universities.

Table 7.5.5.2d Per student expenditure on computers facilities in sampled institutions, 1997/98

Fields of study	Public (in RM) (a)	Private (in RM) (b)	Difference (in RM) (c)= (a)-(b)	Percentage Difference (d)= (c)/(a)
Arts and Social Sciences	37.46	26.28	11.17	29.83
Economics & Business Studies	38.31	117.42	(79.11)	(206.47)
Education	44.26	-	-	-
Law	55.25	57.14	(1.89)	(3.43)
Medicine and Dentistry	46.71	471.62	(424.91)	(909.59)
Engineering and Technology	104.43	97.94	6.50	6.22
Information Technology	481.45	173.65	307.80	63.93
Applied and Pure Sciences	298.94	-	-	-
Overall Ratio	94.37	132.14	(37.77)	(40.02)

Source: Fieldwork 1998

On the other hand, this also reflects that students in the private colleges share fewer computers in Arts and Social Sciences, Engineering and Technical, and Information Technology compared with students in public universities. Therefore, despite the fact that public universities on the whole spent less on computers relative to the private, the breakdown of expenditure by fields of studies, however, shows that the sector also provides superior computing facilities in some fields of studies. This, as we mentioned earlier elsewhere, is the result of National Development Policy that focuses on computer and information technology as we have shown earlier.

Notwithstanding this, if we compare these expenditures with the British Standard, the figures in both types of institutions in Malaysia are still much

lower. The average per student expenditure on computers in 100 top British universities in 1998 is some RM858 per year (Sterling 143 x RM6), compare with only RM94 in public universities and RM132 in private colleges in Malaysia. Thus, to match international standards, both sectors need to spend a substantial amount of money on computers.

7.6 Summary

It is interesting to note that patterns in the public and private provision of higher education we have studied do, to some extent, lend support to our hypotheses in the theoretical model. In the model, we argued that if the Government wishes to maximise long-run economic growth, private colleges should be trying to complement public universities in the provision of higher education, rather than competing with them. The main aim is to achieve not only technical efficiency, but also economic efficiency in the provision, where demands are satisfied at minimum average cost. The role of private colleges is to satisfy highly demanded courses, because of the limited number of places available in public universities. Despite the fact that the private colleges appear to be generally more efficient in the provision of higher education, there are some full first degree courses being offered in which the public universities appears more efficient than the private, for example in Law and Medicine and Dentistry.

Our examination has shown that private colleges, to some extent, complement public universities in the provision of higher education. In fields like Information Technology, Engineering, Economic and Business Studies, and in fact to some extent, Medicine and Dentistry where places in the public sector are very limited, private colleges offer them and, in effect, accommodate the overflow. In contrast, in fields like Education, Applied and Pure Sciences, and to some extent, Arts and Social Sciences

which are less in demand, public universities alone is sufficient. In addition, our analysis also suggests that it is more efficient for public universities alone to offer Law. This has been demonstrated by the higher per student expenditure in the private colleges for Law shown in Table 7.5.1 earlier. Any attempt to offer law by private colleges could possibly lead to inefficient competition between the two sectors causing the costs per student to rise, and consequently, a waste of resources.

The assumption made in our model that the private sector's objective is to maximise profits appears to be justified.[19] Except for Law, comparisons of per student expenditure in almost all fields of study show that the costs per student in the private colleges are much lower than the public universities. It can be seen in Table 7.5.1 that, except for Economics and Business Studies with 38-percentage points difference, the difference between the sectors in terms of per student expenditure for other fields of study are even greater, exceeds 60-percentage points. This relative lowliness in costs, coupled with the relatively high fees charged in the private colleges, is entirely compatible with the profit maximising behaviour assumed in our model and thus, generally consistent with our hypotheses H_1, H_2, H_3, H_{3a} and H_{3b} set earlier in Chapter 5.

Although per student expenditures in the private colleges are lower than that in the public universities, our analysis also shows that a larger proportion of these expenditures go mainly on teaching staff salaries, rather than on teaching facilities. This could have serious consequences on the quality of the provision. Many scholars have argued of the danger to the quality of provision if considerable amounts of money go only to teachers' salaries (Fuller 1986; Johnes and Taylor 1990). Only in Medicine and Dentistry, do unit costs on teaching facilities in the private colleges exceed those in the public universities. However, this does not

[19] We discuss this aspect in Chapter 5.

necessarily indicate superiority in the quality of the provision, since the private colleges newly offer the subjects and the intake is relatively much lower. In contrast, a much lower unit cost on teaching facilities in long and well-established institutions in the public universities are the result of scale economies arising from the relatively higher intake.

The breakdown of the figures on total expenditure on teaching expenses depicts another interesting pattern. If we consider classroom, library, laboratory and computers as critical teaching facilities, then the pattern shows that the public universities spend more on classroom and library, whilst the private colleges on other hand spent more on laboratory and computers. If we assume that the amount of money spent has a strong correlation with quality, then we could presumably conclude that public universities has better classroom and library facilities, whereas the private colleges is superior in providing laboratory and computing facilities. Nonetheless, one might argue that spending more could also indicate less efficiency in providing those facilities. For instance, one might argue that public universities is not using classroom space efficiently, since in some fields of study it has a much lower student-staff ratio not only compared with the local private colleges, but also when compared with international standards. Although a lower student-staff ratio might indicate that quality is being maintained, this might also demonstrate less efficiency in the use of human resources.

In terms of student-staff ratios, our examination shows that, except for Law, the ratio in the private colleges exceeds the public universities. If we assume that higher ratios indicate greater efficiency in the use of teaching staff, then the private colleges are more efficient in all fields, except for Law. On other hand, if we assume that lower ratios indicate superior quality due to fewer students being assigned to staff, then the public universities is superior in quality in all fields, except for Law. If we are able

to estimate the appropriate level of inputs necessary for achieving efficiency and quality of the provision, then we might be able to determine the appropriate mixture of the provision.[20]

However, if we use international standards to indicate the efficiency and possibly also quality levels, then the ratios in the private colleges are too high compared to these standards.[21] On the other hand, within the public universities the ratios are very much lower than the international standards. These patterns suggest that in real cost term the private colleges should lower their student-staff ratio if they were to improve the quality of the provision. Whilst the public universities, in case of high demand, should increase their intake until the student-staff ratio is equivalent to international standards.

We showed earlier that the private colleges spent more on teacher's salaries, rather than on teaching facilities. Nonetheless, teacher cost per student in the public universities is much higher than in the private colleges. The higher cost is due to the public universities seeking to employ both more senior and better-qualified academic staff compared to the private (H_{3a}). The private colleges are not research-based institutions, and, furthermore, they do not design their own degree programmes. Thus, they only require their academic staff for teaching purposes. Under the twinning concept, the parent university supplies the degree programmes in package form, including examination materials and the marking of scripts. Private colleges just teach such programmes with minimum supervision from the parenting university. Such a situation makes private colleges more flexible in offering their courses, compared with the well-established public universities. They can aim to satisfy the areas where

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[20] This is likely to be a complicated process since higher education involves in multi-product outputs (i.e. graduates, research, academic materials and community services). Furthermore, data on related inputs and outputs are difficult to be gathered and quantified.

[21] We have shown this through comparing with British standards.

demand is high and where the public sector cannot supply more places. Thus, the private colleges are likely to be less concerned with the quality of education compared with the public universities since their focus is on making profits. Public universities on other hand, though providing a superior quality of education, because so well established, are likely to be slow to respond to the immediate demands of the market. For the public universities to respond to these demands would presumably require a substantial reallocation of national resources. Academic decisions affecting resource allocation require the participation of numerous parts of the institutions whose immediate objectives may differ. On the whole, despite the changes in recent times, universities are not organised like business organisations and so are slower to respond and adapt to changes.

Our analysis has shown that there is a divergence between the public and the private sector provision of higher education in Malaysia and the divergence appears to be either in efficiency or in the quality of the provision, or both. There are two ways of interpreting the results. First, the private colleges can be interpreted as relatively more efficient (in cost terms) indicating an optimum use of manpower. On the other hand, low unit cost ratios in the private colleges can be seen to be part of a pattern of low quality. Second, the relatively high unit costs and low student-staff ratios in the public universities can be interpreted as indication of superior quality of provision. The arbitrariness in interpreting these results can possibly be resolved through a consideration of the following five points. First, the relatively high unit cost in teaching facilities in the public universities indicates superiority in both quantity and the quality compared of facilities with the private colleges. Second, in terms of teaching staff, the public universities employ a lot more senior and better qualified staff compared with the private colleges, and so we assume would be providing a higher quality of education. Third, the nature of public sector

institutions: The public universities are research-based, more independent and able to offer degree programmes, while the private colleges do not posses any of these characteristics. Research-based institutions are superior in terms of knowledge development, which is a pre-requisite of a higher quality of education. Fourth, in term of campus area, public universities have better campuses and nicer surroundings, which are more conducive for thinking, and working compared with the private colleges. In terms of location, most private colleges are urban-centred and are housed in relatively small buildings compared with the public universities. Fifth, society perceives higher education in the public universities as superior to those private colleges. In general, a family would only decide to go for private higher education after every effort to enter the public systems has failed. There has also been a great concern about the quality of education since many of the private colleges are owned and run by business companies whose main aim is to maximise profits. Although public universities appear to be less efficient in cost terms, they may be economically more efficient compared with the private colleges in that they can satisfy the nature of demands at a relatively higher level of utility. If the nature of demands are mainly for superior quality then it supports further the argument that public universities are superior to private colleges. Further analysis of the demand-side for higher education should throw some light on this.

CHAPTER 8
EQUITY AND ACCESS

8.1 Introduction

The previous Chapter has shown that while the private sector is generally more cost efficient and broadly tends to complement the current provision, the public sector offers a higher quality of education. The data on recruitment tends to support the view that the public prefers university education to that offered by the private colleges. In this and the following two chapters, we shall compare the structure and nature of demand for public and private sector higher education based on equity, efficiency and quality issues raised earlier. In so doing we shall analyse the social, economic and educational dimensions of student demand and explore the characteristics and preferences of students in each sector. Before that, it is crucial to evaluate the reliability of our samples so that the results are likely to represent the population that we aim to investigate.

8.2 The reliability of the samples

The data are derived from selected samples of the student body enrolled in full first degree courses in both public and private sector institutions. The data were collected through questionnaires posted to the sampled institutions during August and October 1999.[1] Student samples were selected using stratified sampling techniques with systematic selection. The student populations in sampled institutions were divided into two

[1] A sample of this questionnaire can be found in Appendix Chapter 6b.

strata, viz., fields of study and the years of study, and were based on the enrolment list in the Registrar/Academic office in each institutions. The samples were then selected systematically based on the appropriate sample fractions, that is 1/50 for sampled public universities and 1/20 for sampled private colleges. The average response rates of 45 per cent shown in Table 8.2a for both types of institutions is approximately double what might be expected for questionnaires distributed by the mailing method.

Table 8.2a Respondent's Rate of Response

Types of Institution	Questionnaires Distributed	Response Received	Response Rate
University UI	265	137	51.7
University U2	310	124	40.0
Total Public	575	261	45.4
College C1	220	69	31.4
College C2	203	105	51.7
College C3	127	74	58.3
Total Private	550	248	45.1
Grand Total	1125	509	45.2

Source: Fieldwork 1999

The data on which the analysis is based relates to some 509 respondents, comprising 51 and 49 per cent of respondents from the public and private sectors of higher education respectively. Of the total in each institution, some 95 per cent of the respondents were between the age of 20 and 25 years old, which is the age group of the majority of the student body in Malaysian universities and colleges. Therefore, the data are likely to represent the most important groups of student that are of

concern in the provision of higher education. In terms of sex, the number of male and female respondents was roughly equal, though females (55 per cent) exceeded males (45 per cent) in the public sector, whilst males (53 per cent) exceeded females (47 per cent) in the private sector.

All years of study are also well represented. As can be seen in Table 8.2b, except for the fifth year, the response rates for all years of study in both public and private sector institutions broadly exceeds 30 per cent, which is very satisfactory for a postal survey. However, the relatively low response rate amongst the fifth year students in the public universities is to be expected since the proportion of students at this level is small. In the public universities, except for Medicine and Dentistry, it requires 3 to 4 years to complete a full first-degree programme, whilst in the private colleges, it requires only 2 to 3 years to do so[2]. Furthermore, under the twinning concept students will normally go abroad (parent universities) to complete their final year studies. Thus, the relatively lower percentage of respondents at the third year level in the private colleges is to be expected. On the whole, our samples in the public universities comprise 30 per cent first year, 29 per cent second year, 28 per cent third year, 13 per cent fourth year and less than 1 per cent of fifth year students. Whilst in the private colleges, our samples comprise 46 per cent first year, 36 per cent second year and 18 per cent of third year students.

If we look at the distribution of respondents by fields of study as shown in Table 8.2c, despite the fact that Education and Applied Sciences are not offered in the private sector, all fields offered are sufficiently represented.

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[2] Originally, all full-first degree programmes at the Malaysian public universities require a minimum of 4 years of studies (except for Medicine), but after 1997, it was reduced to only 3 years (except for Law and Engineering). Whilst in the private colleges, the norm is 3 years but the students are allowed to complete their studies in less than 3 years through the three semesters programme (Chapter 4 discussed this aspect in greater detail).

Table 8.2b Respondent's Rate of Response by Year of Studies

Year of Studies	PUBLIC			PRIVATE		
	Questionnaire Distributed	Response Received	Response Rate	Questionnaire Distributed	Response Received	Response Rate
Year 1	170	77	45.3	240	113	47.08
Year 2	144	76	52.8	192	90	46.88
Year 3	139	72	51.8	118	45	38.14
Year 4	114	35	30.7	-	-	-
Year 5	8	1	12.5	-	-	-
Total	575	261	45.4	550	248	45.1

Source: Fieldwork 1999

Table 8.2c Respondent's Rate of Response by Field of Studies

Field of Studies	PUBLIC			PRIVATE		
	Questionnaire Distributed	Response Received	Response Rate	Questionnaire Distributed	Response Received	Response Rate
Arts and Social Sciences	217	47	21.7	34	20	58.8
Economic and Business Studies	99	43	43.4	99	70	70.7
Education	35	15	42.9	-	-	-
Law	18	15	83.3	8	5	62.5
Medicine and Dentistry	62	34	54.8	5	3	60.0
Engineering and Technology	53	36	67.9	170	66	38.8
Information Technology	22	22	100.0	234	84	35.9
Applied and Pure Sciences	69	49	71.0	-	-	-
Total	575	261	45.4	550	248	45.1

Source: Fieldwork 1999

As can be seen in the table, the response rate for all fields offered exceeds 20 per cent, which is acceptable under the mailing method. Furthermore, the proportions of respondents in all fields correspond well to the general pattern of student intake in both public and private institutions shown earlier in Table 7.3[3].

As we saw earlier, public sector intakes are higher in Arts and Social Sciences, Economics and Business Studies and Applied and Pure Sciences and thus correspond well with the higher number of respondents in these areas of study. Similarly, the higher student intake in Information Technology, Engineering and Technical and Economic and Business Studies within the private colleges also corresponds well with the higher number of respondents in these areas of study. Thus, the samples are likely to give a representative picture of every field of study.

In the Malaysian public universities, the general guideline ratios for students by major ethnic groups are 60:30:10 for the Bumiputera, Chinese and the Indian respectively[4]. In the public sector samples, the respondents are 68 per cent for Bumiputera, 26 per cent for Chinese and 7 per cent are for Indian. Thus, the number of respondents in our sampled public universities while somewhat over representing Bumiputera relative to the two other groups, do provide a reasonable representation of students according to their ethnic origin. Private colleges, however, are not restricted to the above ratios, and therefore are free to have any combination of ethnic groups. Although statistics on private sector higher education are scarce, the general pattern in the private colleges shows that the Chinese are amongst the majority enrolled in these colleges. This may be explained by the limited number of places available in the public

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[3] See Chapter 7, p. 157.

[4] This is the National Policy on higher education stated under the New Economic Policy (1970-1990). After 1990s, public universities are still using these ratios as guideline, though with certain variation between institutions and also within faculties.

sector to the Chinese relative to the demand for higher education (in terms of qualifications and also the ability to pay) amongst the Chinese. In the private sector samples, we have some 28 per cent of the respondents from the Bumiputera, whilst 62 per cent from the Chinese and the rest 10 per cent from the Indian. Thus, the relatively higher percentage of Chinese students selected in samples for the private colleges compared with the Bumiputera and Indian is also to be expected and justified.

On the whole, there appears to be little chance of bias from fields and years of study, race, age or sex so that samples are likely to give a representative picture of the demand-side of higher education for both sectors without any adjustment being necessary.

8.3 Equity aspects

It is argued that parental and family characteristics have significant influence on students' decisions to enrol in higher education. However, such influence might be much stronger for those who choose to enrol in the private higher education sector since one has to pay a relatively higher cost in this sector compared with that in the public sector. Although private higher education provides a wider access to higher education, many have argued that this opportunity is accessible only to the wealthy and the elite in society (Dasgupta 1979; James and Benjamin 1988; Tilak 1991; Psacharopoulos 1991). This is because the private costs for higher education are much higher in the private sector compared with those in the public sector. In case of access demand[5], students from advantaged family backgrounds are more likely to enrol in the private sector if they failed in their attempts to enter any public institutions (Psacharopoulos 1991, p. 7). If this situation persists, private higher education expansion would consequently lead to inequality of the provision.

[5] We discussed this aspect earlier elsewhere (see the theoretical section in Chapter 5).

Higher education in the private sector provides an alternative means to continue education for those who have been refused entry to the public universities, but because private costs are relatively high this opportunity is limited. Thus, the private sector is likely to enrol students from advantaged family backgrounds compared with the public universities. As mentioned elsewhere, the proportion of the Chinese students is relatively high in the private sector presumably because the Chinese who fail to obtain entrance to public universities (partly through the quota system mentioned above) are from wealthier and advantaged family backgrounds.

To throw light on the equity issue and access, we shall analyse the student body according to the family background. If places at the public universities are not available due to limited public spending, it is crucial to examine to what extent these variables have influenced the decision to enrol in the private colleges.

8.3.1 Parents' level of Income

We have argued that higher education in the private sector is likely to enrol students from wealthier and elite family backgrounds. This is because the costs for private sector higher education are relatively high compared with the public sector, and therefore, only student from wealthier families is willing and able to pay for these costs. In economics, the most influential and frequently used indicator of wealth is the level of income. Therefore, we shall use this indicator to examine whether private sector higher education is likely to enrol wealthier students compared with the public sector. To examine this, our operational hypotheses may be stated as follows:

H_0: No difference between students enrols in the private sector and public sector higher education.

H_4: Students who enrol in the private colleges are likely to come from wealthier family backgrounds compared with the public universities.[6]

Since the alternative hypothesis (H_4) is a directional hypothesis and the data are in ordinal ranking, we use the Mann-Whitney U with one-tailed significance level to test these hypotheses. In this, we make the test for significant differences between the two populations by using the observed value of sum of rank and compare it with the sampling distribution of sum of rank for identical populations. The value of standardised test statistic Z will provide the basis for deciding whether to reject H_0. In this test, we reject H_0 when $Z \geq \alpha$ at the 5 per cent significant level ($\alpha = .05$), or the p-value $\leq .05$. Since we are testing a directional hypothesis, we need to be sure that we in the correct direction of the Z-distribution in order to reject H_0, that is, the parents' level of income in the private sector should exceed those in the public sector.

We use fathers' and mothers' level of income as the variables to test these hypotheses. For each of these variables, we make a detailed breakdown by ethnic groups (i.e. Bumiputera, Chinese and Indian) to see whether differences also exist within these groups. The level of income were ranked as follows: 0=no income; 1=less than RM1000; 2=RM1001-RM2500; 3=RM2501-RM4000; 4=RM4001-RM5500; 5=more than RM5500. We can see in Table 8.3.1 that, for fathers' and mothers' level of income, the *p*-value is less than .001 significant level, which indicate that we should reject H_0. If at the 5 per cent level $\alpha = 1.645$ (one-tailed), then

[6] See Chapter 5, page 132 for the development of this hypothesis.

we could see that the calculated Z-values is greater than the tabulated α value ($Z > \alpha$), which also indicates that we should reject H_0.

Table 8.3.1 Mann-Whitney U test for parents' level of income

Parents levels of income	Mean rank for public	Mean rank for private	Calculated Z-value	One-tailed sig. level (*p*-value)
Fathers*	193.33	299.76	8.747	.000
Bumiputera*	113.63	134.18	2.248	.013
Chinese*	71.49	122.79	5.825	.000
Indian*	12.16	24.84	3.647	.000
Mothers*	232.34	272.54	3.501	.000
Bumiputera***	119.23	132.62	1.518	.065
Chinese*	91.28	117.90	3.208	.001
Indian**	16.63	22.35	1.657	.049

**Significant at 1 per cent level*
***Significant at 5 per cent level*
****Significant at 10 per cent level*

Source: Fieldwork 1999

This shows that the difference in the fathers' and mothers' level of income between students in the public and private sector of education is statistically significant. Since the mean difference[7] for both variables (fathers' and mothers' level of income) is negative (which indicates that the values in the private exceed the public), we could be sure that we are in the correct direction of the Z-distribution, and thus reject H_0. From these results, we can conclude that private sector students come from wealthier family backgrounds compared with the public sector.

[7] (Mean for fathers' levels of income: public=1.7782; private=2.5432)(Mean for mothers' levels of income: public=.5953; private=.9390).

For parents' level of income by races, the results in Table 8.3.1 seem to appear similar, except for the Bumiputera mothers' levels of income, which is not significant at the 5 per cent level. However, if we use the 10 per cent significant level, we are able to reject the null hypothesis and conclude that the differences in the parents' level of income by races are statistically significant. The mean differences also show that, for all races, the parents' level of income in the private sector is higher than that in the public sector.[8] These results seem to be consistent with the earlier findings, that wealthier students are likely to enrol in the private sector higher education compared with the public sector.

On the whole, we can observe that parents' level of income is relatively high for students in the private colleges compared with those in the public universities. The mean for fathers' level of income for the public and the private sector students is 1.7782 and 2.5432 respectively. Using this mean we can predict that the average fathers' income for students in the public and the private sector would be around RM1700 and RM2300 respectively.[9] Similar pattern exists for respondents' mother levels of income, though the difference between the private colleges and the public universities is marginal (see footnote 7 above).

According to the 1995 Household Income Survey (Malaysia, 1995), the mean monthly gross household income is estimated at RM2007, with RM2596 per month for urban household and RM1300 per month for the rural household. It was estimated in the survey that 47 per cent of the household surveyed earned between RM1000 and RM3000 per month, which can be regarded as the middle income group (Malaysia 1995, p.

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[8](Fathers – [Bumiputera: public=1.7294; private=1.9118][Chinese: public=1.9516; private=2.7908][Indian: public=1.6250; private=2.7727])
(Mothers - Bumiputera: public=0.6705; private=0.9130][Chinese: public=0.4154; private=0.9156][Indian: public=0.5000; private=1.1739])

[9] Estimates based on the level of income rank as follows: 0=no income; 1=less than RM1000; 2=RM1001-RM2500; 3=RM2501-RM4000; 4=RM4001-RM5500; 5=more than RM5500.

89). If we assume that the fathers' income in our samples is sufficient to represent gross monthly household income, we might be able to generalise that the majority of the students who enrol in the private colleges come from urban-middle class family backgrounds. It is reasonable to make this assumption and generalisation since there is high proportion of students in the private colleges whose mothers have no income (52 per cent). In addition, urban-middle class family has better access to private sector higher education since most of the private colleges are located in the urban centres.

Similar patterns exist for all races as can be seen in footnote 8 above. Despite the fact that the patterns are roughly the same for all races, the proportion of Chinese students in the private colleges are relatively high compared with the other two races. Some 62 per cent of the respondents in the private colleges are Chinese compared with 28 and 10 per cent for Bumiputera and Indian respectively. The relatively higher proportions of the Chinese students in the private colleges could possibly be correlated with the parent income since they are from wealthier family backgrounds. According to the 1995 Household Income Survey, the Chinese are relatively wealthier to other races. The mean monthly gross household income for the Chinese is estimated at RM2895 compared with RM2153 for the Indian and RM1600 for the Bumiputera. Thus, the high demand for higher education (in terms of qualification and also the ability to pay) amongst Chinese could efficiently be satisfied by the private sector despite the limited number of places available for them at the public sector. Whilst for the Indian, although their mean monthly gross income exceed those the Bumiputera, the proportions of Indian students in the private colleges is much lower compared with the Bumiputera is partly because of the demographic factor, where the Indian represents less than 10 per cent of the total population.[10]

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[10] See Figure 4.2.2a, p. 86

On the whole we might generalise that the majority of the students in the private colleges are relatively wealthier compared with those in the public universities. We have seen that the proportions of Chinese students in the private colleges are relatively high compared with the Bumiputera partly because they are from wealthier family backgrounds, and partly also because of the quota system for students with disadvantaged family backgrounds. Theoretically, it is economically more efficient for the wealthier within the society to seek education in the private sector since they are more able to pay. The concept on vertical equity, that is giving the same opportunities to the poor as the rich, might be useful to explore since less wealthier families are under represented in the private sector.

8.3.2 Parental occupation

Parental occupation may also influence the children's education. We might expect that a more professional or managerial family is likely to spend more on their children's education than lower skilled workers (Tsang and Kidchanapanish 1992, Tsang and Taoklam 1992). Since it is argued that the costs for higher education are much higher in the private sector compared with the private sector, it is likely that only students with parents in professional and managerial occupations will attend the private sector education. We shall therefore hypothesise that the parental occupation of students in universities is likely to differ from those in the private colleges. Thus, our operational hypotheses may be stated as follows:

H_0: No difference in the category of parental occupation between students in the public and the private sectors of higher education.

H_5: The category of parental occupation is likely to differ according to the sectors in which their children are enrolled.

We used the Chi-square test (χ^2) to test these hypotheses[11] because our data on the parental occupation are based on occupational categories. In this we compare a value of χ^2 calculated from our data with a tabulated value of χ^2 at the 5 per cent significant level. We reject H_0 when $\chi^2 \geq \alpha$, or *p*-value $\leq .05$. We re-code the parental occupation into four occupational categories with the following ranking, 3= professional and managerial; 2= clerical and sales services; 1= production and agriculture labours; and 0= not in employment.

We can see in Table 8.3.2a and Table 8.3.2b that the calculated χ^2 value for fathers and mothers' occupation is greater than the tabulated value at less than 1 per cent significant level[12], which indicate that we should reject H_0. The *p*-value of .000 for both variables also suggests that we should reject H_0. Thus, from these results we can conclude that the difference in the parental occupation (fathers and mothers) is statistically significant at less than 1 per cent level.

We can see in both tables that the proportion of respondents in the private colleges whose fathers and mothers are employed in the professional and managerial, and clerical and sales category is relatively high compared with the public sector. In contrast, the proportion of respondents whose fathers and mothers are not in employment or employed only as production and agriculture workers is relatively low. These patterns suggest that students whose parents in a relatively high category of employment are highly represented in the private sector compared with those in the public sector.

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[11] See Chapter 5, page 132 for the development of this hypothesis.
[12] The tabulated χ^2 value from the Chi-square distribution table is 11.34 (for the 1 per cent level and 3 *df*).

Table 8.3.2a Chi-square test for fathers' occupation

Crosstab

			types of institution		Total
			public	private	
Fathers' occupation	not in employment	Count	67	29	96
		Expected Count	49.2	46.8	96.0
		% within types of institution	25.7%	11.7%	18.9%
	production and agriculture labours	Count	55	29	84
		Expected Count	43.1	40.9	84.0
		% within types of institution	21.1%	11.7%	16.5%
	clerical and sales services	Count	65	86	151
		Expected Count	77.4	73.6	151.0
		% within types of institution	24.9%	34.7%	29.7%
	professional and managerial	Count	74	104	178
		Expected Count	91.3	86.7	178.0
		% within types of institution	28.4%	41.9%	35.0%
Total		Count	261	248	509
		Expected Count	261.0	248.0	509.0
		% within types of institution	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.754[a]	3	.000
Likelihood Ratio	31.321	3	.000
Linear-by-Linear Association	26.705	1	.000
N of Valid Cases	509		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 40.93.

Source: Fieldwork 1999

Table 8.3.2b Chi-square test for mothers' occupation

Crosstab

			types of institution		Total
			public	private	
Mothers' occupation	not in employment	Count	189	144	333
		Expected Count	170.4	162.6	333.0
		% within types of institution	72.7%	58.1%	65.6%
	production and agriculture labours	Count	13	8	21
		Expected Count	10.7	10.3	21.0
		% within types of institution	5.0%	3.2%	4.1%
	clerical and sales services	Count	24	50	74
		Expected Count	37.9	36.1	74.0
		% within types of institution	9.2%	20.2%	14.6%
	professional and mangerial	Count	34	46	80
		Expected Count	40.9	39.1	80.0
		% within types of institution	13.1%	18.5%	15.7%
Total		Count	260	248	508
		Expected Count	260.0	248.0	508.0
		% within types of institution	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.933[a]	3	.000
Likelihood Ratio	18.158	3	.000
Linear-by-Linear Association	12.115	1	.001
N of Valid Cases	508		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.25.

Source: Fieldwork 1999

We used similar hypotheses to examine parental occupation by race. However, we are not able to use the Chi-square test (χ^2) to test these because more than 20 per cent of the cells have an expected frequency of less than 5.[13] Alternatively, we used an unrelated *t*-test (test for two independent samples) to test these hypotheses since our data on the category of occupation are arranged in ordinal ranking.[14] Table 8.3.2c shows that, except for Bumiputera, the category of fathers' occupation is statistically significant at less than 5 per cent significant level.

Table 8.3.2c The *t*-test test for parental occupation by ethnic groups

Parents levels of income	Mean for public	Mean for private	Calculated *t*-value	One-tailed sig. level (*p*-value)
Fathers*	1.5594	2.0685	5.323	.000
Bumiputera +	1.5819	1.7143	.799	.425
Chinese*	1.5224	2.2078	4.451	.000
Indian**	1.4706	2.2083	2.012	.051
Mothers*	0.6269	0.9919	3.510	.000
Bumiputera***	0.7062	1.0143	1.796	.074
Chinese*	0.4848	0.9351	2.948	.004
Indian*	0.3529	1.2917	3.156	.004

**Significant at 1 per cent level*
***Significant at 5 per cent level*
****Significant at 10 per cent level*
+ Not significant

Source: Fieldwork 1999

The results also appear to be similar for mothers' occupation, though we are able to reject the null hypothesis for mothers' occupation for the Bumiputera at the 10 per cent significant level. Although fathers' occupation for the Bumiputera is not statistically significant, we can see in

[13] This is one of the Chi-square testing requirements (see Siegel and Castellan 1988).
[14] This is suggested by Siegel and Castellan (1988, pg. 144-146), and proven to provide consistent results.

the table that the mean for the private sector still exceeds the public sector, which seems to indicate that the category of fathers' occupation in the private sector is superior to the public sector.

On the whole, the results on the parental occupation seem to suggest that students with advantaged family backgrounds be being over represented in the private sector. The general patterns show that the proportion of students whose parents are in professional or managerial employment is relatively high in the private sector compared with the public sector. Despite the relatively lower significance level for the Bumiputera, the patterns seem to appear similar for all races.

The pattern in the private sector also shows that the proportion of students with advantaged family backgrounds is relatively high amongst the Chinese compared with the other races. This can be seen through the relatively higher proportion of Chinese students whose parents' employment is in the Professional and Technical, Administrative and Managerial and in the commercial sectors (Sales Workers) compared with other races. At the national level, recent statistics show that the Chinese represent 52 per cent of the total employment in the commercial sector compared with the Bumiputera (36 per cent) and the Indian (12 per cent) (Malaysia 1995, p. 82-83).[15] Thus, it likely that most of the Chinese students who choose to enrol in the private colleges are with advantaged and wealthier family backgrounds. These patterns therefore, are consistent with our previous findings and seem to support the view that private sector higher education is likely to enrol mostly students from wealthier and advantaged family backgrounds compared with the public sector.

[15] See also the trend in Figure 4.3.2e, p. 98.

8.3.3 Family's education

In addition to the parents' levels of income and occupation, the family's level of education may also influence the value put on higher education. In a situation where there is limited number of places in the universities, and where a quota system based on ethnic background is operated, it seems reasonable to expect that students from well educated families who fail to obtain entrance will opt for a private college. Therefore, we might expect that the proportion of students from educated families to be relatively high in the private colleges compared with those in the public sector. To examine this, we shall hypothesise that the family's educational background of students in the private colleges is likely to be superior from those who are in the public universities. Thus, our operational hypotheses may be stated as follows:

> H_0: No difference in the family's education backgrounds between students in both sectors of education.
>
> H_6: Family educational background of students enrolled in the private colleges is likely to be superior from those who enrol in the public universities.[16]

We used the Mann-Whitney U test with one-tailed significance level to test these hypotheses for the reason that the alternative hypothesis (H_6) is directional and the data are in ordinal ranking. In this we make the test for significant differences between the two populations by using the observed value of sum of rank and compare it to the sampling distribution of sum of rank for identical populations. The value of the standardised test statistic Z will provide the basis for deciding whether to reject H_0. In this test, we

[16] See Chapter 5, page 133 for the development of this hypothesis.

reject H_0 when $Z \geq \alpha$ at the 5 per cent significant level ($\alpha = .05$) or the *p*-value $\leq .05$.

We used parent's years of schooling, parent's levels of qualifications, and the number of brothers and/or sisters in higher education to differentiate students with highly and less educated family backgrounds. Seven variables were selected to examine whether there are significant differences in the family's education background. These variables are: fathers' years of schooling; fathers' levels of qualification; mothers' years of schooling; mothers' levels of qualification; brothers and/or sisters in higher education; brothers and/or sisters in public higher education; brothers and/or sisters in private higher education. We also examine each of these variables by races (i.e. Bumiputera, Chinese and India) to see whether differences exist within the races.

In this, we ranked the years of schooling in six ordinal ranks, that is, 0=None; 1=less than 6 years; 2=7-9 years; 3= 10-12 years; 4=13-15 years; 5=more than 16 years.[17] The levels of qualification were also ranked in six ordinal ranks, that is, 0=None; 1=primary school qualification; 2=lower secondary school qualification; 3=higher secondary school qualification; 4= diploma level qualification; 5=degree level qualification. Finally the ordinal ranking for brothers and/or sisters in higher education are as follows: 0=no brothers/sisters; 1= 1-2 brothers/sisters; 2=3-4 brothers/sister; 3=more than 5 brothers/sisters.

For fathers' education background, Table 8.3.3a shows that, except for the Indian, the *p*-values for all variables are less than .005, which indicates that we should reject H_0 at the 5 per cent level. If at the 5 per

[17] In the Malaysian educational system, 16 years and above normally refers to university education, 13 to 15 years refers to post secondary education, 10 to 12 years refers to upper secondary level, 7 to 9 years refers to lower secondary level, whilst 6 years and less refer to primary education. (See also Figure 1 and Figure 2 in Appendix Chapter 4).

cent level α = 1.645 (one-tailed), then we could see that $Z > \alpha$ for all variables (except for the Indian), which also indicates that there are significant differences in the fathers' education background between the two sectors of education. Consequently, we should also reject H_0. However for the Indian, we are able to reject H_0 at the 10 per cent significant level. Since the mean rank for private sector students is higher than the mean rank for the public sector students for all variables, we can be sure that we are at the correct direction of the significance level, and thus reject H_0. Therefore, we can conclude that the educational background of fathers of students in the private sector is superior to fathers of students in public sector higher education.

Table 8.3.3a Mann-Whitney U test for *fathers'* education backgrounds

Variables for education backgrounds	Mean Rank for public	Mean Rank for private	z-value	*p*-value
Years of schooling*	229.18	282.18	4.153	.000
Bumiputera*	114.69	147.54	3.317	.001
Chinese*	95.86	117.59	2.384	.009
Indian***	18.15	23.02	1.340	.090
Levels of qualification*	235.36	275.67	3.197	.001
Bumiputera*	117.22	141.14	2.435	.008
Chinese**	99.46	116.02	1.847	.033
Indian***	17.76	23.29	1.526	.064

**Significant at the 1% level (one-tailed)*
***Significant at the 5% level (one-tailed)*
****Significant at the 10% level (one-tailed)*

Source: Fieldwork 1999

Table 8.3.3b shows that, except for the Bumiputera, our analysis on the mothers' education background is similar. In the table, we can see that, except for the Bumiputera, the *p*-values for all variables are less than

.005, which indicates that we should reject H_0 at the 5 per cent level. If at the 5 per cent level $\alpha = 1.645$ (one-tailed), then we could see that $Z > \alpha$ for all variables (except for the Bumiputera), which also indicate that there are significant differences in the mothers' education background between the two sectors of education. Consequently, we should also reject H_0. Since the mean rank for private sector students is higher than the mean rank for public sector students for all variables (except for the Bumiputera), we can be sure that we are at the correct direction of the significant level, and thus reject H_0.

Table 8.3.3b Mann-Whitney U test for *mothers'* education backgrounds

Variables for education backgrounds	Mean Rank for public	Mean Rank for private	z-value	*p*-value
Years of schooling*	235.34	275.69	3.168	.001
Bumiputera +	122.09	128.84	.683	.247
Chinese*	88.19	120.92	3.603	.000
Indian**	17.12	23.75	1.793	.037
Levels of qualification*	238.30	272.58	2.722	.003
Bumiputera +	124.38	123.04	.137	.446
Chinese*	89.67	120.28	3.417	.001
Indian*	15.50	24.90	2.577	.005

**Significant at the 1% level (one-tailed)*
***Significant at the 5% level (one-tailed)*
+Not significant (one-tailed)

Source: Fieldwork 1999

Therefore, we can conclude that (except for the Bumiputera), mothers' of students in the private sector have had a superior education to those students in the public sector higher education. For the Bumiputera students, the result is not statistically significant possibly because they have greater access to the public sector higher education as a result of the quota system.

Our analysis on the number of brothers and/or sisters in higher education background produced a rather different finding. To remain consistent, we shall hypothesise that students in the private sector are likely to have more brothers and/or sisters in higher education. This is likely to be the case since we argued that wealthier and advantaged families put higher values on higher education. Because this is a directional hypothesis, we can reject the null hypothesis (H_0) if the mean for variables in question for private sector exceeds those in the public sector.

For brothers and/or sisters in higher education, Table 8.3.3c shows that, except for the Indian, all variables show significant difference between respondents in both sectors of education since the *p*-value < .05. However, because we are testing a directional hypothesis, we need to check whether the z-value is in the correct tail of the distribution.[18]

Table 8.3.3c Mann-Whitney U test for brothers and/or sisters in higher education

Variables for education backgrounds	Mean Rank for public	Mean Rank for private	Z-value	*p*-value
Brothers & sisters in HE*	209.44	178.11	3.123	.001
Bumiputera*	95.33	77.22	2.339	.010
Chinese*	97.44	82.00	2.144	.016
Indian +	16.77	18.92	.735	.231
Brothers & sisters in Public HE*	228.10	155.51	7.267	.000
Bumiputera*	95.32	73.29	2.790	.003
Chinese*	107.25	77.31	4.808	.000
Indian +	18.67	17.50	.389	.349
Brothers & sisters in Private HE*	175.68	211.92	3.738	.000
Bumiputera**	87.42	98.97	1.841	.033
Chinese +	86.56	85.74	.111	.456
Indian +	15.97	18.71	.898	.185

**Significant at the 1% level (one-tailed)*
***Significant at the 5% level (one-tailed)*
+Not significant (one-tailed)

Source: Fieldwork 1999

[18] In this case, before we can reject H_0, we need to ensure that the mean for the private sector should exceed those in the public sector.

Since the mean rank for all variables in the private sector is smaller than in the public sector, we are not able to reject the null hypothesis (H_0). The result indicates that public sector respondents have more brothers and/or sisters in higher education compared with the private sector respondents, which is in contrasts with our alternative hypothesis. This possibly results from private sector respondents whom have fewer brothers and/or sisters in higher education because the costs for higher education are more expensive in the private colleges. Decision to enrol one family member in a private college might possibly limit other members from doing so because of the budget constraints.

Table 8.3.3c also shows that the result for variables on brothers and/or sisters in public higher education also appears similar, which seems to support this argument. However, the result for variables on brothers and/or sisters in private higher education is statistically significant at less than 1 per cent level. We can see in Table 8.3.3c that the mean for the private sector exceeds those in the public sector, which indicate that the z-value in the correct tail of distribution. Therefore, we can conclude that respondents in the private colleges have more brother and/or sisters in the private sector higher education compared with those in the public universities.

In terms of race, only Bumiputera respondents show similar result. This might appear to be the case since the Bumiputera have greater access to the public universities, and therefore, if one of their children are not offered a place in the public sector, they might be able to sent him/her to private higher education. Furthermore, we showed earlier that most of the students who enrols in the private colleges come from wealthier and advantaged family backgrounds, including those from the Bumiputera origin. Thus, these wealthier and advantaged Bumiputera parents are likely to sent some of their children to the private colleges, if they failed to

get a place in the public sector. On the other hand, the result appear to be not significant for the Chinese and Indian respondents. We might be able to say that this may be the result of the quota system, where private sector higher education acts as an alternative means for continuing tertiary education amongst these races when every effort to enter public universities has failed. Therefore, to these respondents, the public and private sectors of higher education are equally important.

8.4 Summary

Our examination on the parental and family characteristics has shown that students enrolled in the private sector higher education come from much wealthier and advantaged family backgrounds compared with those in the public sector. This is been reflected in our analyses on the level of parents' income, the category of parents' occupation, and the family education background (H_4, H_5 and H_6). The results from these analyses consistently show that the difference between students in both sectors (public and private) for all variables in question are statistically significant. This seems to be consistent with the view that private sector higher education is likely to enrol students from wealthier and advantaged family backgrounds. We argued earlier that this is likely to be the case since the costs of education are relatively high compared to that in the public sector, and therefore, only wealthier and advantaged families are able to meet these costs.

Although the public universities offer a higher quality of education and would be the first preference for most people, but limited availability of places due to restricted public spending had hold over a substantial number of potential candidates from entering higher education. We have shown earlier in Chapter 4 that from every ten qualified candidates, only

six could be granted a place in the public universities.[19] Since the private costs are relatively high in the private colleges compared with those in the public universities, only students from wealthier and advantaged family backgrounds will be likely to attend private sector higher education.

Our examinations has shown that students in the private colleges came from higher income, professional and managerial, and also educated family backgrounds compared with those in the public universities. These results seem to suggest that if every effort to enter the public universities has not been successful, those who are from wealthier and advantage family backgrounds will be likely to seek education in the private sector, or, perhaps abroad. Therefore, it would appear that private sector higher education, despite complementing the public sector in providing more places for higher education, is accessible only to the wealthier and advantaged families. Thus, if the government wishes to expand higher education through the private sector as been suggested by the World Bank model and others, then it is crucial to ensure that those who are from less wealthier and disadvantaged families also get an equal and fair opportunity of access.

[19] See Figure 4.5.2, p. 112.

CHAPTER 9

ECONOMIC EFFICIENCY

9.1 Introduction

In Chapter 8 we have seen that private colleges in general are likely to enrol mostly students from relatively wealthier family background which, despite showing an inequitable level of provision, to some extent, also reflects inefficiency in the provision in economic terms. Earlier, in Chapter 7 we have also seen that generally the private colleges, while technically more efficient than the public universities, might be economically less efficient in satisfying consumer demand at the minimum average costs. In theoretical terms, if the private colleges offer courses at relatively higher consumers' costs, and the goods are not been distributed according to the consumers preferences, it could be considered as economically less efficient.[1] In this Chapter, we shall examine the costs and benefits of higher education to shed more lights regarding the efficiency aspect. Since the financing of higher education is also related to efficiency, it will also be examined in this Chapter.

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[1] See earlier discussions on this aspect in Chapter 3, page 67-68.

9.2 The private costs of higher education

Although many have asserted that the private returns to higher education are always higher than social returns, there is still generally very little known about the private costs and especially the private expenditure on of education. The private costs of education can be classified into direct and indirect costs. The direct private costs include all expenditures made either by parents and, or, students themselves on tuition fees and other non-fee expenditure such as books and learning materials, living and travelling expenses, and other types of expenditure relating to educational services. The indirect private costs refer to the economic value of forgone opportunities of working due to schooling. These are normally measured as the amount of income forgone in occupations open to school leavers. It is argued that the amount of these costs will have significant effects on the demand for higher education, especially amongst students from disadvantaged family backgrounds. We have shown in the previous section that higher education in the private sector enrols a relatively high proportion of students from wealthier family backgrounds. This is because the costs that fall on individuals are relatively high compared with those in the public sector, and therefore, it is likely the only the wealthier and advantaged families are able to meet these costs.

9.2.1 Direct private costs

It has been argued earlier elsewhere that if higher education is being provided by the private sector, the cost of access to higher education is likely to be increased (Adrian 1983; Glytsos 1989). To examine this, we use the *t*-test for two independent samples to test whether it is likely that costs in the private sector are high compared with the public sector. In

doing so, we hypothesised that the private cost of higher education is likely to be higher compared with those in the public sector. Thus, the operational hypotheses can be written as follows:

H_0: The private cost is likely to be equal to, or, less in the private colleges compared with that in the public universities.

H_7: The private cost is likely to be higher in the private colleges compared with that in the public universities.[2]

Since we want to test a directional hypothesis (that is $t > \alpha$), a one-tailed level of significance would be appropriate. In this we compare a value of t calculated from our data with a value of α at the 5 per cent significance level. We reject H_0 when $t > \alpha_{(cv=.05)}$ or p-value < 0.05 significance level. Since we are testing a directional hypothesis, we need to look at the direction of the mean difference to ensure that we are at the correct tail of the t-distribution (i.e. the cost in the private should exceed those in the public).

Five variables were selected to represent the direct private costs, viz., total cost, tuition fees, books and learning materials, living and travelling and other-related expenses. The p-value in Table 9.2.1a shows significant differences in all fields of study on total costs between the two sectors at less than the 1 per cent level. We can see in this table that, despite the fact that Education and Applied Sciences are not offered, the mean for total private costs for all fields of study in the private colleges broadly exceeds those of the public universities. The table also shows that Medicine and Dentistry are the most expensive subjects offered in

[2] See Chapter 5, page 133 for the development of this hypothesis.

the private sector followed by Engineering and Technical, Information Technology, Economics and Business Studies, Arts and Social Sciences, and Law. The general pattern seems to show that it is more expensive to seek education in the private sector compared with that in the public sector.

Table 9.2.1a The *t*-test for difference in *Total Costs* between private and public sector provision (in per academic year)

Fields of study	Mean for private (RM)	Mean for public (RM)	*t*-value	One-tailed significant level (*p*-value)
Arts and Social Sciences*	13,137.50	4,904.48	26.009	.000
Economics and Business Studies*	14,423.57	5,349.99	31.881	.000
Education [a]	n.a.	4,800.00	20,512	n.a.
Law*	10,400.00	5,434.47	7.100	.000
Medicine and Dentistry*	21,999.99	6,170.59	21.606	.000
Engineering and Technology*	16,174.39	6,098.61	24.751	.000
Information Technology*	14,241.31	4,797.72	26.567	.000
Applied and Pure Sciences [a]	n.a.	5,555.71	33.157	n.a.
Overall*	14,734.60	5,445.24	50.727	.000

[a] Cannot be compared since there is no data for the private colleges.
** Significant at 1% level*

Source: Fieldwork 1999

However, if we examine the breakdown of these costs, it seems to show that the relatively high costs in the private sector compared with in the public sector result from the level of tuition fees imposed by the private colleges. Table 9.2.1b shows that tuition fees for all fields of study in the private colleges, except for Education and Applied and Pure Sciences that are not offered, is 4 or 6 times higher than in the public universities.

The large difference in the tuition fees between the private colleges and the public universities is shown by the high level of significance (*p*-value less than .001). This might be taken as further support our profit maximisation model for private sector higher education discussed in the previous chapter.

Table 9.2.1b The *t*-test for difference in *Tuition Fees* between private and public sector provision (in per academic year)

Fields of study	Mean for private (RM)	Mean for public (RM)	*t*-value	One-tailed significant level (*p*-value)
Arts and Social Sciences*	9,395.00	1,400.00	51.135	.000
Economics and Business Studies*	9,402.86	1,400.00	105.831	.000
Education [a]	n.a.	1,400.00	n.a.	n.a.
Law	6,000.00	1,500.00	[b]-	[b]-
Medicine and Dentistry	15,000.00	1,600.00	[b]-	[b]-
Engineering and Technology*	10,909.85	1,548.61	54.297	.000
Information Technology*	8,998.81	1,500.00	52.065	.000
Applied and Pure Sciences [a]	n.a.	1,500.00	n.a.	n.a.
Overall*	9,665.52	1,479.50	82.122	.000

[a] Cannot be compared since there is no data for the private colleges.
[b] t-value cannot be computed since the standard deviation is 0, which indicates that there is no variation between observations.
** Significant at 1% level*

Source: Fieldwork 1999

In contrast, the relatively low tuition fees in the public universities is likely to be the result of government subsidy since they received substantial amounts of grants from the government. If we assume tuition fees to represent the unit price of higher education services, then we can

estimate the amount of public subsidy and the extent of the private sector's profits through comparing the unit price with the unit cost.[3] As can be seen in Table 9.2.1c, all fields of study in the public universities are publicly subsidised. In the private colleges, the profits in all fields of studies, except for Law, are roughly equal (between RM7341 and RM7823). It is notable that the losses in Law (RM844) seem to correspond well with our supply-side findings, where we found that it is less efficient for the private colleges to offer Law because of the relatively high cost per student compared with the public universities (see Chapter 7).

Table 9.2.1.c Estimated subsidy and profits between public and private sector provision

Fields of Studies	Public			Private		
	T/Fees (a)	Unit Cost (b)	Subsidy (c = a – b)	T/Fees (a)	Unit Cost (b)	Profits (c = a – b)
Arts and Social Sciences	1,400.00	4,843.01	(3,443.01)	9,395.00	1,846.63	7,548.37
Economics and Business	1,400.00	3,306.30	(1,906.30)	9,402.86	2,062.34	7,340.52
Education	1,400.00	5,175.35	(3,775.35)	n.a.	n.a.	n.a.
Law	1,500.00	5,456.13	(3,956.13)	6,000.00	6,843.94	(843.94)
Medicine and Dentistry	1,600.00	20,357.47	(18,757.47)	15,000.00	7,355.47	7,644.53
Engineering and Technical	1,548.61	7,939.62	(6,391.01)	10,909.85	3,087.39	7,822.46
Information Technology	1,500.00	6,434.03	(4,934.03)	8,998.81	1,639.23	7,359.58
Applied and Pure Sciences	1,500.00	11,196.46	(9,696.46)	n.a.	n.a.	n.a.

Source: Fieldwork 1999

[3] We estimated the unit cost of higher education earlier in Chapter 7 (see Table 7.5.1, p. 167).

For books and learning expenses, we can see in Table 9.2.1d that, except for Education and Applied and Pure Sciences that are not offered by the private sector, only Engineering and Technical shows significant difference between the two sectors (*p*-value = .034).

Table 9.2.1d The *t*-test for difference in *Books and Learning materials* between private and public sector provision (in per academic year)

Fields of study	Mean for private (RM)	Mean for public (RM)	*t*-value	One-tailed significant level (*p*-value)
Arts and Social Sciences +	627.50	613.83	.148	.442 +
Economics and Business Studies +	670.00	654.65	.216	.415 +
Education [a]	n.a.	560.00	10.019	n.a.
Law +	1,020.00	480.67	1.321	.127
Medicine and Dentistry +	1,333.33	1,164.71	.398	.347
Engineering and Technology**	723.48	588.89	1.847	.034
Information Technology +	796.07	679.55	1.036	.152
Applied and Pure Sciences [a]	n.a.	545.92	10.425	n.a.
Overall**	738.59	670.92	1.700	.045

[a] Cannot be compared since there is no data for the private colleges.
** Significant at 1% level*
*** Significant at 5% level*
+ Not significant

Source: Fieldwork 1999

Although the difference in other fields of study is not statistically significant, the mean for the private still exceeds that for the public, which indicates that average expenses for books and learning materials is relatively high in the private compared with the public.[4] The relatively high

[4]Note that the overall expenses for books and learning materials are statistically significant at 5 per cent level (see Table 9.2.1d).

private costs on books and learning materials in the private colleges seem to correspond well with our supply-side findings in the previous chapter that the private colleges are inferior in terms of teaching facilities compared with the public universities. Thus, students in the private colleges have to spend relatively more on teaching materials because they are not provided adequately by the private colleges.

For living and travelling expenses, we are able to reject the null hypothesis (H_0) for all variables except for Law. The difference in mean (i.e. positive differences) between the two sectors shown in Table 9.2.1e indicates that the significance level is in the correct tail of the *t*-distribution for a directional hypothesis.

Table 9.2.1e The *t*-test for difference in *Living and Travelling Expenses* between private and public sector provision (per academic year)

Fields of study	Mean for private (RM)	Mean for public (RM)	*t*-value	One-tailed significant level (*p*-value)
Arts and Social Sciences**	2,330.00	1,924.69	1.587	.059
Economics and Business Studies*	3,382.14	2,247.67	4.426	.000
Education [a]	n.a.	1,800.00	11.956	n.a.
Law [+]	2,520.00	2,205.33	.678	.253
Medicine and Dentistry*	4,333.33	2,100.00	3.575	.001
Engineering and Technology*	3,673.64	2,913.89	2.449	.008
Information Technology*	3,367.86	1,977.27	6.065	.000
Applied and Pure Sciences [a]	n.a.	2,514.08	18.065	n.a.
Overall*	3,364.15	2,261.23	8.747	.000

[a] *Cannot be compared since there is no data for the private colleges.*
* *Significant at 1% level*
** *Significant at 5% level*
[+] *Not significant*
Source: Fieldwork 1999

Thus, we could reject H_0 and conclude that, except for Law, the difference in travelling and living expenses between the two sectors is statistically significant at 5 percent level or less. Although Law seems not to be statistically significant, the mean for this expenditure in the private sector still exceeds that for the public (see Table 9.2.1e), which indicates that the average cost is higher in the private sector. From the results, we could speculate that the private colleges might not have adequate student accommodation facilities compared with the public universities since the expenditure of students in the private colleges on living and travelling costs are relatively high. We also observe that through a one-sample test method, the *t*-test results for Education and Applied and Pure Sciences (which are not offered by the private sector) on living and travelling expenses are highly significant at less than 1 per cent level (*p*-value = .000).

However, for other-related types of expenses, Table 9.2.1f shows that there is no significant difference between the two sectors, except for Information Technology (*p*-value = .007), and Education and Applied and Pure Sciences (which are not offered by the private sector). If we assume that the overall expenses represent the costs for other-related types of expenses for the two sectors, then we could not reject the null hypothesis since its *p*-value (.148) is greater than the significance level (.05). In this case we have to accept H_0 and could conclude that public sector is likely to spend more or at least equal on 'other-related expenses' compared with the private sector.

Thus, our analyses generally show that the private costs in the private sector broadly exceed the public sector, except for 'other-related expenses'. The most significant difference is found in tuition fees, which consequently leads to a relatively high total cost in the private sector.

Books and learning materials, and living and travelling expenses also show significant difference between the two sectors. These results, by showing that students at private colleges have to pay more for access to a service which, at best, is no better than what is provided in the public sector, demonstrate that the private sector is economically less efficient in satisfying consumer demand at the minimum average costs.

Table 9.2.1f The *t*-test for difference in *Other-related Expenses* between private and public sector provision (per academic year)

Fields of study	Mean for private (RM)	Mean for public (RM)	*t*-value	One-tailed significant level (*p*-value)
Arts and Social Sciences***	785.00	965.96	1.538	.065
Economics and Business Studies +	968.57	1,047.67	.482	.314
Education [a]	n.a.	1,040.00	7.140	n.a.
Law +	860.00	1,248.47	.785	.222
Medicine and Dentistry +	1,333.33	1,305.88	.057	.478
Engineering and Technology +	867.42	1,047.22	1.224	.112
Information Technology*	1,078.57	640.90	2.510	.007
Applied and Pure Sciences [a]	n.a.	995.71	12.168	n.a.
Overall +	966.33	1,033.59	1.046	.148

[a] Cannot be compared since there is no data for the private colleges.
** Significant at 1% level*
*** Significant at 10% level*
+ Not significant

Source: Fieldwork 1999

9.2.2 Indirect private costs

We argued that the level of indirect private cost could have a significant impact on the demand for higher education, especially amongst students from disadvantaged family backgrounds. If the level of this cost is relatively high, we can see that only students from advantaged family background would attend higher education. This is because families with disadvantaged backgrounds are likely to persuade their family member to work rather than entering higher education if the salary is relatively high. Since we have shown earlier elsewhere that private sector higher education enrols mostly students with advantaged family backgrounds, it is likely that indirect private cost will also be higher in the private sector compared to that in the public sector. Thus, to remain consistent with the previous analysis, we shall hypothesise that indirect private cost is likely to be higher in the private sector than that in the public sector. To examine this, it is possible to use hypotheses similar to those cited in the previous section (see H_7, p. 218).

We use the *t*-test for two independent samples to test whether there is any differences in this cost between the two sectors. We reject H_0 when t-value > α or p-value < .05 significant level. Two variables were used to represents the indirect private cost since we have two types of respondents in our samples.[5] These variables are the actual income forgone and the estimated income forgone. Table 9.2.2a shows that although in some fields of study the *t*-test results are not significant (i.e. Economics and Business Studies, Law and Engineering and

[5] One is the freshmen or who are fresh from school (80 per cent and 71 per cent in the public and private sector respectively). Second is the non-freshmen or those who are working before enter higher education (20 per cent and 29 per cent in the public and private sector respectively.

Technology), the difference in the overall actual income forgone however, is statistically significant at less than 1 per cent level ($\alpha < .004$). Table 9.2.2a also shows that, in all fields of study, the mean actual income forgone for the private sector is higher compared with that in the public sector. In this case, the indirect cost is higher in the private sector compared with the public sector. This result seems to correspond well with the results for the direct cost.

Table 9.2.2a The *t*-test for difference on *actual income forgone* between public and private sector provision

Fields of study	Mean for public (RM)	Mean for private (RM)	*t*-value	One-tailed significant level (*p*-value)
Arts and Social Sciences***	692.86	958.33	1.496	.076
Economics and Business Studies +	798.14	830.53	.229	.411
Education [a]	800.00	n.a.	7.108	n.a.
Law +	700.00	700.00	.000	.500
Medicine and Dentistry	934.00	-[b]	[b]-	[b]-
Engineering and Technology +	700.00	807.14	.511	.308
Information Technology*	400.00	1,121.00	6.839	.000
Applied and Pure Sciences [a]	845.46	n.a.	6.867	n.a.
Overall*	751.06	959.43	2.701	.004

[a] Cannot be compared since there is no data for the private colleges.
[b] No response
** Significant at 1% level*
**** Significant at 10% level*
+ Not significant

Source: Fieldwork 1999

However, for the overall estimated income forgone, Table 9.2.2b shows that the *t*-test results appear to be not statistically significant. We can see in this table that, except for Education and Applied and Pure Sciences

that are not offered by the private sector, only information technology shows a significant difference at .025 level. Nonetheless, since this is not the actual income forgone (only estimated base on respondents expectation), we can only conclude that public sector respondents may anticipate to earn more compared with the private sector respondents if they don't enter higher education. If this is the case, the indirect cost is higher for the public sector respondents compared with those in the private sector.

Table 9.2.2b The *t*-test for difference on *estimated income forgone* between public and private sector provision

Fields of study	Mean for public (RM)	Mean for private (RM)	*t*-value	One-tailed significant level (*p*-value)
Arts and Social Sciences +	880.30	750.00	1.244	.110
Economics and Business Studies +	949.44	889.22	.737	.232
Education a	872.22	n.a.	10.621	n.a.
Law +	921.25	625.00	1.049	.156
Medicine and Dentistry***	877.59	666.67	1.613	.059
Engineering and Technology +	914.06	894.23	.358	.361
Information Technology**	794.44	961.67	1.993	.025
Applied and Pure Sciences a	838.16	n.a.	22.351	n.a.
Overall +	883.99	892.02	.253	.401

a Cannot be compared since there is no data for the private colleges.
** Significant at 1% level*
*** Significant at 10% level*
**** Significant at 10% level*
+ Not significant
Source: Fieldwork 1999

To represent indirect costs for each sector of higher education, we calculated the average of the mean salary of actual and estimated income forgone for all respondents as shown in Table 9.2.2c.

Table 9.2.2c Mean of actual, estimated and average income forgone of respondents

Fields of Study	Public			Private		
	(a) Actual Income[1] (RM)	(b) Estimated Income[2] (RM)	(c={a+b}/2) Average (RM)	(a) Actual Income[3] (RM)	(b) Estimated Income[4] (RM)	(c={a+b}/2) Average (RM)
Arts and Social Sciences	692.86	880.30	786.58	958.33	750.00	854.17
Economics and Business Studies	798.14	949.44	873.79	830.53	889.22	859.88
Education [a]	800.00	872.22	836.11	n.a.	n.a.	n.a.
Law	700.00	921.25	810.63	700.00	625.00	662.5
Medicine and Dentistry	934.00	877.59	905.80	n.a.	666.67	666.67
Engineering and Technical	700.00	914.06	807.03	807.14	894.23	850.69
Information Technology	400.00	794.44	597.22	1,121.00	961.67	1,041.34
Applied and Pure Sciences [a]	845.45	838.16	841.81	n.a.	n.a.	n.a.

[a] *Cannot be compared since there is no data for the private colleges.*

[1]20 respondents (7.7 per cent) are in full-time employment and 33 respondents (12.6 per cent) are in part-time employment.

[2]186 respondents (71.3 per cent) are in full-time education and 22 respondents (8.4 per cent) are unemployed.

[3]36 respondents (14.5 per cent) are in full-time employment and 35 respondents (14.1 per cent) are in part-time employment.

[4]139 respondents (56.0 per cent) are in full-time education and 38 respondents (15.3 per cent) are unemployed.

On the whole, we could see from the table that the respondents' income forgone is estimated at less than RM1000 per month for all fields of study, except for Information Technology in the private colleges. These figures seem to correspond well with the general pattern in the income level at the national level from which the non-graduates' workers normally received (probably between one and three years of working experience). The relatively high income forgone estimated for the Information and Technology respondents presumably reflects the high demand for this category of employment, which results from national policy to develop the computer-based technology.

9.3 The private benefits of higher education

Educational investment from both, the individual (private) and the social points of view, yields two types of benefits, viz., monetary and non-monetary benefits. Monetary benefits usually refer to the additional income received by educated workers compared with those who are less educated. On other hand, non-monetary benefits normally refer to the immediate benefits of direct consumption of education that are more difficult to quantify. This may include the amount and types of knowledge gained, development of personal attributes (cognitive and affective), higher status and greater enjoyment of cultural activities due to additional schooling (McMahon 1988). However, in an attempt to measure the private benefits, economists tend to limit themselves to the earnings' benefits only because of the difficulty in estimating the consumption value of education. This consequently underestimates the real value of returns to education. In this study, in addition to the monetary benefits, we shall also show the extent of the non-monetary benefits measured from the private (individual) perspectives.

9.3.1 The monetary benefits

In this study, we used the employment opportunities, the expected salary and the rates of return to demonstrate the level of monetary benefits received from investment in higher education in both types of our sampled institutions. In this, we shall examine the types of occupation that is to be expected and the sector that is likely to offer these types of occupation. We shall also examine the level of income that is to be expected by the respondents and compared them with the actual public and private sector salary.[6] Finally we shall try to estimate the private rates of returns through comparing the private cost data (in the previous section) with the respondent's expected income and the actual public and private sector pay schedule.

9.3.1.1 Employment opportunities

Table 9.3.1.1a shows that the pattern of respondents' expectations of graduate employment is roughly the same in both types of institutions, where the majority are expecting to get employed in the professional and technical fields (exceeding 70 per cent). This pattern seems to correspond well with the types of courses offered by respective sampled institutions shown earlier in Table 7.3[7], where students' intake in the professional and technical courses are relatively high. The pattern, on the other hand, shows that the proportion of respondents who expect to be employed as government officials and administrators is relatively low (6 per cent in the public universities and less than 1 per cent in the private colleges). These patterns seem to be consistent with the pattern shown in

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[6] We do not have the private sector wage schedule, but it was estimated that the private sector in general is paying on the average 15 per cent higher than the public sector salary (Malaysia 1995).
[7] See Chapter 7, p. 157.

Table 9.3.1.1b, where respondents' expectations to be employed in the private sector is relatively high compared with those in the public sector (63 per cent and 78 per cent in the Public Universities and Private Colleges respectively). These patterns seem to reflect the existing demand for graduate workers at the national level shown earlier in Chapter 4.[8]

Table 9.3.1.1a Respondents expectation of graduate employment

Types of Occupation	Public		Private	
	Frequency	%	Frequency	%
PROFESSIONAL AND TECHNICAL:	*193*	*73.95*	*193*	*77.82*
Accountants	16	6.13	29	11.69
Computer Technologist	17	6.51	68	27.42
Doctors and Medical Professionals	24	9.20	3	1.21
Engineers	45	17.24	63	25.40
Lawyers and Judicial	12	4.60	6	2.42
Research and Teaching Professionals	49	18.77	16	6.45
Others types of professionals	30	11.49	8	3.23
ADMINISTRATIVE AND MANAGERIAL:	*68*	*26.05*	*55*	*22.18*
Government officials and administrators	15	5.75	1	0.40
Manufacturing and Production Managers	14	5.36	17	6.85
Self-employed Managers	11	4.21	13	5.24
Other types of Administrative and Managerial	28	10.73	24	9.68
Total number of respondents	*261*	*100.00*	*248*	*100.00*

Source: Fieldwork 1999

[8] We have shown earlier in Chapter 4 that the high demand for graduate workers mainly comes from the private sector through the new job openings. Whilst there is relatively less job openings in the public service result from the privatisation programmes.

Table 9.3.1.1b Respondents expectation of the sectors of employment

Sector	Public		Private	
	Frequency	Per cent	Frequency	Per cent
Public Sector	67	25.7	18	7.3
Private Sector	163	62.5	194	78.2
Self-employment	26	10.0	29	11.7
Family business	5	1.9	7	2.8
Total Respondents	261	100.0	248	100.0

Source: Fieldwork 1999

9.3.1.2 Expected salary

In terms of expectations of graduate salary, Table 9.3.1.2 shows that respondents in the private colleges who enrolled in Economics and Business Studies, Medicine and Dentistry, Engineering and Technical, and Information Technology expect a relatively higher salary compared with those in the public universities. This might be because a relatively high proportion of respondents in the private colleges expect to be employed in the private sector (78 per cent)[9], where wages are normally relatively high. In addition, we have shown earlier in Table 4.5.1[10] that there is high demand for graduate workers in the professional and technical fields. Moreover, most of the new job openings in these fields are to be found in the private sector.

[9] See Table 9.3.1.1b.
[10] See page 110, in Chapter 4.

Table 9.3.1.2 Respondents expected graduate salary (mean)

Fields of studies		Public (in RM)	Private (in RM)	Difference (in RM)
Arts and Social Sciences :	1st Five Years	2,023.40	1,955.00	68.40
	2nd Five Years	2,997.87	2,885.00	112.87
	3rd Five Years	4,059.57	3,860.00	199.57
	4th Five Years	5,148.94	4,900.00	248.94
	5th Five Years	6,248.94	5,900.00	348.94
Economics & Business:	1st Five Years	1,913.95	2,187.86	(273.91)
	2nd Five Years	3,126.74	3,480.00	(353.26)
	3rd Five Years	4,191.86	4,805.70	(613.84)
	4th Five Years	5,319.77	6,027.86	(708.09)
	5th Five Years	6,382.56	7,322.86	(940.30)
Education :	1st Five Years	2,313.33	n.a.	-
	2nd Five Years	2,413.33	n.a.	-
	3rd Five Years	3,266.67	n.a.	-
	4th Five Years	4,033.33	n.a.	-
	5th Five Years	4,920.00	n.a.	-
Law :	1st Five Years	2,186.67	1,800.00	386.67
	2nd Five Years	3,613.33	2,800.00	813.33
	3rd Five Years	5,513.33	3,800.00	1,713.33
	4th Five Years	7,253.33	4,800.00	2,453.33
	5th Five Years	9,866.67	6,100.00	3,766.67
Medicine and Dentistry :	1st Five Years	2,317.65	4,166.67	(1,849.02)
	2nd Five Years	3,458.82	7,000.00	(3,541.18)
	3rd Five Years	4,985.29	9,833.33	(4,848.04)
	4th Five Years	6,573.53	12,500.00	(5,926.47)
	5th Five Years	8,882.35	15,666.67	(6,784.32)
Engineering and Technical :	1st Five Years	2,197.22	2,272.73	(75.51)
	2nd Five Years	3,513.89	3,536.36	(22.47)
	3rd Five Years	4,783.33	4,963.64	(180.31)
	4th Five Years	6,347.22	6,342.42	4.80
	5th Five Years	8,094.44	8,003.03	91.41
Information Technology :	1st Five Years	2,000.00	2,152.38	(152.38)
	2nd Five Years	2,945.45	3,411.90	(466.45)
	3rd Five Years	4,043.18	4,746.43	(703.25)
	4th Five Years	5,345.45	5,955.95	(610.50)
	5th Five Years	7,143.18	7,471.43	(328.25)
Pure and Applied Sciences :	1st Five Years	1,965.31	n.a.	-
	2nd Five Years	2,944.90	n.a.	-
	3rd Five Years	4,071.43	n.a.	-
	4th Five Years	5,273.45	n.a.	-
	5th Five Years	6,524.08	n.a.	-

Source: Fieldwork 1999

The table shows that only in Arts and Social Sciences, and Law is the expected income relatively higher for those who enrolled in the public universities compared with the private colleges. This could be a result of the relatively low demand in the private sector for professions for Art and Social Sciences and Law graduates. Additionally, the proportion of respondents from the public universities who expect to be employed in the public sector is relatively high compared with those in the private colleges (see Table 9.3.1.1b). This seems to correspond well with the relatively high intake for Arts and Social Sciences (38 per cent) in the public universities shown earlier in Table 7.3.[11]

However, we discover that the amount of salary to be expected by respondents is relatively high when compared with the actual pay schedule in the public sector. The patterns appear to be similar for respondents in both sectors as could be seen in Figure 9.3.1.2a and Figure 9.3.1.2b (public sector respondents) and Figure 9.3.1.2c and 9.3.1.2d (private sector respondents). We could predict that the considerable demand for higher education shown earlier elsewhere might arise from this high expectation on the income level.[12] We observe from these charts that respondents in both sectors had greater expectations in terms of expected income for Medicine and Dentistry, Engineering and Technology and Information Technology, which seems to reflect the high demand of graduate workers in these areas. However, it is notable that public sector respondents had relatively high expectations for future income in Law (as can be seen in Figure 9.3.1.2a). This might be because public sector respondents had greater expectations of employment in the public sector (26 per cent)[13], where Law graduates

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[11] See page 157 in Chapter 7.
[12] We discussed this earlier in Chapter 4.
[13] See Table 9.3.1.1b.

receive relatively high salaries compared with graduates from other fields of study (Figure 9.3.1.2b).

Figure 9.3.1.2a Graduate salary expectation of public sector respondents

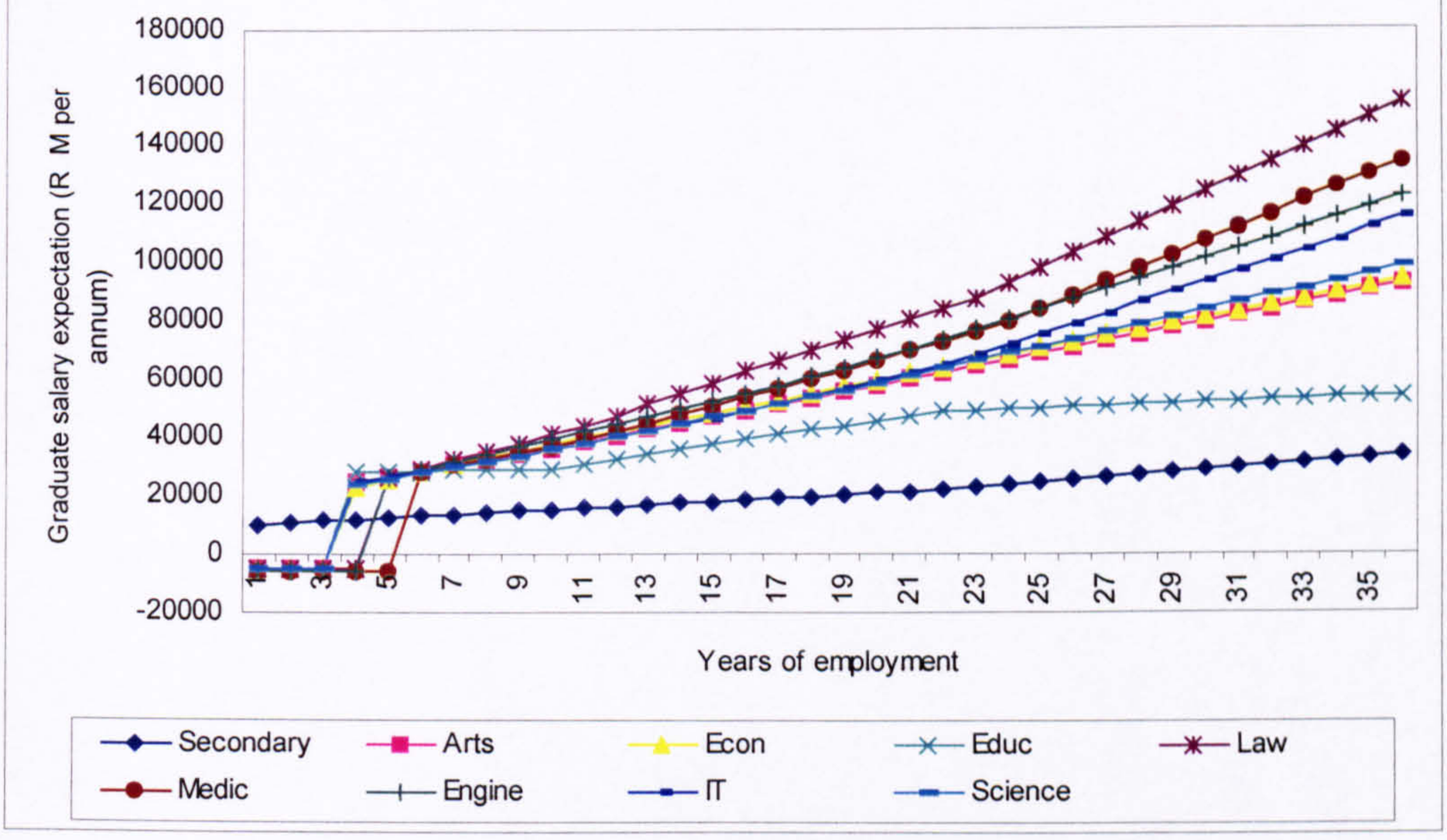


Figure 9.3.1.2b Graduate salary based on public service pay schedule for public sector respondents

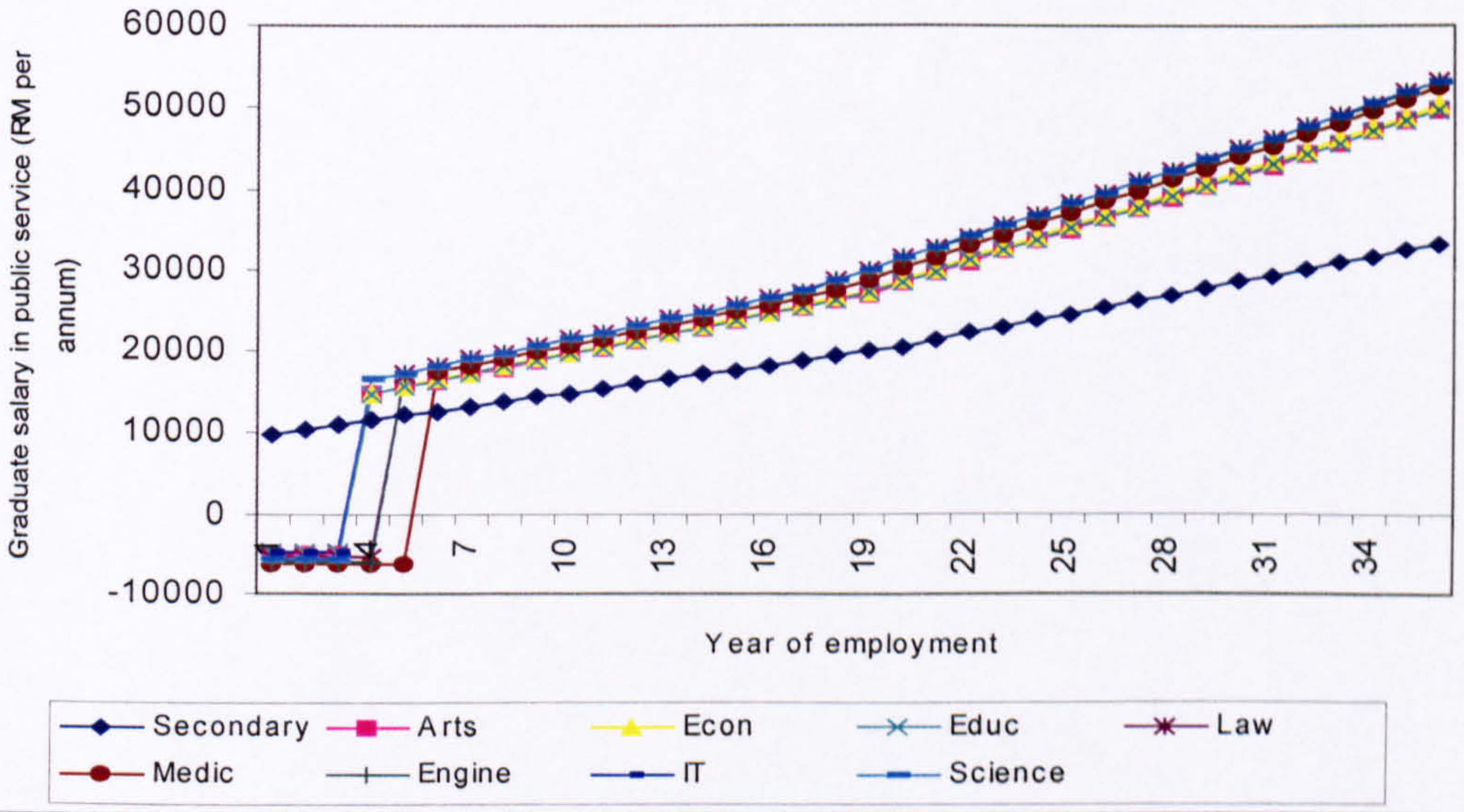


Figure 9.3.1.2c Graduate salary expectation of private sector respondents

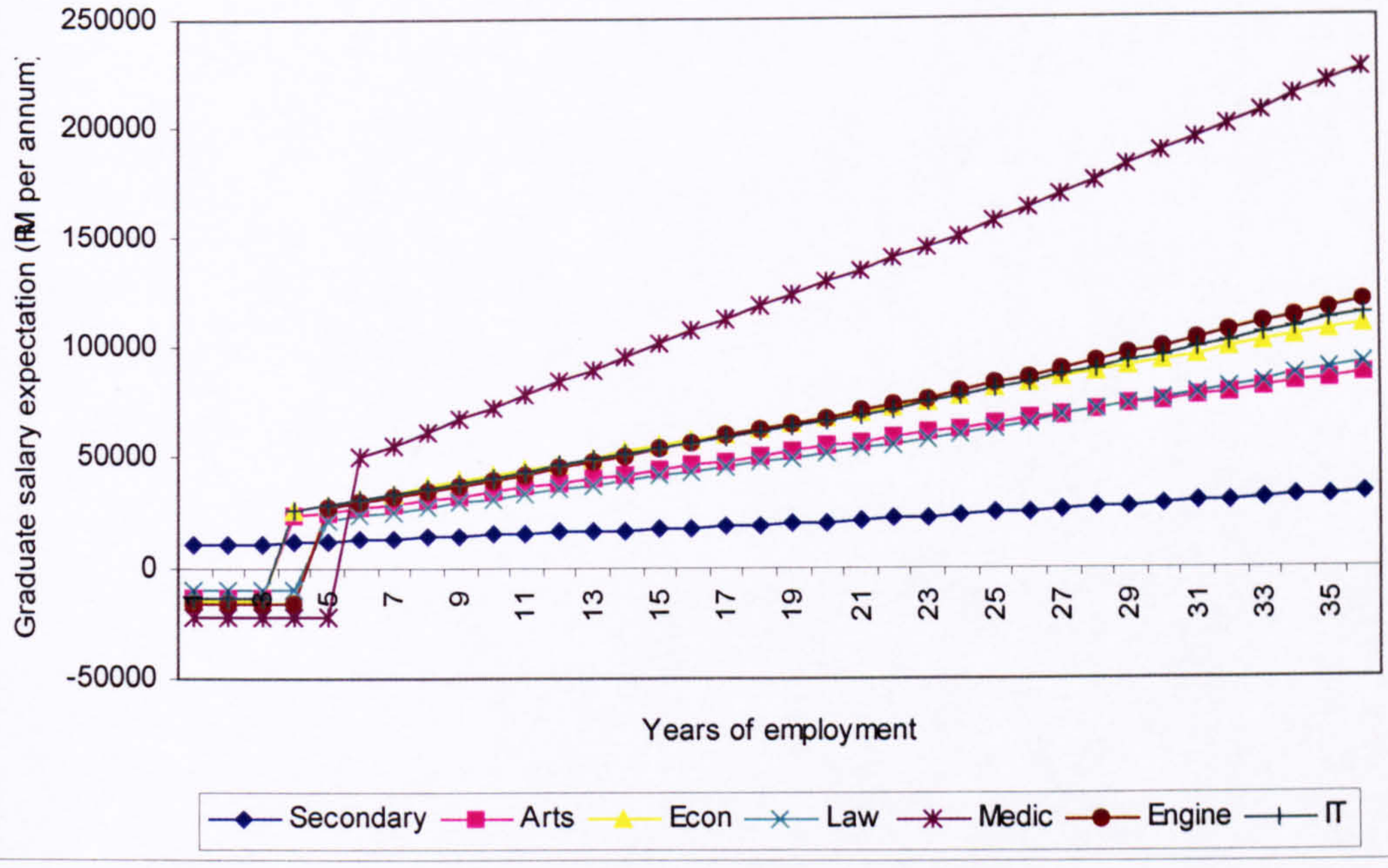
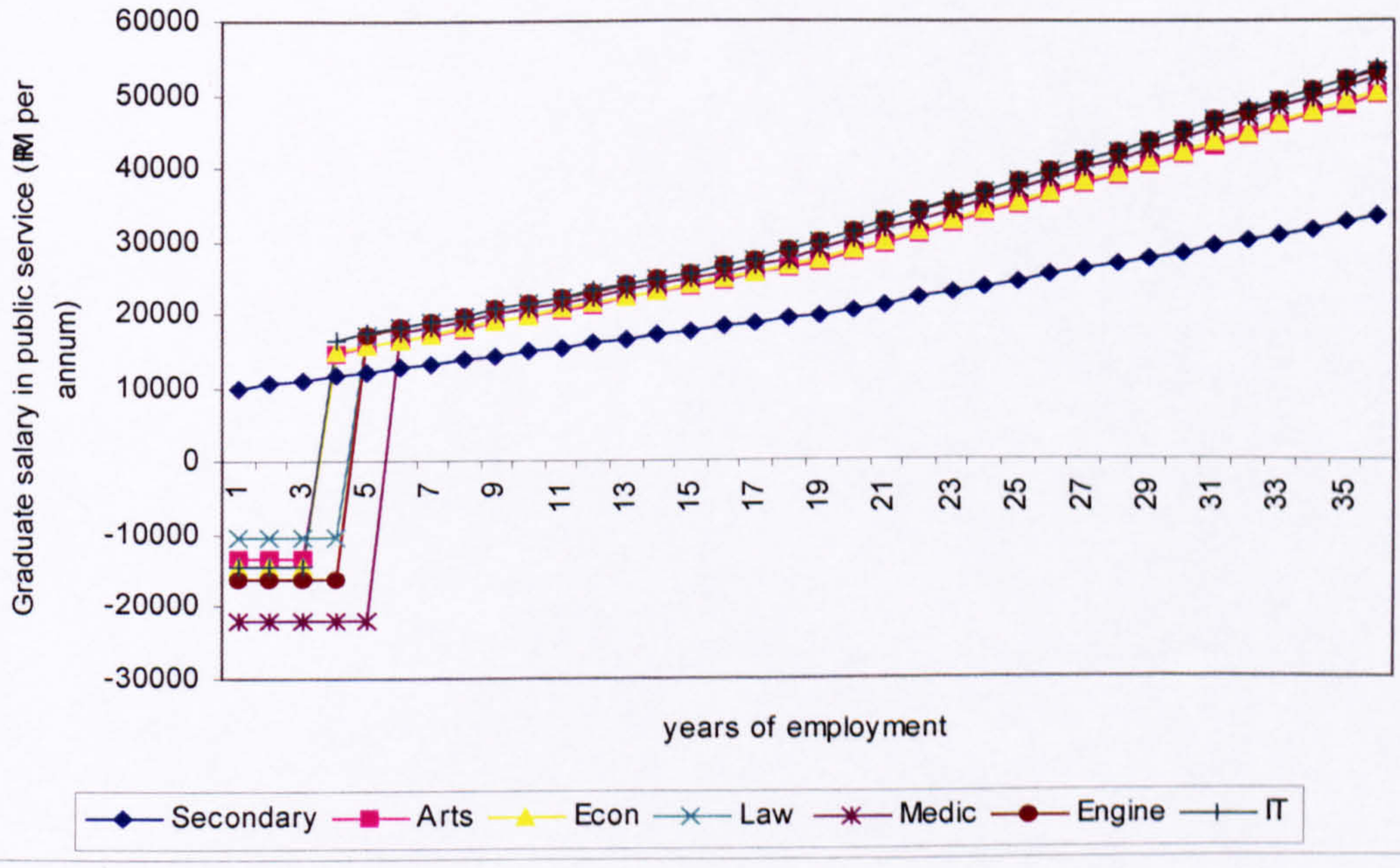


Figure 9.3.1.2d Graduate salary based on public service pay schedule for private sector respondents



9.3.1.3 The private rates of return

Charts in Figures 9.3.1.2 (a to d) above also shows the difference between secondary school income and expected graduate salaries (expectation and actual public service pay). We estimate the monetary benefits through calculating these differences to show the net benefits of entering higher education, and compute the rates of return accordingly. The rate of return can be estimated through solving the value of r from the following equation:

$$\sum_{t=c}^{n}(Y_{HE}-Y_{SE})_t(1+r)^{-t}=\sum_{t=0}^{c-1}C_{HE}(1+r)^{-t}$$

Where, Y_{HE} = *individual income at higher education*

Y_{SE} = *individual income at secondary education*

C_{HE} = *cost of entering higher education*

n = *years of employment*

c = *years of education*

t = *the year referred to by each variable*

Using the available cost data (discussed in the previous section) and the income level data (based on respondents' expectations and the public service pay schedule), we calculated the private rates of return using the above equation.[14] Table 9.3.1.3 shows that the computed value of the private rates of return (in both estimates) for respondents in the private colleges in all fields of study is relatively low compared with those in the public universities. The main reason for this pattern is that respondents in

[14] The data used in this exercise are shown in Appendix Chapter 9

the private colleges have to pay relatively high costs (especially in tuition fees) compared with those in the public universities.

Table 9.3.1.3
Private rates of return based on respondents expectation and estimated actual salary in the public and private sector employment

Fields of Studies	Public			Private		
	Respondents expectation (per cent)	Public sector employment estimates (per cent)	Private sector employment estimates (per cent)	Respondents expectation (per cent)	Public sector employment estimates (per cent)	Private sector employment estimates (per cent)
Arts and Social Sciences	29	11	15	21	8	11
Economics & Business Studies	28	11	15	24	7	11
Education	27	11	15	n.a.	n.a.	n.a.
Law	26	10	14	16	8	11
Medicine and Dentistry	20	7	10	23	4	6
Engineering and Technical	24	10	13	18	7	9
Information Technology	29	14	18	24	9	13
Applied and Pure Sciences	28	13	17	n.a	n.a.	n.a.

Source: Fieldwork 1999

We have shown earlier that generally, in all fields of study, tuition fees are 4 or 6 times higher in the private colleges compared with those in the public universities. Nonetheless, it is noteworthy that the respondents expected private rates of return in both institutions broadly to exceed our estimated values based on the public service pay schedule. This might be the result of more respondents expecting to be employed in the private sector rather than in the public sector, where the wages are relatively high (on average 15 per cent higher than the public sector salary). If we took account of these differences into our calculation, the private rates of return would probably fall between the expected private rates of return

(based on respondents' expectation) and the estimated private rates of return that based on the public sector pay schedule (see Table 9.3.1.3).

9.3.2 The non-monetary benefits

Despite the fact that non-monetary benefits (consumption benefits) are much more difficult to measure compared with monetary benefits, there are a number of indicators that might possibly reflect the immediate benefits of direct consumption of higher education. We selected seven variables that have been used by the Dearing Report 1997[15] as the indicators to show the extent of the non-monetary benefits between the two groups of respondents in our sampled institutions. These variables are the following; developed new skills; experienced intellectual development; learned and discussed new ideas; broadened horizons; increased self-esteem and confidence; met new people; and had a good time. We use the five points of Likert-scale measurement to indicate the ranking of these variables based on whether the respondents agree or disagree to have gained those benefits.[16]

Since we have shown in the previous section that the expected monetary benefits of higher education are relatively high in the public sector compared with the private sector, we shall anticipate that the non-monetary benefits are likely to have similar pattern. Furthermore, we have shown earlier elsewhere that the public sector provision is superior to the private sector, and consequently, provides greater satisfaction amongst students. Thus, to remain consistent, we hypothesised that the non-monetary benefits are likely to be higher in the public sector compared

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[15] The National Committee of Inquiry into Higher Education in the UK

[16] The values are: 5=strongly agree; 4=Agree; 3=Neither agree nor disagree; 2=Disagree; 1=Strongly disagree (refer Question 34 (a) – (g) in the questionnaire in Appendix 6b)

with the private sector. We shall examine this through the following operational hypothesis:

H_0: Non-monetary benefits are likely to be equal or less in the public universities compared with the private colleges.

H_8: Non-monetary benefits of higher education are likely to be higher in the public universities compared with the private colleges.

We used the Man-Whitney U test with one-tailed significance level to tests these hypotheses for the reason that the hypotheses are directional and the data are in ordinal ranking. In this we make the test for significant differences between the two population by using the observed value sum of rank and compare it to the sampling distribution of sum of rank for identical populations. The value of the standardised test statistic Z will provide the basis for deciding whether to reject H_0. In this test, we reject H_0 when $Z \geq \alpha$ at the 5 per cent significant level ($\alpha = .05$) or the p-value $\leq$ .05.

Table 9.3.2 shows that, except for the third variable (learned and discussed new ideas), the *p*-value for six other variables is less than .05 significant level, which indicates that we should reject H_0. If at the 5 per cent level $\alpha = 1.645$ (one-tailed), then we could see that $Z > \alpha$ for all the six variables, which also indicates that the differences between the two sectors are statistically significant. Consequently, we should also reject H_0. Since the calculated mean rank for the public sector is greater, we could be sure that we are at the correct tail of the Z-distribution, and thus reject H_0. From these results, we conclude that (except for learned and discussed new ideas) public sector students have greater non-monetary

benefits compared with students in the private sector as indicated by the level of significance in those six variables.

Table 9.3.2 Mann-Whitney U statistic on non-monetary benefits

Types of Non-Monetary Benefits	Mean rank for public	Mean rank for private	Z-value	One-tailed sig. Level (*p*-value)
Developed new skills**	264.79	244.70	1.730	.042
Experienced intellectual development*	273.61	235.41	3.286	.001
Learned and discussed new ideas ⁺	258.93	249.85	.775	.219
Broadened horizons**	262.95	241.63	1.803	.036
Increased self-esteem and confidence**	264.45	244.07	1.713	.044
Met new people**	267.01	242.36	2.087	.019
Had a good time**	267.49	240.77	2.207	.014

**Significant at 1 % level*
***Significant at 5 % level*
⁺ Not significant

Source: Fieldwork 1999

This pattern seems to be consistent with our supply-side findings that the public universities are superior in terms of quality compared with the private colleges, and thus, provides relatively high benefits (monetary and non-monetary). We have shown that the public universities have more-qualified and senior teaching staff, better teaching facilities, more research-based and offer their own degree programmes. The private colleges in contrast, employed less-qualified and junior staff, had inadequate teaching facilities (especially libraries), were not research-based and offered only twinning types of degree programmes. Consequently, the benefits of higher education are likely to be lower.

9.4 Financial support for students

We have seen that the private costs (direct and indirect) are relatively high in the private colleges compared with those in the public sector. We have also seen that because of the relatively high private cost involved (especially in tuition fees) for students in the private colleges, they received relatively lower benefits (especially the monetary benefits) compared with students in the public universities. We have shown earlier elsewhere that students who choose to enrol in the private colleges are relatively wealthier compared with those who enrol in the public universities. It is therefore crucial to examine the sources of private financing of higher education, especially amongst private sector students since the private costs are relatively high. In this section we shall compare the types of financial assistance and sources of private financing of higher education between students in the private colleges with students in the public universities.

In this analysis, we shall hypothesise that students in the private colleges are likely to receive less financial assistance since they came from wealthier family backgrounds. To examine this, our operational hypotheses may be stated as follows:

H_0: No difference in the level of financial assistance received between private colleges and public universities students

H_9: Private colleges' students are likely to receive less financial assistance compared with students in the public universities.

We used the Chi-square test (χ^2) to test these hypotheses since our data are in nominal order (Yes or No). In this we compare a value of χ^2

calculated from our data with a tabulated value of χ^2 at the 5 per cent significant level. The χ^2 value in Table 9.4a is greater than the value of α at the 5 per cent level, which indicates that we should reject H_0. Consequently, we can conclude that private sector students received less financial assistance compared with students in the public sector. We can see in Table 9.4a that the proportion of students in the private colleges who received financial assistance is relatively low compared with those who are in the public sector.

Table 9.4a Financial assistance amongst students in higher education

			types of institution		Total
			public	private	
receive any maintenance grants	yes	Count	212	62	274
		Expected Count	140.5	133.5	274.0
		% within types of institution	81.2%	25.0%	53.8%
	no	Count	49	186	235
		Expected Count	120.5	114.5	235.0
		% within types of institution	18.8%	75.0%	46.2%
Total		Count	261	248	509
		Expected Count	261.0	248.0	509.0
		% within types of institution	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	161.758[b]	1	.000		
Continuity Correction[a]	159.504	1	.000		
Likelihood Ratio	171.626	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	161.441	1	.000		
N of Valid Cases	509				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 114.50.

Source: Fieldwork 1999

Table 9.4b also shows significant difference in the types of financial assistance available for students in both sectors of education (p-value < .001). We can see from the table that JPA[17] and PTPTN[18] do not offer any financial assistance for students in the private sector. Whilst the State Government offers less than 1 per cent financial assistance for students in private sector. We can also see that self-financing students are relatively high in the private colleges (75 per cent) compared with those in the public sector (19 per cent). Thus, we may conclude that private sector students receive less financial assistance compared with students in the public sector. We might be able to predict that the relatively low proportion of poorer students in the private sector is likely to result from the lack of financial support for students in this sector. This finding suggests that if the government wishes to see more students to attend private sector higher education (especially from the poorer families), more financial assistance should be provided for students to study in this sector.

The value of scholarships or grants provided also shows a significant difference between the two sectors (*t*-value=11.840 and *p*-value=.000). We can see in Table 9.4c that the average value of the scholarships or grants for students in the private sector is higher than the average value for the public sector students. This seems to be consistent with the existing situation, where students in the private sector have to bear relatively high costs for their education compared with those who are in public sector higher education. Nonetheless, this value, as shown in the table, is still relatively low when compared with the actual private costs.

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[17] JPA – Public Service Department
[18] PTPTN – National Higher Education Fund Corporation

Table 9.4b Types of financial assistance amongst students in higher education

			types of institution		Total
			public	private	
the name of grants/scholarships provider	JPA	Count	74	0	74
		Expected Count	37.9	36.1	74.0
		% within types of institution	28.4%	.0%	14.5%
	MARA	Count	42	48	90
		Expected Count	46.1	43.9	90.0
		% within types of institution	16.1%	19.4%	17.7%
	PTPTN	Count	42	0	42
		Expected Count	21.5	20.5	42.0
		% within types of institution	16.1%	.0%	8.3%
	States Govt.	Count	10	1	11
		Expected Count	5.6	5.4	11.0
		% within types of institution	3.8%	.4%	2.2%
	Others	Count	44	12	56
		Expected Count	28.7	27.3	56.0
		% within types of institution	16.9%	4.8%	11.0%
	Self-finance	Count	49	187	236
		Expected Count	121.0	115.0	236.0
		% within types of institution	18.8%	75.4%	46.4%
Total		Count	261	248	509
		Expected Count	261.0	248.0	509.0
		% within types of institution	100.0%	100.0%	100.0%

[a] *JPA – Public Service Department*
[b] *MARA – Bumiputera Trust Council*
[c] *PTPTN – National Higher Education Fund Corporation*

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	222.557[a]	5	.000
Likelihood Ratio	274.935	5	.000
Linear-by-Linear Association	120.646	1	.000
N of Valid Cases	509		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.36.

Source: Fieldwork 1999

Table 9.4c The *t*-test for difference in the value of scholarship/grant

Sources of financing	Public		Private		t-value	One-tailed sig. level
	Cases (N)	Mean (%)	Cases (N)	Mean (%)		
Scholarship/grant value*	212	5035.57	61	8201.64	11.840	.000
Total private costs*	261	5,445.24	248	14,734.60	50.727	.000

** Significant at 1 per cent level*

Source: Fieldwork 1999

To throw more lights on the financing issues, it is necessary to examine the sources of private financing for higher education. We selected five types of private resources, viz., parents' funding, scholarship/grant, bank loan, income from part-time job and other types of resources (which include saving, sibling contribution). For each variable, respondents were asked to state the percentage contribution of these sources of funding to their higher education (i.e. 0 to 100 per cent). Since the data are in ratio scale, we use the *t*-test for two independent samples (public and private) to test whether there is any differences in the method of private financing to higher education between the two sectors. We shall hypothesise that the private resources are likely to differ between students in both sectors of education. This is likely to be the case since public sector students received greater financial assistance, whilst students in the private sector use other types of private resources to meet their higher education financial needs. Thus, our operational hypotheses can be stated through the following statements:

H_0: No difference in the private resources of financing higher education between the two sectors.

H_{10}: Private resources of financing higher education in the private colleges are likely to differ from those in the public universities.

In this test, we compare a value of *t* calculated from our data with a value of α at the 5 per cent significant level. We reject H_0 when $t > \alpha_{(cv=.05)}$, or *p*-value < 0.05 significant level. We can see in Table 9.4d that, for parents funding and scholarship/grants, the *t* and *p*-values show that there are significant differences between the two sectors in terms of the private resources of financing higher education. We can see in the table that students in the private sector have a relatively high proportion of parents funding, whilst in contrast, students in the public sector have a relatively high proportion of scholarship/grants.

Table 9.4d The *t*-test for difference in private resources of financing higher education

Sources of financing	Public		Private		t-value	2-tailed sig. level
	Cases (N)	Mean (%)	Cases (N)	Mean (%)		
Parents*	203	38.4	241	78.3	13.838	.000
Scholarship/grant*	211	79.5	61	59.8	6.418	.000
Bank loan [a]	0	-	8	25.6	-	-
Income from part-time job [+]	29	22.2	44	18.5	.719	.477
Others (saving, sibling contribution) [+]	35	25.7	51	24.6	.205	.838

** Significant at 1 per cent level*
[+] Not significant
[a] t cannot be computed because the value in the public is empty.

Source: Fieldwork 1999

These findings are consistent with our previous findings on parental backgrounds, which seems to indicate that there are more wealthy students in private colleges compared with in the private universities. We can see also that private sector students use bank loans to finance their education, but the number of cases are very small (only 8 cases or 3 per

cent). For income form part-time jobs and other sources of funding, there is no significant differences between the two sectors. Thus, students in both sectors of education also use income from part-time jobs and other sources of funding (saving or siblings contribution) to help finance their higher education. This is likely to be the case since the amount of scholarships or grants is relatively low compared with the private costs, especially amongst students in the private sector.

9.5 Summary

Our analysis on the private costs, benefits and also sources of funding of higher education reflects that there are significant differences between the two sectors of higher education (public and private). We found that students in the private sector have to pay a relatively high cost, especially in tuition fees, compared with those in the public sector. Although earlier in Chapter 7 we have argued that the private colleges are technically cost effective to offers degree programmes, the consumers' costs are very high compared with the public sector. Our examination of the total cost shows that students in the private colleges have to pay 2 or 3 times more than those in the public universities, and only wealthy and advantaged families are able to do so. This seems to be consistent with our earlier findings in Chapter 8 on the parental backgrounds which show that most students who enrol in the private colleges tend to come from wealthier and advantaged families.

In terms of benefits, we observed that students in the public universities are likely to receive greater, both monetary and non-monetary benefits, compared with students in the private colleges. Though we discovered despite marginal differences in the employment opportunities and the expected salaries, high cost in the private sector higher education has

consequently led to a lower rate of returns amongst private sector students compared with those in the public sector.

It is also found that private sector students received less financial assistance than students in the public sector did. At least 75 per cent of students in the private colleges are self-financed compared with only 19 per cent that in the public universities. Thus, this might also be the reason for the less wealthy and less advantaged students not to enrol in the private colleges.

Thus, the general findings seem to appear consistent with the our earlier results (in Chapter 7 and 8) and the general view that private sector while providing cost efficient education is likely to be economically less efficient, i.e. it does not satisfy consumer demand at minimum average costs. Therefore, if the government wishes to expand higher education through the private sector as been suggested by the World Bank model, then it is crucial to address the deficiencies which occurs within the private sector provision as been reflected in the findings.

CHAPTER 10

QUALITY ASPECTS

10.1 Introduction

Although recent policy recommendations suggest that private higher education would enhance the quality of education, it is still not clear how quality could be maintained, especially in an environment where most of the private colleges are profit motivated. It may be argued that a low quality public education may stimulate the growth of a high quality of private sector provision, meeting the demand of those who are willing and able to pay for academic quality. However, if the quality level of education in the public sector is already at a high standard, but the supply of these places is very limited, then the private sector provision may be stimulated to meet the growth of this demand. In this situation, students who fail to enter public sector higher education would be most likely to enter private higher education. In Chapter 7, the supply-side analysis provides evidence that the private colleges offer a relatively low quality of education compared with the public universities. In this Chapter we shall examine whether data on demand-side provide further evidence to support the supply-side findings on the quality of the provision.

10.2 The quality of the student characteristics

We mentioned earlier in Chapter 4 that several types of qualification are currently used as entry certificates for higher education. In addition to the ordinary Higher Schools Certificate (HSC/STPM), pre-universities certificates are also widely used as the entry qualification to either the public universities or the private colleges[1]. Therefore it is noteworthy to examine whether the types of entry qualification differ between our sampled institutions. To examine this we hypothesised that the types of entry qualification used by both types of sampled institutions is likely to differ. Thus, the operational hypotheses may be stated as follows:

H_0: No difference in the types of entry qualification between public universities and private colleges' students.

H_{11}: The types of entry qualification will differ between the two sectors.[2]

We used the Chi-square test (χ^2) to test these hypotheses since the data are categorical (nominal). In this we compare a value of χ^2 calculated from our data with a tabulated value of χ^2 at the 5 per cent significant level. We reject H_0 when $\chi^2 \geq \alpha$ or, if *p*-value $\leq .05$. Table 10.2a shows $\chi^2_{(99.575)} \geq \alpha_{(5.99)}$ (where the *p*-value = .000), and therefore the null hypothesis is rejected. Thus, we could conclude that the difference in the types of entry qualification used by both types of institution in the population is statistically significant (more than 95 per cent confidence).

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[1] Pre-universities courses are conducted through matriculation programmes at the Public universities, while at the private colleges, it is offered through foundation programmes.
[2] See Chapter 5, page 133 for the development of this hypothesis.

Table 10.2a Chi-square test for respondents' entry qualification

			types of institution		
			public	private	Total
Types of entry qualification for higher education	HSC/STPM	Count	128	28	156
		Expected Count	80.0	76.0	156.0
		% within types of institution	49.0%	11.3%	30.6%
	Matriculation/Pre U College	Count	111	141	252
		Expected Count	129.2	122.8	252.0
		% within types of institution	42.5%	56.9%	49.5%
	Other	Count	22	79	101
		Expected Count	51.8	49.2	101.0
		% within types of institution	8.4%	31.9%	19.8%
Total		Count	261	248	509
		Expected Count	261.0	248.0	509.0
		% within types of institution	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	99.575[a]	2	.000
Likelihood Ratio	106.818	2	.000
Linear-by-Linear Association	96.305	1	.000
N of Valid Cases	509		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 49.21.

Source: Fieldwork 1999

We could see from the table that HSC/STPM[3] (49 per cent) and matriculation certificates (43 per cent) are equally important as entry qualification for the public universities, but for the private colleges, the

[3] English is the medium of instruction for HSC, and, Malaysia Language is the medium of instruction for STPM.

colleges' certificates (57 per cent) are more widely used for the entry purposes. It should be noted that the Ministry of Education offers HSC/STPM and the matriculation programme through the national school curriculum. However in contrast, the colleges' certificates (through the foundation programmes) are been conducted independently by the private colleges themselves. At this stage, we could only suggest that the quality of certificates offered by the Ministry of Education might be superior to that the certificates from the private colleges since they are part of the national curriculum.

To provide some indication of the quality of the students enrolled by each type of sampled institution, we could possibly examine the level of qualification achieved in the certificates for entry to higher education. To examine this, we hypothesised that public sector enrolled better students compared with the private sector. This is likely to be the case since student's first preference is for the public universities. Thus, the operational hypotheses may be stated as follows:

H_0: No difference in the entry qualification between students in both sectors.

H_{12}: Public sector enrols better-qualified students compared with the private sector.[4]

We used the Mann-Whitney U test with one-tailed significance level to test these hypotheses for the reason that the alternative hypothesis (H_1) is directional and the data are in ordinal ranking. In this we make the test for significant differences between the two populations by using the

[4] See Chapter 5, page 134 for the development of this hypothesis.

observed value of sum of rank and compare it to the sampling distribution of sum of rank for identical populations. The value of the standardised test statistic z will provide the basis for deciding whether to reject H_0. In this test, we reject H_0 when $z \geq \alpha$ at the 5 per cent significant level (α = .05) or, if *p*-value ≤ .05.

Nine variables were grouped together and used to examine whether there are significant differences in the level of entry qualification to higher education. These variables are the grade, class ranking, and achievements in seven main subjects (i.e. Malaysia Language, English Language, Mathematics, General Science, Physics, Chemistry and Biology) in the certificate of entry. The grades are ranked from 1 (representing the lowest) until 6 (representing the highest) to show the overall performance of the respondents. The class ranking (1=top 5%; 2=top 10%; 3=top 20%; 4=top 50%; 5=rest of 50%) is to show the relative performance of the respondents as to other students in the same class. Whilst, achievements in the main subjects (3=distinction; 2=credit; 1=pass) is to provide further insights of the students quality since these subjects are important for the entry requirements.

The results of the Mann-Whitney U test are been presented in Table 10.2b. As can be seen in the table, the values of z for all variables, except for mathematics, show significant differences in the entry qualification between the two sectors at 1 per cent significant level (α = .01). Although the difference in mathematics is not statistically significant, the estimated mean rank for this subject in the public sector still exceeds the private sector, which is consistent with the view that students in the public sector are relatively better. These results therefore, lend support to our supply-side findings that public sector is superior in quality compared with the private sector.

Table 10.2b Mann-Whitney U test for entry qualification variables

List of variables	Mean rank for Public	Mean rank for Private	Z-value	One-tailed sig. level (*p*-value)
Grade*	299.50	208.17	7.997	.000
Class ranking*	228.67	276.77	3.821	.000
Malaysia Language*	267.58	166.01	9.329	.000
English Language*	232.74	199.64	3.008	.001
Mathematics +	237.54	222.62	1.341	.090
Science*	62.52	48.86	2.587	.005
Physics*	160.50	132.56	3.202	.000
Chemistry*	167.92	121.48	5.188	.000
Biology*	156.29	112.17	5.183	.000

**Significant at the 1% level*

+ *Not significant*

Source: Fieldwork 1999

10.3 The quality of the degree programmes

We examine the quality of provision between the two sectors of education (public and private) in terms of five variables that represent the main academic activities: lectures, seminars/tutorials, laboratory/workshops, practical/projects, and mentoring/guidance sessions. For each of these variables, our assessment is based on the contact of hours (i.e. how many hours per week it involved), the structure (i.e. how well it is been structured), the preparation (i.e. how well it is been prepared) and the

presentation (i.e. how well it is been presented). We shall examine those variables based on these aspects in turn.

10.3.1 Contact of hours

Our data on contact of hours are measured in hours per week, and these are in ratio numbers. Since we are looking for differences between the two sectors (public and private), the *t*-test for two independent samples is appropriate to determine if the means for the public differ to that of the private. To remain consistent with our earlier hypotheses, we should hypothesise that the quality of the degree programmes in the public sector is likely to be superior to that in the private sector. If we assume that greater contact of hours (i.e. hours per week) reflects a better quality of the provision then the public sector is likely to have more hours per week in all five variables which are in issues.[5] Thus, the test hypotheses may be stated as follows:

H_0: Contact of hours in academic activities for public universities are likely to be equal to or less than that in the private colleges.

H_{13}: Contact of hours in academic activities for public universities are likely to be greater than that in the private colleges.[6]

We used the two-sample *t*-test with a one-tailed level of significant since these are directional hypotheses. In this we compare a value of *t* calculated from our data with a value of α at the 5 per cent significant level. We reject H_0 when $t > \alpha_{(cv=.05)}$ or, if p-value < .05 significant level.

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[5]These variables are lectures, seminars/tutorials, laboratory/workshops, practical/projects, and mentoring/guidance.

[6] See Chapter 5, page 134 for the development of this hypothesis.

Since we are testing a directional hypothesis, we need to look at the direction of the mean difference to ensure that we are at the correct tail of the t-distribution (in this case the mean hours in the public should exceed those in the private).

As could be seen in the Table 10.3.1, except for practical/projects, all variables are statistically significant at least at the 5 per cent level. Thus, we could possibly reject the null hypothesis (H_0) at $\alpha = 0.5$ and conclude that there are differences between the two sectors in the academic activities in terms of the hours per week. However for practical/projects, we could possibly rejects the null hypothesis if the significant level is at the 10 per cent level.

Table 10.3.1 The *t*-test for hours per week of academic activities

List of Variables	Mean for public (hrs week)	Mean for private (hrs week)	*t*-value	One-tailed sig. Level (p-value)
Lectures*	16.80	15.91	2.630	.001
Seminars/tutorials**	4.05	3.78	1.679	.047
Laboratory/workshop +	4.34	5.04	-2.089	.019
Computer-based learning +	2.86	4.10	-5.213	.000
Practical/projects***	4.43	3.96	1.409	.080
Mentoring/guidance**	1.87	1.64	1.892	.030

**Significant at 1% level*
***Significant at 5% level*
****Significant at 10% level*
+ Not significant since the mean difference is in the opposite direction (i.e. private exceeds the public)

Source: Fieldwork 1999

Before we could decide to accept the alternative hypothesis (H_{13}), we need to look at the direction of the mean difference to ensure that we are at the correct tail of the *t*-distribution. This is crucial since we are testing a directional hypothesis (i.e. public is superior to private). The mean differences show that, except for laboratory/workshop and computer-based learning, all variables are in the correct direction of the *t*-distribution. The negative means differences in laboratory/workshop and computer-based learning indicates that the private sector exceeds the public sector in its hours per week, and therefore, we cannot reject the null hypothesis (H_0) for these two variables.

From the above analysis we can conclude that the public sector is superior in terms of contact hours in academic activities (per week) to the private sector for lectures, seminars/tutorials, practical/projects and mentoring/guidance sessions. However in contrast, the private sector is superior (in hours per week) to the public sector in laboratory/workshop and computer-based learning. This may reflect the fact that private sector focuses mainly on vocational education and has better equipment in these areas, and this pattern seems to correspond well with our supply-side findings (refer Chapter 7). Notwithstanding this, one could still argue that the greater number of hours per week might not necessarily ensure that the quality must be at high standard. It was thought that the way these academic activities are structured, prepared and presented would have significant consequences on the quality of the provision. Thus, we shall examine each of these aspects next.

10.3.2 The structure of academic activities

We have shown earlier in Chapter 7 that the public sector offers own degree programmes, whilst the private sector depend mainly on the

programmes designed by parent universities under the twinning concept. Thus, it is likely that the academic activities in the public sector are more structured compared with those that are in the private sector. Since we hypothesised that the public sector is better in quality compared with the private sector, our alternative hypothesis could be stated as a directional hypothesis. Thus, the operational hypotheses could be constructed through the following statements:

H_0: No difference in the structure of academic activities between both sectors.

H_{14}: Public universities offer well-structured degree programmes compared with those in the private colleges.[7]

We used the Mann-Whitney U test with one-tailed significance level to test these hypotheses since our data are represented in ordinal ranking.[8] Furthermore, the one-tailed test would reassure whether the public sector exceeds the private at the appropriate significance level. In this, the same six variables were used to examine whether there are significant differences in the structure of academic activities between the two sectors.[9] If there are significant differences, whether the differences are in the correct directions (i.e. public > private). In this test, we used the *p*-value to either reject or accept the null hypothesis since this value is given by the SPSS output. But the *p*-value needs to be halved since SPSS output produced two-tailed significance levels by default. We can

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[7] See Chapter 5, page 134 for the development of this hypothesis.
[8] The ranking were based on the five points Likert-scale measurement (5=all are well structured; 4=most are well structured; 3=half are well structured; 2= some are well structured; 1=none are well structured).
[9] (Lectures; Seminars/tutorials; Laboratory/workshop; Computer-based Learning; Practical/projects; Mentoring/guidance sessions)

reject the null hypotheses if the *p*-value is smaller than the 5 per cent significance level (α =.05).

Table 10.3.2 shows that all six variables of academic activities are statistically significant at less than 5 per cent significance level ($p < .05$). In fact, the level of significance is as high as .01 for all variables, except for lectures, where the significance level is at 4 per cent (α = ·041). The table also shows that the mean differences between the two sectors for all variables are positive, which indicates that we are at the right tail of the Z-distribution (that is the public exceeds the private).

Table 10.3.2 Mann-Whitney U test for the *Structure* of academic activities

List of variables	Mean rank for Public	Mean rank for Private	Z-value	One-tailed sig. level (*p*-value)
Lectures**	265.22	244.25	1.737	.041
Seminars/tutorials*	244.18	208.78	3.053	.001
Laboratory/workshop tasks*	127.19	99.28	3.320	.000
Computer-based learning**	155.69	134.28	2.280	.012
Practical/projects tasks*	211.41	176.16	3.302	.000
Mentoring/guidance sessions*	133.13	110.21	2.688	.004

**Significant at 1% level*
***Significant at 5% level*

Source: Fieldwork 1999

Therefore, we are confident to reject H_0, and conclude that there appear to be significant differences in the structure of academic activities between the two sectors. Consequently we accept our alternative hypothesis (H_{14}) since Z exceeds α at less than 5 per cent level. Thus,

these results show that in terms of the structure of the academic activities, public sector offers degree programmes that are better structured compared with those that are offered by the private sector. This seems to support our earlier findings that public sector degree programmes are superior to that the private sector.

10.3.3 The preparation of academic activities

In addition to its' structure, the quality of an academic activities could also be determined by the extent of preparation of these activities. In this section we shall examine whether those academic activities as represented by the six variables are well prepared.[10] Since we argued earlier elsewhere that the public sector is superior in quality to the private sector, it is likely that these academic activities are better prepared in the public sector. Thus, our test hypotheses could be written as follows:

H_0: No difference in the preparation of academic activities between public and private sector provisions.

H_{15}: Public universities offer well-prepared degree programmes compared with the private colleges.[11]

We used the Mann-Whitney U test to test these hypotheses since our data are represented in ordinal ranking.[12] We also employed the one-tailed method since the alternative hypothesis is directional. In this test, we used the *p*-value to either reject or accept the null hypothesis since

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[10] (Lectures; Seminars/tutorials; Laboratory/workshop; Computer-based learning; Practical/projects; Mentoring/guidance sessions)

[11] See Chapter 5, page 134 for the development of this hypothesis.

[12] The ranking are based on the five points of the Likert-scale measurement (5=all are well prepared; 4=most are well prepared; 3=half are well prepared; 2= some are well prepared; 1=none are well prepared).

this value is given by the SPSS output. We can reject the null hypotheses if the *p*-value is smaller than 5 per cent significant level ($\alpha \leq \cdot 05$), which indicates there is significant differences between the two sectors in the variables in question. Table 10.3.3 shows that, except for lectures, the *p*-values for all variables of academic activities are statistically significant at 1 per cent level ($\alpha \leq \cdot 01$), and therefore, the null hypothesis is rejected.[13]

Table 10.3.3 Mann-Whitney U test for the *Preparation* of academic activities

List of variables	Mean rank for Public	Mean rank for Private	Z-value	One-tailed sig. level (*p*-value)
Lectures +	261.55	248.11	1.129	.130
Seminars/tutorials*	247.01	205.43	3.582	.000
Laboratory/workshop tasks*	130.14	95.47	4.170	.000
Computer-based learning*	157.70	133.03	2.615	.005
Practical/projects tasks*	205.79	181.02	2.331	.010
Mentoring/guidance sessions*	131.97	111.44	2.387	.009

**Significant at 1% level*
+ Not significant

Source: Fieldwork 1999

Although the result for lectures seem not to show any significant difference between the two sectors, the estimated mean rank for this variable (lectures) still exceeds the private sector, which is consistent with the view that public sector offers superior quality of education compared

[13] Observed that the mean differences for all variables between the two sectors are positive, which indicates that we are in the right direction of the Z-distribution (see Table 10.3.3).

with the private sector. These results therefore, provide further evidence that the public sector offers better quality of education compared with the private sector, and consequently, lend support to the previous supply-side findings.

10.3.4 The presentation of academic activities

It is crucial to examine whether academic activities, despite of being well structured and prepared, are also being well presented. This, to some extent, could also possibly reflect the level of quality of the educational provisions. We have shown earlier in Chapter 7 that the proportions of senior and better-qualified staff are relatively high in the public sector compared with the private sector. With such a pattern of academic staff employment, it is likely that academic activities in the public sector would possibly been better presented compared with that in the private sector. To analyse this, the operational hypotheses could be formulated through the following statements:

H_0: No difference in the presentation of academic activities between the two sectors.

H_{16}: Academic activities are better presented in the public universities compared with in the private colleges.[14]

Since the data are also ordinal, we used the Man-Whitney U test with one-tailed level to test these hypotheses.[15] The ranking are based on the five points of Likert-scale measurement, viz., 5=all are well presented;

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[14] See Chapter 5, page 134 for the development of this hypothesis.
[15] We seek to see whether the public sector is better than the private sector, thus H_{16} is a directional hypothesis, and therefore, one-tailed method is appropriate.

4=most are well presented; 3=half are well presented; 2=some are well presented; 1=none are well presented. Similar to the previous analyses, in this test, we also used the *p*-value to either reject or accept the null hypothesis since this value was provided by the SPSS output. We can reject the null hypothesis (H_0) when *p*-value is less than .05 for each of the six variables in question[16], provided the mean differences for these variables are in the correct direction the z-distribution (in this case the public sector mean should exceed the private sector). Table 10.3.4 shows that, except for lectures, we are able to reject the null hypothesis (H_0) for all variables that are in question at less than 5 per cent level.

Table 10.3.4 Mann-Whitney U test for the *Presentation* of academic activities

List of variables	Mean rank for Public	Mean rank for Private	Z-value	One-tailed sig. level (p-value)
Lectures +	258.46	251.36	.583	.280
Seminars/tutorials*	248.39	203.78	3.831	.000
Laboratory/workshop tasks*	129.10	98.13	3.707	.000
Computer-based learning**	153.06	136.77	1.714	.043
Practical/projects tasks*	210.45	176.99	3.147	.001
Mentoring/guidance sessions**	129.78	113.75	1.867	.031

**Significant at 1% level*
***Significant at 5% level*
+ *Not significant*
Source: Fieldwork 1999

These results seem to be consistent with our findings in the previous sections (i.e. the structure and the preparation of academic activities).

[16] These variables are, Lectures; Seminars/tutorials; Laboratory/workshop; Computer-based learning; Practical/projects; Mentoring/guidance sessions).

Although lectures seem not to show any significant differences, the estimated mean rank for this variable in the public sector still exceeds the private sector. This is consistent with our previous results. Thus, these results provide further evidence that the public sector offers relatively high quality of education compared with the private sector.

10.4 Students' satisfaction with the degree programmes

In section 10.2 we have shown that, on the whole, the public sector enrolled better quality students compared with the private sector. Whilst in section 10.3, we showed that, generally, public sector offers relatively high quality of education compared with the private sector. Both of these findings are consistent with the view that public sector education is superior to that the private sector, and therefore, provides further evidence to our supply-side findings. In this section we shall seek to reflect further the difference in the quality level of the provision between the two sectors through analysing the level of students' satisfactions of the degree programmes. In this, we assume that the high level of satisfaction amongst the respondents may reflect the high level of quality in the education provisions. To remain consistent with our theoretical statement elsewhere, we would argue that the public sector respondents are likely to experience greater level of satisfaction compared with those in the private sector. To examine this argument, our operational hypotheses could be stated through the following statements:

H_0: No difference in the level of satisfactions between the two sectors.

H_{17}: Students in the public universities have greater level of satisfactions compared with those in the private colleges.

We can use the one-tailed Mann-Whitney U test to test these hypotheses since the alternative hypothesis is a directional hypothesis.[17] In this we make the test for significant differences between the two populations by using the observed value of sum of rank and compare it to the sampling distribution of sum of rank for identical populations. The value of standardised test statistic z will provide the basis for deciding whether to reject H_0. Alternatively, we could also used the *p*-value to make these decisions since it is been provided by the SPSS output. In this test, we reject H_0 when $z \geq \alpha$ at the 5 per cent significant level ($\alpha = .05$) or when *p*-value $\leq .05$. Since the test is one-tailed, we need to ensure that the tail of the z-distribution is in the appropriate direction before deciding whether to reject H_0. Seventeen variables were selected to test these hypotheses, and were grouped into three categories. These categories are teaching-related matters (five variables), teaching facilities (six variables) and other types of services (six variables).[18]

Table 10.4a shows the test results for five variables under the teaching-related matters. The table shows that, for all variables, *p*-value is less than .05 significant level, which indicate that we should reject H_0. If at 5 per cent level $\alpha = 1.645$ (one-tailed), then we could see that for all variables, $z > \alpha$, which also indicates that there are significant differences between the two sectors. Consequently, we should also reject H_0. Since the mean difference for all variables between the two sectors is positive, we could be sure that we are at the correct direction of the significant level, and thus reject H_0. From these results, we can conclude that, in terms of teaching-related matters, public sector students have greater

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[17] See Chapter 5, page 134 for the development of this hypothesis.

[18] Each of these variables were rank based on the five points Likert-scale measurement, viz., 5=very satisfied; 4=satisfied; 3= neither satisfied nor dissatisfied; 2=not satisfied; 1=very not satisfied.

satisfactions compared with the private sector. This seems to be consistent with the view that the public sector provision is superior to that the private sector, and therefore, offer greater satisfactions amongst students.

Table 10.4a Mann-Whitney U test for level of satisfactions on teaching-related matters

List of variables	Mean rank for Public	Mean rank for Private	Z-value	One-tailed sig. level (*p*-value)
Overall satisfaction*	272.04	237.07	3.022	.002
Quantity of lectures*	271.29	237.85	2.852	.002
Quality of lectures*	268.87	238.34	2.590	.005
Quantity of academic support*	271.04	236.21	2.897	.002
Quality of academic support**	265.96	242.49	1.942	.026

Significant at 1% level
**Significant at 5% level

Source: Fieldwork 1999

For teaching facilities (i.e. second category variables), Table 10.4b shows that library services (facilities, opening times and availability of books) are statistically significant at less than 1 per cent level, which suggest that we should reject H_0. We could also see that z-value for these variables broadly exceed $\alpha_{1.645}$, which shows that there is significant difference in the level of students' satisfaction between the sectors of education. This seems to be consistent with our supply-side findings that, in all fields of study, public sector provides better library services compared with the private sector (see Table 7.5.5.2b, pg. 184). For computer facilities, we

can see that students' level of satisfaction is statistically significant in terms of its facilities (p=·033), but on other hand, not significant in terms of its support (p= ·367). This shows that although in terms of computing facilities the public sector might be better, but in terms of computing support, the private seems to provide greater satisfaction amongst students.

Table 10.4b Mann-Whitney U test for level of satisfactions on teaching facilities

List of variables	Mean rank for Public	Mean rank for Private	Z-value	One-tailed sig. level (p-value)
Library facilities*	305.23	202.14	8.291	.000
Library opening times*	291.38	215.84	6.222	.000
Library books*	303.10	204.38	7.817	.000
Computer facilities**	265.75	242.71	1.838	.033
Computing support +	252.94	257.17	.340	.367
Laboratory facilities +	250.10	241.85	.684	.247

**Significant at 1% level*
***Significant at 5% level*
+ Not significant

Source: Fieldwork 1999

We can see in Table 10.4b that the mean rank for computing support in the private sector exceeds the public sector, which indicates that the private is better than the public. This seems to be consistent with our findings on the contact hours for computer-based learning, in that the result appear to be not significant (where private sector offer more hours per week than the public sector). However for laboratory facilities, although the result is not statistically significant (p= ·247), the mean rank

for the public sector still exceeds the private sector, which indicates greater level of satisfaction amongst students in the public sector.

Similar patterns exist for other types of education services as could be seen in Table 10.4c. Although union facilities (p= ·227) and career guidance support (p= ·128) are not statistically significant, the mean rank for these two variables in the public sector still exceed the private sector, indicating relatively greater satisfaction amongst students in the public sector. Thus, up to this extent, the pattern seems to be consistent with and lend support to the overall findings elsewhere.

Table 10.4c Mann-Whitney U test for level of satisfactions on other education services

List of variables	Mean rank for Public	Mean rank for Private	Z-value	One-tailed sig. level (p-value)
Quantity of non-academic support*	268.13	240.21	2.299	.011
Quality of non-academic support*	271.78	232.44	3.256	.001
Students' Union support*	268.81	237.32	2.543	.006
Students' Union facilities +	255.49	246.31	.748	.227
Extra-curricular activities*	273.39	232.81	3.321	.001
Career guidance support +	261.32	247.35	1.137	.128

**Significant at 1% level*
+ Not significant

Source: Fieldwork 1999

10.5 Summary

Our analyses on the students' characteristics, the nature of the degree programmes offered and the level of students' satisfaction seem to indicate that public sector education is superior to that the private sector. We can see that the public universities enrol students with relatively high qualifications compared with the private sector. This is consistent with our earlier argument elsewhere that the public universities seem to be the first preference for most students in higher education, and therefore, students with high qualification are likely to place public universities as their first choice.

We also observed that, in many aspects, public universities offers degree programmes that are superior to that in the private colleges, although in some cases private offers slightly better quality than the public. For instance, we saw that in laboratory/workshop and computer-based learning, the private sector offers more hours per week than the public sector. Our explanation to this is that, this might possibly be the result of greater emphasis of the private sector on vocational education that is highly demanded by the labour market.

Our evaluation on student levels of satisfaction of the degree programmes also complements the general findings that the public universities are superior to the private colleges. In general, the results show that students in the public universities have greater satisfaction on the teaching aspects, teaching facilities and other types of services compared with the private sector students. Greater satisfaction might reflect the superiority of the quality.

On the whole, we can conclude that our analysis on the quality of provision seems to show consistency with our previous findings and provide further evidence that lend support to the theoretical argument that public sector offers better quality of education compared with that in the private sector. It is noteworthy that if government wishes to expand higher education through the private sector as suggested by the World Bank model, emphasis should be given to improve the quality of the provision within the private sector.

CHAPTER 11
CONCLUSIONS AND POLICY IMPLICATIONS

11.1 Introduction

This Chapter provides an overview of this research, a summary of the main findings, and explores several policy options for consideration including the implications of existing policies. In order to guide future research work on this subject, we have evaluated the research method employed in this study and highlighted several key areas of future possible research for consideration.

11.2 Overview of research project

The purpose of this thesis is to investigate the extent and nature of private sector contributions to the expansion of higher education in Malaysia. The characteristics of the supply- and demand-side of the private sector provision were compared with the existing public system. The main aim was to shed light on the efficiency, equity and quality issues that are raised.

This research adopts the human capital approach which suggests that investment in education and the training of the workforce is the critical factor influencing the economic growth and development of a nation. Education and training require substantial financial resources that depend

on the current rate of growth of the economy. The trend in demand for higher education in most countries is increasing due to economic and socio-political factors. However, most governments face financial constraints on funding, and, many scholars, including those at the World Bank, have suggested that governments should shift some of the costs of providing higher education either through direct private sector provision or through the introduction of tuition fees within the public system. The justification for consumers paying for their own higher education is that, the benefits accruing to the individuals and their families are relatively high compared with that received by the society. Furthermore, it is also argued that the privately financed higher education is likely to be relatively more efficient, provide greater access to, and offers better quality of, degree programmes than the public sector.

Theoretically, the demand for private sector provision of higher education stems first, from the excess demand arising from the limited capacity of the public system; and second, from differentiated demand which is due to the inability of the public sector to supply the special kinds of education demanded. The view advanced here is that the nature of private sector provision is likely to influence the extent of its contribution to the expansion of higher education. In the case of Malaysia, the public sector is always the first preference of potential students because of its superiority but there are a limited number of places because of constraints of public resources. Thus, only those with the best results will have the opportunity to enter leaving those with lower achievements to seek education in the private sector.

If the objective of the private sector is to maximise profits, there is likely to be some effect on the quality of the provision, especially when the private providers indulge in cost cutting behaviour. Moreover, it is also argued that consumer costs are likely to increase and thus only students from

wealthy family backgrounds will be able to attend private sector higher education. These issues are likely to have serious consequences on the efficiency, equity and quality of the provision.

11.3 Summary of the research findings

The main findings of this study are summarised below:

1. Efficiency and the quality aspects – Although private colleges supply education at a lower cost in both real (students-staff ratios) and money terms (cost per student), in terms of economic (or allocative) efficiency they perform less well than public universities. Comparison of the costs of provision between the two sectors from the supply-side analysis in Chapter 7 revealed that in almost all courses offered, except for Law, and Medicine and Dentistry, the costs of provision in the private sector are relatively low compared with the public sector. However, analysis on the demand-side data in Chapter 9 shows that students in the private colleges have to pay relatively high tuition fees compared with those who are in the public universities. In contrast, our findings show that public universities offer better quality of degree programmes compared with that in the private colleges. Since degree programmes in public universities are offered at a relatively low price, they would therefore be the first preference amongst most students and their families for this reason alone.

Indicators from the supply-side shows that the private sector provision are inferior in many respects to the public sector. We found that private colleges employed relatively lower qualified and junior staff and have high student-staff ratios compared with the public universities. The spending of private colleges on teaching facilities was relatively low, especially on classrooms and libraries though, in some instances,

they spent relatively highly on computer and laboratory equipment. Indicators from the demand-side data in Chapter 10 also seem to correspond well with the supply-side findings. On student characteristics, since the first preference of students is for public universities, and because places in the public universities are very limited, only those students with high achievements have the opportunity for access, whereas the less able enrol in the private colleges. In addition, the results on the nature of the degree programmes offered and the level of satisfaction achieved by students also show that public universities are superior to the private colleges.

Thus, it is essential for the Government to ensure that the private sector offers programmes of study which are, at the least, of equivalent quality to the public sector. Since the main concern of the economic analysis of investment in education is on the economic efficiency of the provision, public sector provision of higher education would be more preferable because they can satisfy demand at a relatively higher level of utility. Therefore, if the Government wishes to expand higher education through the private sector, appropriate policies governing the costs and the price are essential to maintain appropriate levels of efficiency and quality of the provision.

2. Accessibility and socio-economic factors in access - Although private sector provision is less efficient in the sense of satisfying individual demand, in a wider sense it complements public sector provision, especially in fields of study in high demand by the market, and where places in the public universities are very limited. In Chapter 7, the results show that the private colleges offer degree courses mostly in Information Technology, Engineering, Economic and Business Studies. There is also some effort by the private college to offer degree programmes in Medicine and Dentistry. The results also show

that in fields of study which are less in demand, such as in Applied and Pure Sciences, Education and Arts and Social Sciences, only the public universities offer them. Thus, these findings indicate that, in the case of excess demand, private sector provision provides greater access to higher education for those who fail to enter the public system.

However, although the private sector seems to complement the public sector provision and provide greater accessibility to higher education, this is accessible to only the wealthier students. The demand-side analysis in Chapter 8 shows that there are significant differences in the family and parental socio-economic background between students enrolled in the private colleges and those enrolled in the public universities. The results show that students who enter private colleges are most likely to come from economically advantaged family backgrounds. The fact that the proportion of Chinese students in the private colleges is relatively high compared with other ethnic groups corresponds well with the socio-economic structure of the Malaysian society where the Chinese are relatively wealthier than other ethnic groups. Although the Bumiputera are the majority population, they are less represented in the private sector possibly because they are from a relatively less wealthy community as well as because they have relatively greater access to public universities.

Equity includes no racial or social, as well as, no economic discrimination. To maximise economic benefits, it could be argued that that higher education should be open to, and attract, the most able students who are most likely to benefit. The end of positive discrimination in favour of Bumiputeras might have financial implications if a higher proportion of low-income students is excluded from the public sector and they need government financial support to

enter the private sector. Thus, if the Government wishes the private sector to complement the public, it is crucial to ensure that access to the private sector is fair.

3. Profit maximising private sector providers - Our assumption that the private sector's objective is to maximise profits appears to be justified. The supply-side findings in Chapter 7 shows that, except for Law, the costs per student in all fields of study in the private colleges are relatively low compared with the public universities. Nonetheless, from the demand-side analysis (in Chapter 9), students in the private colleges pay relatively high tuition fees compared with those in the public universities. The gap in the costs of provision and the amount of fees charged within both sectors shows the extent of profit maximisation by the private colleges. Since higher education is considered as a mixed-good, it is crucial for the Government to ensure that profit maximising behaviour amongst private sector providers does not have significant effects on demand. This is to prevent under investment in the provision of higher education that we have seen in the literature is crucial to assist economic growth in the long-term and the national development.

4. The benefits of higher education and funding aspects - Our analysis on the monetary benefits revealed that although there are marginal differences between employment opportunities and expected graduate salaries there is significant difference in the private rate of return to investment in education between students in the two sectors. We found that the main reason that contributes to this difference is the relatively high costs which the private colleges' students have to pay for their higher education. The relatively high costs, especially tuition fees, have consequently led to a lower rate of return amongst the private colleges, compared with public universities' students. The

findings on the non-monetary benefits also show that public universities' students receive greater benefits compared with students in the private colleges as indicated by evaluation of the level of their satisfaction with the entire programmes (see Chapter 9). Since we found that the gap in the benefits is considerable, it is crucial for the Government to formulate appropriate measures to reduce such gaps in order to make provision of higher education within the society fairer. This might be achieved through policies of 'levelling-up' or levelling-down'. If the Government follows the practices of the West, the equity of benefits will be achieved by increasing students to staff ratios and all that that implies. On the other hand, greater control would be exercised on the private sector to induce some improvement in standards. But this would mean that the Government would have to give greater support to the private sector.

In the existing funding system, the supply- and demand-side analyses show that the private sector receives little or no financial support from the government compared with the public. From the supply-side, despite considerable government funding to the public universities, there is no evidence to show that the private colleges received any form of government grants or financial assistance. This finding is in contrast with the general concept of education investment as a mixed-good with both private and social costs and benefits. This possibly explains why private sector education does not allocate its expenditure to research, which supposedly contains highly social benefits. Our findings also show that more than 75 per cent of students in the private colleges are self-financed but in the public sector more than 80 per cent received financial support either in terms of scholarships or educational loans (see Table 9.4a, p. 248). This explains why the proportion of less wealthy students is relatively low in the private sector. Therefore, to ensure that less wealthy students have the

opportunity to enrol in the private colleges, it is therefore essential for the Government when expanding access to higher education to increase the amount of financial assistant to those students.

On the whole, the findings of this study indicated that there are likely to be significant divergence between public and private sector provision of higher education in Malaysia in terms of efficiency, equity and the quality aspects. In most cases the private sector is likely to be inferior to the public sector. These findings seem to be consistent with the relevant literature in this subject reviewed earlier. Although the findings specifically concern Malaysia, the Malaysian case is not untypical of other developing economies so that this analysis and recommendations might be generalised.

11.4 The policy implications and recommendations

Earlier, we have shown that the role of private sector higher education at the national level has become more important towards complementing public sector provision. It is necessary not only to allow the development of these private colleges, but also to make a more vigorous effort to promote their growth in order to satisfy the market demands. In Chapter 4, we have seen that through the 1996 Private Higher Education Bill, the Malaysian government has allowed and encouraged the private sector to organise and offer higher education programmes. The main aim is to provide greater accessibility for higher education with little recourse to public funds. This is crucial realising that the public sector has limited capacity to accommodate the increasing demand for higher education programmes. It is understood that in order to increase this capacity, a substantial amount of public resources is required, which is likely to have a significant effect on the Government's budget. Therefore, it is

reasonable for the Government to allow and encourage the private sector providers to offer degree courses.

Theoretically, the private sector higher education institutions provide greater opportunity for, and accessibility to, higher education within the nation. This will lead to the fairer educational system required by the nation. From the research findings, we have seen that the private colleges are capable of complementing the public universities, especially in fields of study that are in high demand by the market. We discovered that the private colleges offers courses at a relatively low average cost compared with the public universities, which indicates that they are technically more efficient.

However, our analyses of several indicators of the higher education provision, also revealed that the private colleges are inferior to the public universities in many respects. For example, we have seen that students who enrolled in the private colleges have to bear costs that are relatively high compared with those in the public universities because the private colleges charged tuition fees that are relatively high compared with the public universities. As a result, only the relatively high-income groups of society can afford higher education in the private colleges. If this continues, it would have a negative impact on the overall national development objective of achieving social justice. Furthermore, we discovered that more than 75 per cent of the students who attend private colleges are amongst non-Bumiputera (mainly the Chinese), which are relatively wealthy compared with other ethnic groups.

It is also apparent that many private colleges tend to offer courses that require less capital investment and lower operational costs but which are in high demand by the market; examples are accounting, banking, business management, economics, law and computer science. Their main

objective to maximise profits is likely to encourage them to offer cheaper and relatively low quality programmes regardless of the labour market and national needs. If the trend continues, the private provision of higher education is likely to fail to help overcome shortages of graduate-workers that required by the economy.

We have mentioned earlier in Chapter 4 that in the early stage of development, education was seen as a means of achieving national unity through the eradication of poverty and the restructuring the society.[1] During this period, the government was very restrictive about establishing private universities due to the socio-economic imbalance among majority ethnic groups in the country. Our findings seem to suggest that the relaxation of this restriction, if not properly controlled, might not bring about the positive impact desired.

Therefore, the growth and expansion of private higher education institutions must be in tandem with actual demand and supply of national human resource requirements. In addition, standards must be regulated. The proliferation of small and less efficient private sector institutions that could bring a negative impact on the quality of higher education must be avoided. There must also be specific control mechanisms so as to be in line with the national education policy and the interests of the nation as a whole. The basic policies with regard to private higher education must be fine-tuned and carefully implemented. Although private higher education institutions have an important role to play, their uncontrolled growth cannot be allowed. In short, the growth and expansion of private higher education institutions must be sensitive to the needs of the economy and the delivery system must be more effective than that which exists at present.

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[1] These are basic objectives of the New Economic Policy (NEP) (1971-1990)

Those are several big issues surrounding the private sector provision of higher education in Malaysia. We have shown earlier in Chapter 1 and Chapter 4 that the average skill levels of the workforce is declining, and there is likely to be rapid diffusion of wealth and income because of the equity problem. Thus, if the Government wishes to expand higher education through the private sector provision, it is therefore crucial to formulate appropriate policy measures to rectify the private sector deficiencies as discovered in this study. The following policy options appear to be worth consideration.

11.4.1 Equality in access

The main impediments to fair access to higher education are found in the current loan scheme, the ethnic quota system and the high tuition costs in the private sector. Thus, we proposed that the following alternative measures be worth consideration:

1. Education loans must be made available not only to students in the public sector, but also to private sector students. We have seen in Chapter 9 (Table 9.4a, p. 248) that only 25 per cent of the students in the private colleges receives financial support (either in terms of scholarships or loans) compared with 80 per cent in the public universities. Thus, to ensure greater access to private colleges it is essential to make the loans available for these students. To reduce the Government's burden in providing such loans, a mean-tested loan which restrict the availability of grants or loans to those in greatest need would be preferable.

2. Incentives need to be provided for the private sector to reduce their tuition fees since it is observed that the difference in tuition costs between the public and private sector provisions are relatively high

(see Table 9.2.1b, p. 224). These could be through favourable tax treatment and, or, subsidising the costs of provision in the private sector. The latter is reasonable since education is considered as quasi-public goods (or mixed goods) but we discovered that private colleges receive no financial support from the government (see Chapter 7).

3. The introduction of variable tuition costs in accordance with family income. Tuition fees in both the public and private sectors should vary in accordance with the family income of each student. They should be waived or reduced in the case of low-income families. This approach has been employed in several western countries as a means of financing student flows (see Woodhall 1987a, p. 198). This is reasonable since education is considered as a major route for social mobility, and the possibility of poor people being excluded from higher education by fees is considered inequitable. Although this might sound feasible in the public sector, it is likely that the private sector to resists this since their main objective is to maximise profit unless sufficient incentives are being offered in order for them to do so.

4. The quota system used in the public universities should also be introduced within the private sector provision to ensure that all races are well represented. In Chapter 4, we have shown that preferential policy in education only involved public sector institutions which provide more places to less wealthy students especially from the Bumiputera families. Similar policy is likely to be effective if been introduced within the private sector provision. However, sufficient financial support is essential because it is likely that most families are unable to meet necessary financial requirements since they are from poor economic background.

11.4.2 The financing of higher education

The crucial issue in higher education expansion is to provide appropriate funding mechanisms so that resources are used efficiently and equitably. We have seen in Chapter 7 and Chapter 9 that the current funding system considers only those who are in the public sector education, though it is inevitable that those from wealthy family largely benefited from it. Thus, to increase sources of funding and to encourage the efficient use of financial resources the following alternative measures are worth consideration:

1. Encourage those who benefit the most from higher education to pay:

    a) Student and their families - introduce tax credit for tuition fees that allows families to deduct fees from their income. Since this is likely to affect government's revenue, the Government may formulate measures whether to give full credit for tuition fees, or will set tax allowances at the difference between private and public university tuition fees. Alternatively, the Government may introduce income-contingent loans and, or, graduate tax since there are sufficient evidence to show that this has the potential to raise substantial public resources.[2] Countries like Malaysia which have an efficient taxation system may investigate in greater detail the possibility of using a graduate tax as an effective measure of cost-recovery in higher education. For example, the Government may investigate schemes through which firms pay higher payroll taxes on graduates than non-graduate.

[2] The difference between the two approaches has been discussed in Chapter 3 (see page 73-76).

b) Industries and graduate employers – Industries and graduate employers should contribute more directly to higher education and research because university graduates and researchers are among the most important capital resources for industrial development. Industrial and corporate tax exemptions are likely to be an effective approach to encourage industry's contribution in financing higher education.

2. Encourage the private sector providers to organise twinning programmes with local public universities. Since we have seen that public universities offer relatively high quality programmes, it would be cheaper for the private sector to organise twinning courses with local institutions. Moreover, co-ordination and supervision from parent's university with adjacent location are likely to be more effective. From the fieldwork we have observed that there are several private colleges that offers twinning courses at the certificate and diploma levels with local public universities, and thus, similar efforts at the degree level is likely to reduce the cost of provision.

3. Increase the efficiency of public sector provision so that more places can be offered at a relatively cheaper price but with high quality. This can be achieved through implementing budget reform within the public sector provision. For example, universities funding should be based on performance indicators rather than by conventional budget practices that are solely based on full-time equivalent enrolment by field and level of studies. It is important to state that the latter can lead an institution to over-enrol students which are likely to be to the detriment of quality. Performance-based funding, on the other hand, drives public revenues by criteria other than, or at least in addition to enrolments, which may include types and levels of degrees offered,

students' performance, success of faculty in winning competitive research grants, or, the scholarly reputation of the faculty member.

4. Encourage entrepreneurial activities amongst the public universities through the sale of services (e.g. research and consultancy projects) and specialised courses (e.g. vocational training and professional courses). The main aim is to increase institution's financial resources through diversified revenue and thus, reduce dependency on government grants. In addition, there are also several benefits to entrepreneurial activities within the university framework, viz., it helps to introduce a market sensitive institutional culture, establish co-operative links with business partners who might become involved in curriculum design, and offer relevant training experience through effective work placement programmes.

11.4.3 Maintaining the standards

The results of this study in Chapter 7 and Chapter 9 show that degree programmes offered by the private colleges are relatively inferior compared with those in the public universities. We argued that if the Government wishes to expand higher education through the private sector provision, it is crucial to ensure that the level of quality is at least, equal to, or, better than that in the public sector. Thus, the following alternative measures are worth consideration to maintain and improve the quality of the provisions:

1. Provide financial incentives for the private sector to conduct research. Since higher education is considered as a mixed-good, the Government should also help to finance the private sector provision especially in programmes that contribute to high social benefits, such

as research and development.[3] Indirectly, this will encourage the private sector providers to do research which is crucial in the development of new ideas and knowledge. The amount of financial contributions should be dependent on the performance of each research project as suggested earlier.

2. Improve the legal and regulatory environment for the creation of new institutions and programmes in the public and private sectors. For example, the introduction of a periodic review of programmes that may increase the accountability for maintaining standards. To implement this, standards and procedures for periodic quality evaluations can be developed and applied and monitored through the existing accreditation system or evaluation committees.

3. Create incentives and supporting initiatives for quality programmes through competitive grants for programme innovation and research in both sectors.

The above recommendations offer several alternative policies towards achieving an equitable, efficient, and higher level of quality of higher education provision. These policies are fairly brief, and are more applicable to the situation in Malaysia. Nonetheless, some may also applicable to other developing countries that share similar settings with regard to their higher education provision.

11.5 Suggestions for future research

This research project has provided the empirical evidence necessary to support a number of views arising from the literature concerning the

[3] From our analysis, we found that only public universities received grants from the Government. We also found that the private sector give less emphasis on research and development.

critical role of private higher education in economic growth and development. A number of potential areas for future research have become apparent from this research work and require further investigation to increase our understanding of the role of higher education towards enhancing the economy, in particular, regarding the role of the private sector provision. From the experience of this work we have identified several potential areas of future research that require further investigation.

First, it is apparent that data on this topic are difficult to secure. Thus, the study relies heavily on cross-sectional data collected from institutions and student samples. A longitudinal study over a period of time was not feasible because of time factor, and moreover, such data are not available from secondary sources. The findings of this thesis inevitably may be limited as they mainly refer to the present situation, whereas, the characteristics of both the public and private sector providers may evolve through time. Therefore, it would be useful to have a similar research project but to employ time-series data to investigate further whether public and private sector provisions differ over time. Notwithstanding this, the cross-sectional approach that has been used in this research project has its own advantages since it allows for a more detailed and precise investigation of the characteristics of the provisions. It is important to note that a longitudinal study approach may highlight the trends over time, but it may overlook some pertinent details associated with the private sector provision that is crucial in formulating appropriate policy options.

Second, in this work, we compare the public with for-profit private sector provision. From the literature, we know that there are also the non-profit private sector providers which offer degree programmes at break-even level. It is interesting to investigate the characteristics of this type of institution since we have seen from the above literature that they are likely to be superior from the public sector in many respects. If this can be

proved to be true, then incentives should be given to encourage more of such institutions to be established.

Third, from the literature review, we observed that there are four broad categories of stakeholders pertaining to higher education, viz., the institutions which offer higher education programmes; the Government which provides much of the finance to higher education; the students and their families; and, the employers of graduates. Since all the stakeholders benefited from higher education investment, it is crucial to investigate how the costs of this investment are distributed between them under different funding options. The purpose of this research would be to investigate how the stakeholders in higher education are likely to respond to changes in the way the system is funded.

Fourth, we also observed from the literature that student loans, despite debatable issues surrounding the subject, are amongst important source of funding of higher education. Although there have been several extensive studies to reveal the experience of introducing students loans within developed and developing countries, further research on this subject is essential because of the variability of student loans which exist. It is learned that different types of loan are likely to have different impact on the supply and demand of higher education. Thus, the main aim of this research is to investigate the extent of each loan affecting the supply and demand of higher education. The study might be useful for those countries planning to introduce student loans or to improve the existing loans system.

Finally, there is contradictory evidence to show that graduates from the private sector perform better compared with those from the public sector. In the case of Malaysia, it has been argued that graduates from the private sector have greater employment opportunities especially in the

private sector because they are more competent in English and moreover, foreign universities awarded their degrees. We found that those who enter private colleges possess lower abilities which raises question whether graduates from the private colleges really perform well compared with graduates from the public universities in the job market. It is therefore crucial to investigate, especially from the employers' perspective, the difference in the performance between graduates from both sectors. The results from this research may be useful in evaluating the quality of programmes offered by both public and private sector institutions.

11.6 Conclusions

This concluding chapter has provided an overview of this thesis and has summarised the key research findings, evaluated the policy implications pertaining to this investigation and offer several policy options. Several potential research areas were also been suggested for further investigation of future research. On the whole, we can conclude that as higher education expands, especially as private participation and cost recovery measures are more and more utilised, attention must be given to growth versus efficiency, equity and quality issues. This is to ensure that the expansion is economically efficient, will not include only those in the mainstream or those who can afford it, and will maintained a reasonable standard of provision. It is apparent that several compensatory mechanisms must be created and activated to ensure equal access to all and to avoid any subgroups being excluded, and prevent quality deteriorating. Since we have seen from the above literature that private higher education has a crucial role, a more concerted effort should therefore be directed towards the development of a competent and fair private sector provision in line with the national development objectives.

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Table 1 Share of GDP by industry (figures are in million Malaysian Ringggit)

Product	1985		1990		1995		2000		Growth (%)	
	RM	%	RM	%	RM	%	RM	%	6MP	7MP
Primary Sector:										
Agriculture & Forestry	11,854	*20.8*	14,827	*18.7*	16,406	*13.6*	18,460	*10.5*	2.0	2.4
Mining & Quarrying	5,958	*10.4*	7,757	*9.8*	8,938	*7.4*	10,023	*5.7*	2.9	2.3
Secondary Sector:										
Manufacturing	11,263	*19.7*	21,340	*26.9*	39,825	*33.1*	66,251	*37.5*	13.3	10.7
Construction	2,738	*4.8*	2,832	*3.6*	5,277	*4.4*	8,560	*4.8*	13.3	10.2
Tertiary Sector:										
a) *Producer's Services*:										
Transport, Storage & Communication.	3,630	*6.4*	5,487	*6.9*	8,787	*7.3*	14,599	*8.3*	9.9	10.7
Finance, Real Estate, Business Services.	5,121	*9.0*	7,758	*9.8*	12,884	*10.7*	20.977	*11.9*	10.7	10.2
b) *Public Services*:										
Government Service.	6,957	*12.2*	8,447	*10.6*	11,683	*9.7*	14,354	*8.1*	6.7	4.2
Electricity, Gas & Water.	948	*1.7*	1,526	*1.9*	2,823	*2.3*	4,686	*2.7*	13.1	10.7
c) *Other Services*:										
Wholesale & Retail Trade, Hotels & Restaurants.	6,911	*12.1*	8,806	*11.1*	14,568	*12.1*	22,378	*12.7*	10.6	9.0
Other Services	1,302	*2.3*	1,678	*2.1*	2,436	*2.0*	3,749	*2.1*	7.7	9.0
Total	57,093	*100.0*	79,329	*100.0*	120,316	*100.0*	176,638	*100.0*	8.7	8.0

Source: Malaysia 1996, page 52

Table 2 Share of exports by industry

Product	1990		1995		2000		Average Growth Rate (%)	
	RM Million	%	RM Million	%	RM Million	%	6MP	7MP
Agriculture	15,004	*18.8*	20,644	*11.2*	16,017	*4.4*	6.5	1.5
Mining	14,176	*17.8*	10,417	*5.6*	13,909	*3.8*	-5.8	6.7
Manufacturing	46,835	*58.8*	147,524	*79.6*	322,444	*88.7*	25.8	16.9
Others	3,631	*4.6*	6,740	*3.6*	11,398	*3.1*	13.2	11.1
Total	79,646	*100.0*	185,325	*100.0*	363,768	*100.0*	18.4	14.4

Source: Malaysia 1996, page 59

Table 3 Employment by economic sector ('000)

Sector	1970		1980		1990		1995		2000	
	('000)	%	('000)	%	('000)	%	('000)	%	('000)	%
PRIMARY	1,874	*56.1*	1,863	*38.5*	1,775	*26.5*	1,469	*18.6*	1,232	*13.6*
SECONDARY	381	*11.4*	1,019	*21.1*	1,757	*26.3*	2,711	*34.2*	3,462	*38.2*
TERTIARY	1,085	*32.5*	1,954	*40.4*	3,154	*47.2*	3,735	*47.2*	4,372	*48.2*
Producer's Services	*160*	*4.8*	*330*	*6.8*	*560*	*8.4*	*774*	*9.8*	*986*	*10.9*
Public Services	*423*	*12.7*	*678*	*14.0*	*897*	*13.4*	*941*	*11.9*	*978*	*10.9*
Other Sercives	*502*	*15.0*	*945*	*19.5*	*1,697*	*25.4*	*2,020*	*25.5*	*2,408*	*26.6*
Total	3,340	100.0	4,835	100.0	6.686	100.0	7,915	100.0	9,066	100.0

Source: Malaysia 1991 Economic Report 1991/92 & Malaysia 1996, page 59

Table 4 Employment by occupation (in '000 person)

Sector	1990		1995		2000*		Growth (%)	
	('000)	%	('000)	%	('000)	%	6th Plan	7th Plan
Professional & Technical	586.4	*8.8*	815.3	*10.3*	1,097.0	*12.1*	6.8	6.1
Administrative & Managerial	163.8	*2.4*	213.7	*2.7*	290.1	*3.2*	5.5	6.3
Clerical	652.6	*9.8*	799.5	*10.1*	933.8	*10.3*	4.1	3.2
Sales	768.9	*11.5*	894.4	*11.3*	1,042.6	*11.5*	3.1	3.1
Service	777.6	*11.6*	981.5	*12.4*	1,169.5	*12.9*	4.8	3.6
Production	1,846.0	*27.6*	2,548.8	*32.2*	3,046.2	*33.6*	6.7	3.6
Agriculture	1,890.7	*28.3*	1,662.2	*21.0*	1,486.9	*16.4*	-2.5	-2.2
Total	6,686.0	*100.0*	7,915.4	*100.0*	9,066.2	*100.0*	3.4	2.8

* Estimate

Source: Malaysia 1996, page 113

STRUCTURE OF PUBLIC EDUCATION SYSTEM

BASIC EDUCATION

AGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
LEVEL OF EDUCATION					Pre-School Education		Primary School Education (Standard 1 to 6)						Levels Secondary School Education (Form 1 to 3)			Upper Secondary School Education (Form 4 & 5)		Post-Secondary School Education Sixth Form (2 years)		First Bachelor Degree Education (3-5 years)			Master Degree Education		Doctrade Degree					
NATIONAL EXAMINATION (NATIONAL CURRICULUM)					Minister's Guidelines		UPSR (KBSR)						PMR			SPM/SPMV		Post-Secondary Curriculum (STPM)		University Curriculum & Qualifications										
													KBSM																	

TYPES OF EDUCATIONAL INSTITUTIONS

TYPES OF PRIMARY SCHOOLS

- National School
- National-Type Chinese School**
- National-Type Tamil School**

TYPES OF UPPER SECONDARY SCHOOLS

- Academic Secondary School
- Secondary Technical School
- Secondary Vocational School

OTHER STUDY OPPORTUNITIES

- Certificate and Diploma Levels at Polytechnic (2-3 years)
- Certificate and Diploma Levels at Government sponsored Colleges (2-3years)
- Certificate and Diploma Levels in Universities (UTM and UPM)
- Teacher Training College
- Matriculation (1-2 year)*

+

TWO GOVERNMENT SPONSORED COLLEGES

- Institut Teknologi MARA
- Kolej Tunku Abdul Rahman

SEVEN POLYTECHNICS

- Politeknik Sultan Abdul Halim Mu'adzam Shah, Kedah
- Politeknik Ungku Omar, Perak
- Politeknik Port Dickson, Negeri Sembilan
- Politeknik Sultan Haji Ahmad Shah, Pahang
- Politeknik Kota Bharu, Kelantan
- Politeknik Kuching, Sarawak
- Politeknik Kota Kinabalu, Sabah

EIGHT LOCAL PUBLIC UNIVERSITIES

- Universiti Malaya (UM)
- Universiti Sains Malaysia (USM)
- Universiti Kebangsaan Malaysia (UKM)
- Universiti Teknologi Malaysia (UTM)
- Universiti Putra Malaysia (UPM)
- Universiti Utara Malaysia (UUM)
- Universiti Malaysia Sarawak (UNIMAS)
- Universiti Malaysia Sabah (UMS)

+

ONE INTERNATIONAL UNIVERSITY

- International Islamic University Malaysia (IIUM)

* For Bumiputra students only

** The students of these schools are required to undergo one year in remove Form (transition class)
Given to those student who perform well in UPSR, especially Bahasa Malaysia subject

STRUCTURE OF PRIVATE EDUCATION SYSTEM

Educational levels and opportunities at Private Kindergartens, Private Schools, Private Colleges and Private Universities

AGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
LEVEL OF EDUCATION & CURRICULUM			Nursery		Pre-School Education		Primary School Education (Standard 1 to 6)						Lower Secondary School Education (Form 1 to 3)			Upper Secondary School Education (Form 4 & 5)		Post Secondary Education ⇢ Higher Education													
					Following Ministry's Guidelines		Following National Curriculum and Common Examination																								
TYPE OF EDUCATIONAL INSTITUTIONS			**Child Care Centres**		**Private Kindergartens**		**Private Schools**																							

Private Colleges

Post Secondary Education (1 to 2 years)

External Academic Examination

for the following qualifications:

Local
- STPM, *Malaysia*

Overseas
- GCE 'A' Level, *UK*
- SAM, *Australia*
- WATEE, *Australia*
- HSC, *Australia*

Overseas University Access and Bridging Programme

by way of
- Pre-university
- Matriculation
- University Foundation Course

Higher Education 3 to 4 years

Internal Qualification at Certificate and Diploma Levels

in the areas of
- Accountancy
- Advertising & Marketing
- Business Studies
- Computer Studies
- Engineering Studies
- Fashion & Design
- Hotel & Hospitality Studies
- Health Science
- Journalism
- Public Relations
- Performing Arts
- Secretarial Science and Administration
- Travel Tourism
- Technical Skills
- Etc.

Bachelor's First Degree Award (By Local/ Foreign Universities)

by way of
- Twinning Degree Programme
- Credit Transfer Programme
- Advance Standing Programme
- External Degree Programme
- Distance Learning Programme

in the areas of
- Accountancy
- Aviation
- Business and Management
- Commerce
- Engineering
- Education
- Economics
- Humanities
- Law
- Multimedia
- Science

External Professional and Senior Professional Examinations (Local/ overseas)

by the following Examination Bodies:

Local
- CLP
- IBBM/IEM
- MLVK
- MACPA
- MII

Overseas
- ACCA
- CIMA
- ISCA
- ABE
- CGLI
- LCCI
- Pitman Qualification
- NCC

Master Degrees & Post Graduate Qualification

by way of :
- Distance Learning
- Joint Programme

in the areas of :
- Accountancy
- Business and Management
- Education
- Finance
- Human Resource Management
- Information Technology
- Law
- Marketing
- Etc

Private University

Offering Pre-University and First Bachelor's Degree Programmes
- Universiti Telekom
- Tenaga National University
- Petronas University of Technology

(3-5 years)

Table 5 Output for first degree courses from local public educational institutions, 1996-2000

Course	Output from local public educational institutions											
	UM	UKM	USM	UPM	UTM	UIA	UUM	UNIMAS	UMS	ITM	KTAR	Total
Arts	**8,960**	**9,370**	**9,560**	**3,660**	**210**	**4,050**	**10,060**	**480**	**310**	**4,540**	**2,890**	**54,090**
Arts & Humanities [1]	6,410	5,900	8,740	2,730	90	750	1,620	480	170	1,630	0	28,520
Economic & Business [2]	2,020	3,160	820	830	120	2,150	8,320	0	140	2,520	2,890	22,970
Law	530	310	0	100	0	1,150	120	0	0	390	0	2,600
Science	**4,490**	**3,890**	**6,170**	**9,130**	**3,640**	**1,210**	**1,410**	**810**	**230**	**800**	**2,200**	**33,980**
Medicine & Dentistry	1,140	850	710	250	0	0	0	80	0	0	0	3,030
Agriculture & Related Science [3]	0	0	0	1,160	0	0	0	210	30	0	0	1,400
Pure Science [4]	0	2,310	0	2,820	0	0	0	0	80	180	2,200	7,590
Others [5]	3,350	730	5,460	4,900	3,640	1,210	1,410	520	120	620	0	21,960
Technical	**1,190**	**720**	**2,840**	**2,180**	**6,480**	**1,000**	**0**	**140**	**0**	**3,320**	**2,140**	**20,010**
Engineering	1,190	720	2,120	1,880	3,960	700	0	140	0	1,760	1,640	14,110
Architecture & Town Planning	0	0	720	300	650	300	0	0	0	580	500	3,050
Survey	0	0	0	0	300	0	0	0	0	400	0	700
Others [6]	0	0	0	0	1,570	0	0	0	0	580	0	2,150
Total	**14,640**	**13,980**	**18,570**	**14,970**	**10,330**	**6,260**	**11,470**	**1,430**	**540**	**8,660**	**7,230**	**108,080**

Notes:
[1] Includes Islamic studies, languages, literature, Malay culture, social science, library science, and art and design.
[2] Includes accountancy, business management, resource economics, and, agribusiness.
[3] Includes home science and human development.
[4] Includes biology, chemistry, physics, and, mathematics.
[5] Includes pharmacy, applied science, environmental studies, food technology and science with education.
[6] Includes property management.

Source: Malaysia 1996, p. 33

Table 6 Saving On Tuition Fees through 3+0 Twinning Programme by Private Colleges and The Degree Programmes

Name of Private Colleges	Affiliate Foreign University/ Degree Programme	Annual Tuition Fees/ Amount of Saving (RM)
Asia Pacific Institute of Information Technology (APIIT)	University of Staffordshire, UK: BSc in Computing BSc in Electronic Commerce BSc in Business Computing BSc in Business Information Technology	at UK : 42,000 at Mal : 15,000 Saving : 27,000
SAL College	University of Wolverhampton, UK: BA in Business Administration	at UK : 50,000 at Mal : 30,000 Saving :20,000
HELP Institute	Charles Sturt University, Australia: Bachelor of Business Accounting Bachelor of Business Finance Bachelor Marketing Bachelor of Business Information Technology	at Aust : 21,000 at Mal : 9,600 Saving : 11,400
Bandar Utama College	Nottingham Trent University, UK: BEng in Electronics and Computing BEng in Electrical and Electronics Engineering BSc in Computer Studies	at UK : 43,155 at Mal : 23,000 Saving : 20,155
	Anglia Polytechnic University, UK: BA in Business Administration	at UK : 34,965 at Mal : 20,000 Saving : 14,965
INTI College	Hertfordshire University, UK: BA in Finance BA in Marketing BA in Accounting BA in Business Administration	at UK : 42,000 at Mal : 13,000 Saving : 29,000
	Coventry University, UK: BSc in Business Information Technology BSc in Computing	at UK : 42,000 at Mal : 13,000 Saving : 29,000
Limkokwing Institute of Creative Technology	Royal Melbourne Institute of Technology, Aust: BA in Graphic Design	at Aust : 36,000 at Mal : 26,000 Saving : 10,000
	BA in Industrial Design	at Aust : 40,000 at Mal : 28,000 Saving : 12,000
	Curtin University of Technology, Australia: BA in Interior Design BA in Mass Communication Bachelor of Applied Science (Architectural Science)	at Aust : 32,250 at Mal : 23,000 Saving : 9,250
Stamford Executive Centre	University Of Northumbria at Newcastle, UK: BA in International Business Administration BA in Marketing BEng in Electrical and Electronic Engineering	at UK : 38,400 at Mal : 15,000 Saving : 23,400
Binary School of Commerce	University Of Northumbria at Newcastle, UK: BSc in Applied Business Computing BA in Business Administration	at UK : 36,000 at Mal : 19,000 Saving : 17,000
Nilai College	La Trobe University, Australia: Bachelor of Business Bachelor of Science	at Aust : 42,000 at Mal : 20,000 Saving : 22,000
	Oxford Brookes University, UK: Bachelor of Business Administration	at UK : 45,000 at Mal : 18,000 Saving : 27,000
Sedaya College	University Of Northumbria at Newcastle, UK: Bachelor in Micro-Electronic	at UK : 39,000 at Mal : 20,000 Saving : 19,000

Source: Department of Private Education, Ministry of Education, 1997

Table 7 Programmes, fees, entry requirements and intakes of the private universities in Malaysia, 1997

Private Universities	Programmes of Studies	Annual Fees (RM)	General Entry Requirement	Total Intake for 1997
University Telekom	BSc Engineering in Computers in Electronic in Telecommunication	13,000	SPM	900
	BSc Digital Media BSc Filming & Animation BSc Media Innovation BSc Software Engineering/ Information Technology	11,000		
	Bachelor of Accounting BBA Management BBA Marketing BBA Finance	9,500		
University Tenaga Nasional	BSc Engineering in Mechanical in Manufacturing in Electrical in Electronics	12,000	SPM	300
	BSc Commerce and Management/ Business Study	10,000		
University Teknologi PETRONAS	BSc Engineering in Mechanical in Electronics in Electrical in Chemical & Process in Petroleum/Gas Technology	12,200	SPM	200

Source: Department of Private Education, Ministry of Education (1999)

UNIVERSITY OF SHEFFIELD

DEPARTMENT OF ECONOMICS

RESEARCH ON PRIVATE HIGHER EDUCATION

Name of the Institution: _____

Address: _____

_____

_____

_____

Phone No.: _____

Fax No.: _____

Email Address: _____

Contact Person: _____

Post Held: _____

PART 1

INFORMATION ABOUT COURSES/PROGRAMMES OFFERED AND STUDENT'S ENROLMENT

Table 1a: Academic Fees by Courses/Programmes and Levels of Studies

Year: _____

No.	Courses/ Programmes	Certificates		Diplomas		First Degrees		Post Graduates	
		RM per year	Duration	RM per year	Duration	RM per year	Duration	RM per year	Duration
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Table 1b: Students Enrolment by Courses/Programmes and Levels of Studies

Year: _____

No.	Courses/Programmes	Certificates	Diplomas	First Degrees	Post Graduates	Total
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
Total						

Table 1c: Enrolment in First Degree by Courses/Programmes and Levels of Studies

Year: _____

No.	Courses/Programmes	Year 1	Year 2	Year 3	Total
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Table 1d: Socio-Economic Background of the Institution's First Degree Students

Year: _____

No.	Student's Name	Course/Programme Attended	Year	Parent's Occupation (a) Father (b) Mother	Parent's Income (a) Father (b) Mother	Source of Funding Tuition Fees
1				(a) (b)	(a) (b)	(a) (b)
2				(a) (b)	(a) (b)	(a) (b)
3				(a) (b)	(a) (b)	(a) (b)
4				(a) (b)	(a) (b)	(a) (b)
5				(a) (b)	(a) (b)	(a) (b)
6				(a) (b)	(a) (b)	(a) (b)
7				(a) (b)	(a) (b)	(a) (b)

8				(a) (b)	(a) (b)	(a) (b)
9				(a) (b)	(a) (b)	(a) (b)
10				(a) (b)	(a) (b)	(a) (b)
11				(a) (b)	(a) (b)	(a) (b)
12				(a) (b)	(a) (b)	(a) (b)
13				(a) (b)	(a) (b)	(a) (b)
14				(a) (b)	(a) (b)	(a) (b)
15				(a) (b)	(a) (b)	(a) (b)
16				(a) (b)	(a) (b)	(a) (b)

17				(a) (b)	(a) (b)	(a) (b)
18				(a) (b)	(a) (b)	(a) (b)
19				(a) (b)	(a) (b)	(a) (b)
20				(a) (b)	(a) (b)	(a) (b)
21				(a) (b)	(a) (b)	(a) (b)
22				(a) (b)	(a) (b)	(a) (b)
23				(a) (b)	(a) (b)	(a) (b)
24				(a) (b)	(a) (b)	(a) (b)
25				(a) (b)	(a) (b)	(a) (b)

26				(a) (b)	(a) (b)	(a) (b)
27				(a) (b)	(a) (b)	(a) (b)
28				(a) (b)	(a) (b)	(a) (b)
29				(a) (b)	(a) (b)	(a) (b)
30				(a) (b)	(a) (b)	(a) (b)
31				(a) (b)	(a) (b)	(a) (b)
32				(a) (b)	(a) (b)	(a) (b)
33				(a) (b)	(a) (b)	(a) (b)
34				(a) (b)	(a) (b)	(a) (b)

35				(a) (b)	(a) (b)	(a) (b)
36				(a) (b)	(a) (b)	(a) (b)
37				(a) (b)	(a) (b)	(a) (b)
38				(a) (b)	(a) (b)	(a) (b)
39				(a) (b)	(a) (b)	(a) (b)
40				(a) (b)	(a) (b)	(a) (b)
41				(a) (b)	(a) (b)	(a) (b)
42				(a) (b)	(a) (b)	(a) (b)
43				(a) (b)	(a) (b)	(a) (b)

44				(a) (b)	(a) (b)	(a) (b)
45				(a) (b)	(a) (b)	(a) (b)
46				(a) (b)	(a) (b)	(a) (b)
47				(a) (b)	(a) (b)	(a) (b)
48				(a) (b)	(a) (b)	(a) (b)
49				(a) (b)	(a) (b)	(a) (b)
50				(a) (b)	(a) (b)	(a) (b)
51				(a) (b)	(a) (b)	(a) (b)
52				(a) (b)	(a) (b)	(a) (b)

53				(a) (b)	(a) (b)	(a) (b)
54				(a) (b)	(a) (b)	(a) (b)
55				(a) (b)	(a) (b)	(a) (b)
56				(a) (b)	(a) (b)	(a) (b)
57				(a) (b)	(a) (b)	(a) (b)
58				(a) (b)	(a) (b)	(a) (b)
59				(a) (b)	(a) (b)	(a) (b)
60				(a) (b)	(a) (b)	(a) (b)
61				(a) (b)	(a) (b)	(a) (b)

62				(a) (b)	(a) (b)	(a) (b)
63				(a) (b)	(a) (b)	(a) (b)
64				(a) (b)	(a) (b)	(a) (b)
65				(a) (b)	(a) (b)	(a) (b)
66				(a) (b)	(a) (b)	(a) (b)
67				(a) (b)	(a) (b)	(a) (b)
68				(a) (b)	(a) (b)	(a) (b)
69				(a) (b)	(a) (b)	(a) (b)
70				(a) (b)	(a) (b)	(a) (b)

71				(a) (b)	(a) (b)	(a) (b)
72				(a) (b)	(a) (b)	(a) (b)
73				(a) (b)	(a) (b)	(a) (b)
74				(a) (b)	(a) (b)	(a) (b)
75				(a) (b)	(a) (b)	(a) (b)
76				(a) (b)	(a) (b)	(a) (b)
77				(a) (b)	(a) (b)	(a) (b)
78				(a) (b)	(a) (b)	(a) (b)
79				(a) (b)	(a) (b)	(a) (b)

80				(a) (b)	(a) (b)	(a) (b)
81				(a) (b)	(a) (b)	(a) (b)
82				(a) (b)	(a) (b)	(a) (b)
83				(a) (b)	(a) (b)	(a) (b)
84				(a) (b)	(a) (b)	(a) (b)
85				(a) (b)	(a) (b)	(a) (b)
86				(a) (b)	(a) (b)	(a) (b)
87				(a) (b)	(a) (b)	(a) (b)
88				(a) (b)	(a) (b)	(a) (b)

89				(a) (b)	(a) (b)	(a) (b)
90				(a) (b)	(a) (b)	(a) (b)
91				(a) (b)	(a) (b)	(a) (b)
92				(a) (b)	(a) (b)	(a) (b)
93				(a) (b)	(a) (b)	(a) (b)
94				(a) (b)	(a) (b)	(a) (b)
95				(a) (b)	(a) (b)	(a) (b)
96				(a) (b)	(a) (b)	(a) (b)
97				(a) (b)	(a) (b)	(a) (b)

98				(a) (b)	(a) (b)	(a) (b)
99				(a) (b)	(a) (b)	(a) (b)
100				(a) (b)	(a) (b)	(a) (b)
101				(a) (b)	(a) (b)	(a) (b)
102				(a) (b)	(a) (b)	(a) (b)
103				(a) (b)	(a) (b)	(a) (b)
104				(a) (b)	(a) (b)	(a) (b)
105				(a) (b)	(a) (b)	(a) (b)
106				(a) (b)	(a) (b)	(a) (b)

PART II

INFORMATION ABOUT TEACHING STAFF

Table 2a: Number of Institution's Academic Staff by Courses/Programmes According to Post Held

Year: _____

No.	Courses/Programmes	Professor	Associate Professor	Lecturer	Assistant Lecturer	Researcher	Total
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
Total							

Table 2b: Number of Institution's Academic Staff by Courses/Programmes According to their Levels of Qualification

Year: _____

No.	Courses/Programmes	PhD	Master	First Degree	Total
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Total					

Table 2c: Number of Foreign Lecturer from Parent University Involved in Teaching According to Post Held

Year: _____

No.	Courses/Programmes	Professor	Associate Professor	Lecturer	Assistant Lecturer	Researcher	Total
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
Total							

Table 2d: Number of Foreign Lecturer from Parent University by Levels of Qualification

Year: _____

No.	Courses/Programmes	PhD	Master	First Degree	Total
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Total					

PART III

INFORMATION ABOUT INSTITUTION'S EXPENDITURE

Table 3a: Institution's Capital and Recurrent Expenditure by Courses/Programmes

Year: _____

No.	Courses/Programmes	Capital Expenditure (RM per year)	Recurrent Expenditure (RM per year)	Total
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
Total				

Table 3b: Institution's Expenditure on Several Key Items

Year: _____

No.	Items	Expenditure (RM per year –estimates)	Percentage from Total Institution's Expenditure
1	Library resources		
2	Computing facilities		
3	Teaching and classroom equipment		
4	Laboratory facilities		
5	Wages and Salary: - (a) Academic staff (b) Non-academic staff		
6	Academic research		

PART IV

INFORMATION ABOUT INSTITUTION'S GRADUATES AND THEIR CAREER OPPORTUNITIES

Table 4a: Number of Institution's Graduate in First Degree Courses/Programmes

Year: _____

No.	Courses/Programmes	Total Number of Graduates	1st Class	2nd Class	3rd Class	General Degree	Drop Out (estimates)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
Total							

Table 4b: Career Opportunities amongst Institution's Graduates

(Information about the first destination of the institution's graduates – first degree holders)

Year: _____

No.	Courses/Programmes	Permanent Employment		Short-term Employment	Unemployed	Further Education & Training	Unknown Destination	Total
		In Public Sector	In Private Sector					
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
Total								

THE UNIVERSITY OF SHEFFIELD
Department of Economics

A Survey on Students' Expectations and Motivations for Higher Education[1]

This enquiry is part of a wider study of higher education in Malaysia. This study aim at finding the factors that influence your decision and what are your motivations and expectations from pursuing higher education. To be a useful study that can help others, all questions must be answered. There are only 35 questions in this questionnaire. Many of these questions are concerned with issues relating to your decision to enrol in higher education, with special emphasis to those who are studying in private higher education. For purpose of comparison, students enrolled in public higher education will also be asked to respond to the same questions.

This study is to fulfil part of the requirements for a doctoral degree programme (PhD) at the Department of Economics, University of Sheffield, and therefore is purely an academic exercise. Any query regarding this study can be directed to the following address:

Department of Economics
9 Mappin Street, Sheffield
S1 4DT UK
Tel : 0114-2223418 or 2223406
Fax: 0114-2223458

Thank you for your co-operation and we are looking forward for your response.

Ishak Yussof
(Research Student)
Email:ecp96iy@Sheffield.ac.uk

R.K. Wilkinson
(Supervisor and Professor of economics)
Email: R.Wilkinson@Sheffield.ac.uk

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1 Some of these questions are extracted from The National Committee of Inquiry into Higher Education in the UK - The Dearing Report 1997

SECTION 1: ABOUT YOUR PERSONAL DETAILS

*This section is regarding your personal background and academic achievements. Please **tick** or **circle** the appropriate answer.*

1. Your sex?

- ☐ Male
- ☐ Female

2. Your age group?

- ☐ 20-24
- ☐ 26-30
- ☐ 31-35
- ☐ over 35

3. Your ethnic group ?

- ☐ Bumiputera
- ☐ Chinese
- ☐ Indian
- ☐ Others

4(a) What is your highest schools certificate used as entry qualification to enter this institution?

- ☐ SPM/MCE/GCE
- ☐ STPM/HSC
- ☐ Others (*please specify*): _____

4(b) Please indicate the grade you achieved in that examination?
(*please circle appropriately*)

- ☐ If SPM/MCE/GCE..... | 1 | 2 | 3 | 4 | 9 | **OR**
- ☐ If STP/HSC..... | 5P | 4P | 3P | 2P | 1P | **OR**
- ☐ If others: _____
  (*please give appropriate levels achieved*)

4(c). Please provide your achievement in the following subjects from that examination?
(*please tick appropriate column*)

Subjects	Distinction	Credit	Pass	Failed	Irrelevant
Bahasa Malaysia					
English Language					
Mathematics					
Science -					
Physics					
Chemistry					
Biology					

5. Overall, what were you rank in your high school class?

- ☐ Top 5 per cent
- ☐ Top 10 per cent
- ☐ Top 20 percent
- ☐ Top 50 per cent
- ☐ The rest 50 per cent

SECTION 2: ABOUT YOUR FAMILY BACKGROUND

*This section is regarding your family's educational background and parents' occupations. Please **tick** or **circle** the appropriate answer.*

6. Do you have any brother or sisters (living at home and/or away from home)? If so please indicate in the table below their age, relations, number of college years completed and types of institutions they went (public or private).

☐ Yes *(if yes please give details in box below)*

☐ No *(if no please go to the next question)*

Age *(Fill-in the age)*	Brother = 1 Sister = 2 *(Circle one)*	Number of College Years Completed *(Fill-in the number of years at college)*	Public = 1 Private = 2 *(Circle one)*
	1 2		1 2
	1 2		1 2
	1 2		1 2
	1 2		1 2
	1 2		1 2
	1 2		1 2
	1 2		1 2

(If you have more than 6 brothers and sisters, list the information for the oldest 6)

7. Approximately, how many years of formal schooling have each of your parents completed? *(Please include primary school, secondary school and college/university education)*

	Father	*Mother*
None	☐	☐
Less than 6 years	☐	☐
7 - 9 years	☐	☐
10 - 12 years	☐	☐
13 - 15 years	☐	☐
more than 16 years	☐	☐

8. What is the highest qualification achieved by your parents?

	Father	*Mother*
Primary school qualification	☐	☐
Lower schools qualification (i.e. LCE, SRP, PMR)	☐	☐
Higher school qualification (i.e. MCE, SPM/SPVM, HSC, STPM)	☐	☐
Diploma level qualification	☐	☐
Degree level qualification	☐	☐

9. What is your parents occupation?
(Use code from the occupation list provided. If unemployed or deceased, please indicate the occupation in which they were last employed).

Father *(enter code here)*: ☐ (please refer to page 16)

Mother *(enter code here)*: ☐ (please refer to page 16)

10. If your parents are employed, approximately how much is their monthly income?

	Father	*Mother*
No income	☐	☐
Less than RM1000	☐	☐
RM1001 - RM2500	☐	☐
RM2501 - RM4000	☐	☐
RM4001 - RM5500	☐	☐
More than RM5500	☐	☐

SECTION 3: ABOUT YOUR COURSE OF STUDY

This section is about your degree programme. The purpose is to investigate to what extent you are satisfied with the courses offered and also with the institution you have chosen in general. Please ***tick*** *the appropriate answer.*

11. What is your main course of study?

- ☐ Arts & Social Sciences/Humanities/Education
- ☐ Economics/Business studies/Accounting
- ☐ Law
- ☐ Applied and pure sciences (physics, chemistry, biology)
- ☐ Information Technology & Computer studies
- ☐ Engineering/technology/architecture
- ☐ Medicine/dentistry/health subjects allied to medicine
- ☐ Others (*please specify*) _____

12. What levels of study you are aiming for?

- ☐ Certificate
- ☐ Diploma
- ☐ Degree
- ☐ Other (please specify):_____

13. How many years does your full course last and what year are you in now?

Duration of study

- ☐ 1 year or less
- ☐ 2 years
- ☐ 3 years
- ☐ 4 years
- ☐ 5 years or more

Year of study

- ☐ 1st year
- ☐ 2nd year
- ☐ 3rd year
- ☐ 4th year
- ☐ 5th year or above

14. Is the institution you are currently attending your first choice?

- ☐ Yes
- ☐ No

15. As best you can remember, before you started at your institution did you know anything about _____?

	Yes	*No*
(a) Its academic reputation	☐	☐
(b) Its teaching record	☐	☐
(c) Its research achievements	☐	☐
(d) The type of extra-curricular opportunities available	☐	☐
(e) The type of living accommodation available	☐	☐

16. Roughly, how many hours per week on average do you spend on the following teaching methods? *(Please write in the number of hours for each item. Write zero [0] if they are not relevant to you)*

	Hours per week
(a) Lectures	☐
(b) Seminars/tutorials	☐
(c) Laboratory/workshop sessions	☐
(d) Computer based learning packages	☐
(e) Practicals/projects	☐
(f) Individual sessions with teaching staff	☐

17. How would you rate the quality of teaching methods listed in question (6) above in terms of it's *STRUCTURE, PREPARATION AND PRESENTATION.* Please write the in a score from 5 to 1 using the following scale to indicate that is *well structured, well prepared and well presented.*

5: All are well structured/prepared/presented
4: Most are well structured/prepared/presented
3: Half are well structured/prepared/presented
2: Some are well structured/prepared/presented
1: None are well structured/prepared/presented

	Structure	*Preparation*	*Presentation*
(a) Lectures	☐	☐	☐
(b) Seminars/tutorials	☐	☐	☐
(c) Laboratory/workshop sessions	☐	☐	☐
(d) Computer based learning packages	☐	☐	☐
(e) Practicals/projects	☐	☐	☐
(f) Individual sessions with teaching staff	☐	☐	☐

18. How satisfied are you with each of the following aspects?

	Very Satis-fied	*Satis-fied*	*Neither satis-fied nor dissatisfied*	*Dissatis-fied*	*Very dissa-tisfied*
(a) Your course in general	☐	☐	☐	☐	☐
(b) The amount of teaching you are getting	☐	☐	☐	☐	☐
(c) The overall quality of teaching	☐	☐	☐	☐	☐
(d) The amount of academic support you get from staff	☐	☐	☐	☐	☐
(e) The quality of the academic support you get from staff	☐	☐	☐	☐	☐
(f) The amount of non-academic support available	☐	☐	☐	☐	☐
(g) The quality of non-academic support received	☐	☐	☐	☐	☐
(h)The range of library facilities available	☐	☐	☐	☐	☐
(i) Opening times of the library	☐	☐	☐	☐	☐
(j) The availability of books in the library	☐	☐	☐	☐	☐
(k) The computing facilities available	☐	☐	☐	☐	☐
(l) The amount of computing support	☐	☐	☐	☐	☐
(m) The laboratory facilities available	☐	☐	☐	☐	☐
(n) Access to specialist equipment needed for your study	☐	☐	☐	☐	☐
(o) The support from the Students' Union	☐	☐	☐	☐	☐
(p) The facilities in the Students' Union	☐	☐	☐	☐	☐
(q) The extra-curricular activities available (e.g. Student's associations, sports etc.)	☐	☐	☐	☐	☐
(r) Career guidance and support	☐	☐	☐	☐	☐

SECTION 4: THE COST OF EDUCATION AND SOURCE OF FUNDING

*This section requires you to estimate the amount you are spending annually on higher education and sources of funding them. Try to make your best estimates on these expenses. Please **fill-in your estimations** or **tick** the answer where appropriate.*

19. Please estimate the total cost per year for attending this university/college by completing the table below:

Item	Types of expenditure	Amount (RM)
1.	Tuition fees per year	RM
2.	Books and learning materials per year	RM
3.	Living and travelling per year	RM
4.	Other expenses	RM
	Total expenditure per year	RM

20(a) Do you receive any maintenance grant? *(i.e. scholarships or educational loan)*

☐ Yes

☐ No

20(b) If YES, please state down the awarding body and the amount you received?

(i) Awarding body: _____

(ii) Amount received: RM _____ *(per academic year)*

21. Please indicate the contributions of the following sources of funding onto your university/college's education? (*Please provide your estimates*)

(a) Parents contributions : _____ per cent

(b) Scholarship/Educational loan : _____ per cent

(c) Bank loan: _____ per cent

(d) Doing part-time jobs: _____ per cent

(e) Other sources: _____ per cent (*Please indicate the sources*)

SECTION 5: EXPECTED RETURNS FROM HIGHER EDUCATION

*This section is regarding your expectation on higher education. There are some questions that require you to imagine or predict the current and future educational returns. As best as you can, try to imagine and make prediction on these aspects by **filling** or **ticking** the appropriate answers.*

22. What were you doing before enrolling as a university/college student?

- ☐ In full-time education (*please go to Question 23b*)
- ☐ In full-time employment (*please go to Question 23a*)
- ☐ In part-time employment (*please go to Question 23a*)
- ☐ Unemployed (*please go to Question 23b*)

23(a) If you were employed, what was your occupation and how much were you earning?

(i) Occupation code: _____ (*Please use the occupation's codes in page 16)*

(ii) Salary: RM _____ per month

23(b) If you have never been employed before, and assuming that you do not wish to continue higher education, what type of occupation would you most likely to be working-in and how much do you expect to earn?

(I) Occupation code: _____ (*Please use the occupation's codes in page 16)*

(ii) Salary: RM _____ per month

24. What types of occupation are you expecting to be employed-in after graduation?

Occupation code: _____ (*Please use the occupation's codes in page 16)*

25. In which sector is the job likely to be?

- ☐ Government services
- ☐ Private sector
- ☐ Self-employment
- ☐ Family business
- ☐ Other (*please specify*): _____

26. How confident are you to get employed in this job?

- ☐ 100 per cent confident
- ☐ 75 per cent confident
- ☐ 50 per cent confident
- ☐ 25 per cent confident
- ☐ Not confident at all

27. How much are you hoping or expecting to be your minimum monthly salary over the next 25 years after graduation? (*Please provide your best estimate even if you are very uncertain*)

(a) First 5 years: RM _____ average monthly

(b) Next 5 years: RM _____ average monthly

(c) Next 5 years: RM _____ average monthly

(d) Next 5 years: RM _____ average monthly

(e) Last 5 years: RM _____ average monthly

28. Do you think that your academic knowledge in your current field of study will be applicable to the type of job in which you hope to be employed?

- ☐ Fully applicable
- ☐ Partly applicable
- ☐ Not applicable
- ☐ very uncertain

SECTION 6: STUDENT PERCEPTIONS AND MOTIVATIONS FOR HIGHER EDUCATION

*The final section of this questionnaire contains questions related to your perceptions of and motivations for higher education. Please answer all questions in this section by simply putting a **tick** in the relevant boxes.*

29. Are you studying in a PUBLIC or PRIVATE institution?

- ☐ Public University/College *(go to question 2a)*
- ☐ Private University/College *(go to question 2b)*

30(a) If you were studying in a PUBLIC institution, what would you do assuming that you were not offered a place at this institution?

- ☐ Continue my education at PRIVATE institutions
- ☐ Continue my education abroad
- ☐ Go for part-time employment and apply again next year
- ☐ Go for full-time employment
- ☐ Other (*Please specify*): _____

OR

30(b) If you are studying in a PRIVATE institution, please tick the main reason you choose to go to this type of institution?

- ☐ I am not qualified enough to enter PUBLIC Universities/Colleges
- ☐ I am qualified to enter PUBLIC Universities/Colleges, but was not offered a place
- ☐ The course of study is not offered by the PUBLIC Universities/Colleges
- ☐ The degrees offered by PRIVATE Universities/Colleges are highly demanded in the job market, thus easier to get employed upon graduation.
- ☐ Other reasons (*Please specify*):_____

31. You have decided to enter higher education. Please indicate how important was each of the following reasons to you in making your decision.

	Very Important	*Impor-tant*	*Unim-portant*	*Not re-levant*
(a) I was interested in the subject and wanted to continue studying.	☐	☐	☐	☐
(b) I thought it would help me get a better job for a better life.	☐	☐	☐	☐
(c) I wanted to pursue a particular career and need a particular qualification.	☐	☐	☐	☐
(d) I wanted to improve my social status in the society.	☐	☐	☐	☐
(e) My parents requested/encouraged me to further my study .	☐	☐	☐	☐
(f) I was motivated by my brothers/sisters' achievement in higher education.	☐	☐	☐	☐
(g) I was motivated by friends' achievement in higher education.	☐	☐	☐	☐

32. Indicate form the list above the most important reason on your decision to enter higher education?

Enter the alphabet from the list above here: ☐

33. You have chosen this University/College to further your study. Please tick either TRUE or FALSE each of these statements that have influenced your decision.

	True	*False*
(a) It was the only one that offered me a place	☐	☐
(b) It was the best one for the subject I wanted to study	☐	☐
(c) It was the only institution that ran the course/subject I wanted to study	☐	☐
(d) It has a good academic reputation	☐	☐
(e) It was recommended by friends and family	☐	☐
(f) It was recommended by the career officer/people at a college/school.	☐	☐

	True	*False*
(g) It had links with the school/college where I did my pra-university/college education.	☐	☐
(h) I like what I saw when I went for interview/ attended an open day.	☐	☐
(i) It was near my home.	☐	☐
(j) It had a good reputation for getting people jobs.	☐	☐

34. Other than qualification and to get a good job, there can be a number of other benefits gained by going to university/college. To what extent do you agree that you have gained the following benefits?

	Strongly agree	*Agree*	*Neither agree nor disagree*	*Disagree*	*Strongly disagree*
(a) Developed new skills or existing skills	☐	☐	☐	☐	☐
(b) Experienced intellectual growth and stimulation	☐	☐	☐	☐	☐
(c) Learned about and discussed new ideas	☐	☐	☐	☐	☐
(d) Broadened my horizons	☐	☐	☐	☐	☐
(e) Increased my self-esteem or confidence	☐	☐	☐	☐	☐
(f) Met new people	☐	☐	☐	☐	☐
(g) Had a good time	☐	☐	☐	☐	☐

35. To what extent do you agree or disagree with each of the following statements?

	Strongly agree	*Agree*	*Neither agree nor disagree*	*Disagree*	*Strongly disagree*
(a) So far my time at university/college has been better than I expected.	☐	☐	☐	☐	☐
(b) So far my time at university/college has been worse than I expected	☐	☐	☐	☐	☐
(c) Staff are more interested in their research than teaching	☐	☐	☐	☐	☐

	Strongly agree	*Agree*	*Neither agree nor disagree*	*Disagree*	*Strongly disagree*
(d) Post-graduates and teaching assistants are used too often for teaching.	☐	☐	☐	☐	☐
(e) My qualification will get me a good job.	☐	☐	☐	☐	☐
(f) My course is equipping me for the demands of working life.	☐	☐	☐	☐	☐

OCCUPATION CODING LIST

000 Unemployed
- *001 Retired*
- *002 Housewife*
- *003 Disabled*
- *004 Deceased*

100 Professional & Technical
- *101 Accountants/auditors*
- *102 Architect/surveyors*
- *103 Computing technologist/programmer*
- *104 Doctors (including dentist and ophthalmologist)*
- *105 Engineer*
- *106 Engineering technician*
- *107 Lawyer or judge*
- *108 Lecturers (University/College)*
- *109 Researchers (Scientist and social scientist)*
- *110 Teachers*
- *111 Other professional or technical*

200 Administrative & Managerial
- *201 Government officials and administrators*
- *202 Manufacturing managers*
- *203 Production managers*
- *204 Retailing managers*
- *205 Proprietor (Self-employed manager)*
- *206 Other Administrative & managerial*

300 Clerical Workers
- *301 Bookkeepers*
- *302 Clerk 1 (Government offices)*
- *303 Clerk 2 (Private or business offices)*
- *304 Store keepers*
- *305 Typist, Stenographer, secretary*
- *306 Other types of clerical workers*

400 Sales Workers
- *401 family business*
- *402 insurance agents*
- *403 manufacturing sales*
- *404 Real estate agents/broker*
- *405 wholesales/retailing sales*
- *406 shopkeeper*
- *407 other types of sales workers*

500 Service Workers
- *501 Barbers/tailors*
- *502 Counter workers*
- *503 Guards/watchmen*
- *504 Hotel workers*
- *505 Policemen, postmen, firemen, soldier*
- *506 Other types of services worker*

600 Agriculture Workers
- *601 Farm labour*
- *602 Farmer*
- *603 Fishermen*
- *604 Mine workers*

700 Production Workers
- *701 Bus/taxi, truck/lorry drivers*
- *702 Electricians*
- *703 Factory operators*
- *704 Foremen/machinist*
- *705 Other types of operative workers*

...question.doc

Case 1: Public Sector Respondents (Respondents expectation on employment)																		
		Secondary	Arts		Econ		Educ		Law		Medic		Engine		IT		Science	
Age	Yr	Income	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft
20	1	9960	-4904.5	-14864.5	-5350	-15310	-4800	-14760	-5434.47	-15394.47	-6170.6	-16130.6	-6098.6	-16058.6	-4797.7	-14757.72	-5555.7	-15515.7
21	2	10512	-4904.5	-15416.5	-5350	-15862	-4800	-15312	-5434.47	-15946.47	-6170.6	-16682.6	-6098.6	-16610.6	-4797.7	-15309.72	-5555.7	-16067.7
22	3	11064	-4904.5	-15968.5	-5350	-16414	-4800	-15864	-5434.47	-16498.47	-6170.6	-17234.6	-6098.6	-17162.6	-4797.7	-15861.72	-5555.7	-16619.7
23	4	11616	24280.8	12664.8	22967.4	11351.4	27760	16143.96	-5434.47	-17050.47	-6170.6	-17786.6	-6098.6	-17714.6	24000	12384	23583.7	11967.72
24	5	12168	26229.7	14061.7	25393.0	13224.98	27960	15792	26240.04	14072.04	-6170.6	-18338.6	26366.6	14198.64	25890.9	13722.924	25542.9	13374.88
25	6	12720	28178.7	15458.7	27818.6	15098.56	28160	15440	29093.36	16373.36	27811.8	15091.8	29000	16279.95	27781.8	15061.824	27502.1	14782.06
26	7	13272	30127.6	16855.6	30244.1	16972.14	28360	15088	31946.68	18674.68	30094.3	16822.33	31633.3	18361.3	29672.7	16400.7	29461.2	16189.24
27	8	13824	32076.5	18252.5	32669.7	18845.72	28560	14736	34800	20976	32376.7	18552.66	34266.7	20442.65	31563.6	17739.6	31420.4	17596.42
28	9	14376	34025.5	19649.5	35095.3	20719.3	28760	14384	37653.32	23277.32	34659.0	20282.99	36900	22524	33454.5	19078.5	33379.6	19003.6
29	10	14928	35974.4	21046.4	37520.9	22592.88	28960	14032	40506.64	25578.64	36941.3	22013.32	39533.4	24605.35	35345.4	20417.4	35338.8	20410.78
30	11	15480	38097.8	22617.8	39651.1	24171.11	30666.7	15186.67	43359.96	27879.96	39223.7	23743.65	42166.7	26686.7	37540.9	22060.87	37591.9	22111.85
31	12	16032	40221.2	24189.2	41781.3	25749.34	32373.3	16341.34	47159.96	31127.96	41506.0	25473.98	44705.6	28673.58	39736.3	23704.34	39844.9	23812.92
32	13	16584	42344.6	25760.6	43911.6	27327.57	34080.0	17496.01	50959.96	34375.96	44558.8	27974.81	47244.5	30660.46	41931.8	25347.81	42098	25513.99
33	14	17136	44468	27332	46041.8	28905.8	35786.7	18650.68	54759.96	37623.96	47611.6	30475.64	49783.3	32647.34	44127.3	26991.28	44351.1	27215.06
34	15	17688	46591.4	28903.4	48172.0	30484.03	37493.4	19805.35	58559.96	40871.96	50664.5	32976.47	52322.2	34634.22	46322.8	28634.75	46604.1	28916.13
35	16	18240	48714.8	30474.8	50302.3	32062.26	39200.0	20960.02	62359.96	44119.96	53717.3	35477.3	54861.1	36621.1	48518.2	30278.22	48857.2	30617.2
36	17	18792	50893.5	32101.5	52558.1	33766.08	40733.4	21941.35	66159.96	47367.96	56770.1	37978.13	57400	38607.98	51122.8	32330.75	51261.2	32469.23
37	18	19344	53072.3	33728.3	54813.9	35469.9	42266.7	22922.68	69639.96	50295.96	59823.0	40478.96	60527.8	41183.75	53727.3	34383.28	53665.3	34321.26
38	19	19896	55251	35355	57069.7	37173.72	43800.0	23904.01	73119.96	53223.96	62999.5	43103.46	63655.5	43759.52	56331.8	36435.81	56069.3	36173.29
39	20	20448	57429.8	36981.8	59325.5	38877.54	45333.3	24885.34	76599.96	56151.96	66176.0	45727.96	66783.3	46335.29	58936.3	38488.34	58473.3	38025.32
40	21	21264	59608.5	38344.5	61581.4	40317.36	46866.7	25602.67	80079.96	58815.96	69352.5	48088.46	69911.1	48647.06	61540.9	40276.87	60877.4	39613.35
41	22	22080	61787.3	39707.28	63837.2	41757.18	48400	26319.96	83559.96	61479.96	72529.0	50448.96	73038.8	50958.83	64145.4	42065.4	63281.4	41201.38
42	23	22896	63987.3	41091.3	65962.8	43066.76	48823.3	25927.33	87039.96	64143.96	75705.5	52809.46	76166.6	53270.6	67740.9	44844.87	65782.7	42886.65
43	24	23712	66187.3	42475.3	68088.3	44376.34	49246.7	25534.66	92266.63	68554.63	78882.0	55169.96	79661.1	55949.05	71336.3	47624.34	68283.9	44571.92
44	25	24528	68387.3	43859.3	70213.9	45685.92	49670	25141.99	97493.3	72965.3	83499.6	58971.63	83155.5	58627.5	74931.8	50403.81	70785.2	46257.19

45	26	25344	70587.3	45243.3	72339.5	46995.5	50093.3	24749.32	102720	77376	88117.3	62773.3	86650	61305.95	78527.3	53183.28	73286.5	47942.46
46	27	26160	72787.3	46627.3	74465.1	48305.08	50516.7	24356.65	107946.6	81786.6	92735.0	66574.97	90144.4	63984.4	82122.8	55962.75	75787.7	49627.73
47	28	26976	74987.3	48011.3	76590.7	49614.66	50940	23963.98	113173.3	86197.3	97352.6	70376.64	93638.9	66662.85	85718.2	58742.22	78289	51313
48	29	27792	77187.3	49395.3	78716.2	50924.24	51363.3	23571.31	118400	90608.04	101970	74178.31	97133.3	69341.3	89313.7	61521.69	80790.3	52998.27
49	30	28608	79387.3	50779.3	80841.8	52233.82	51786.6	23178.64	123626.7	95018.7	106588	77979.98	100628	72019.8	92909.2	64301.16	83291.5	54683.54
50	31	29424	81587.3	52163.3	82967.4	53543.4	52210	22785.97	128853.3	99429.3	111206	81781.65	104122	74698.2	96504.6	67080.63	85792.8	56368.81
51	32	30240	83787.3	53547.3	85093	54852.98	52633.3	22393.3	134080	103840	115823	85583.22	107617	77376.7	100100	69860.1	88294.1	58054.08
52	33	31056	85987.3	54931.3	87218.6	56162.56	53056.6	22000.63	139306.7	108250.7	106588	75532.2	111111	80055.1	103696	72639.6	90795.4	59739.35
53	34	31872	88187.3	56315.3	89344.1	57472.14	53480	21607.96	144533.3	112661.3	125059	93186.66	114606	82733.6	107291	75419	93296.6	61424.62
54	35	32688	90387.3	57699.3	91469.7	58781.72	53903.3	21215.29	149760	117072	129676	96988.33	118100	85412	110887	78198.5	95797.9	63109.89
55	36	33504	92587.3	59083.3	93595.3	60091.3	54326.6	20822.62	154986.7	121482.7	134294	100790	121595	88090.5	114482	80978	98299.2	64795.16
	Internal Rate of Return			29%		28%		27%		26%		20%		24%		29%		28%

Case 2: Public Sector Respondents (Normal public service employment)																			
		Secondary	Arts		Econ		Educ		Law		Medic		Engine		IT		Science	
Age	Yr	Income	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft
20	1	9960	-4904.5	-14864.5	-5350	-15310	-4800	-14760	-5434.47	-15394.5	-6170.6	-16130.6	-6098.6	-16058.6	-4797.7	-14757.7	-5555.7	-15515.7
21	2	10512	-4904.5	-15416.5	-5350	-15862	-4800	-15312	-5434.47	-15946.5	-6170.6	-16682.6	-6098.6	-16610.6	-4797.7	-15309.7	-5555.7	-16067.7
22	3	11064	-4904.5	-15968.5	-5350	-16414	-4800	-15864	-5434.47	-16498.5	-6170.6	-17234.6	-6098.6	-17162.6	-4797.7	-15861.7	-5555.7	-16619.7
23	4	11616	14748	3132	14868	3252	14796	3180	-5434.47	-17050.5	-6170.6	-17786.6	-6098.6	-17714.6	16560	4944	16560	4944
24	5	12168	15564	3396	15696	3528	15612	3444	17340	5172	-6170.6	-18338.6	17340	5172	17388	5220	17388	5220
25	6	12720	16380	3660	16524	3804	16428	3708	18168	5448	17424	4704	18168	5448	18216	5496	18216	5496
26	7	13272	17196	3924	17352	4080	17244	3972	18996	5724	18252	4980	18996	5724	19044	5772	19044	5772
27	8	13824	18012	4188	18180	4356	18060	4236	19824	6000	19080	5256	19824	6000	19872	6048	19872	6048
28	9	14376	18828	4452	19008	4632	18876	4500	20652	6276	19908	5532	20652	6276	20700	6324	20700	6324
29	10	14928	19644	4716	19836	4908	19692	4764	21480	6552	20736	5808	21480	6552	21528	6600	21528	6600
30	11	15480	20460	4980	20664	5184	20508	5028	22308	6828	21564	6084	22308	6828	22356	6876	22356	6876
31	12	16032	21276	5244	21492	5460	21324	5292	23136	7104	22392	6360	23136	7104	23184	7152	23184	7152
32	13	16584	22092	5508	22320	5736	22140	5556	23964	7380	23220	6636	23964	7380	24012	7428	24012	7428
33	14	17136	22908	5772	23148	6012	22956	5820	24792	7656	24048	6912	24792	7656	24840	7704	24840	7704
34	15	17688	23724	6036	23976	6288	23772	6084	25620	7932	24876	7188	25620	7932	25668	7980	25668	7980
35	16	18240	24540	6300	24804	6564	24588	6348	26448	8208	25704	7464	26448	8208	26496	8256	26496	8256
36	17	18792	25356	6564	25632	6840	25404	6612	27276	8484	26532	7740	27276	8484	27324	8532	27324	8532
37	18	19344	26172	6828	26460	7116	26220	6876	28644	9300	27360	8016	28644	9300	28692	9348	28692	9348
38	19	19896	26988	7092	27288	7392	27036	7140	30012	10116	28752	8856	30012	10116	30060	10164	30060	10164
39	20	20448	28332	7884	28644	8196	28380	7932	31380	10932	30144	9696	31380	10932	31428	10980	31428	10980
40	21	21264	29676	8412	30000	8736	29724	8460	32748	11484	31536	10272	32748	11484	32796	11532	32796	11532
41	22	22080	31020	8940	31356	9276	31068	8988	34116	12036	32928	10848	34116	12036	34164	12084	34164	12084
42	23	22896	32364	9468	32712	9816	32412	9516	35484	12588	34320	11424	35484	12588	35532	12636	35532	12636
43	24	23712	33708	9996	34068	10356	33756	10044	36852	13140	35712	12000	36852	13140	36900	13188	36900	13188
44	25	24528	35052	10524	35424	10896	35100	10572	38220	13692	37104	12576	38220	13692	38268	13740	38268	13740

45	26	25344	36396	11052	36780	11436	36444	11100	39588	14244	38496	13152	39588	14244	39636	14292	39636	14292
46	27	26160	37740	11580	38136	11976	37788	11628	40956	14796	39888	13728	40956	14796	41004	14844	41004	14844
47	28	26976	39084	12108	39492	12516	39132	12156	42324	15348	41280	14304	42324	15348	42372	15396	42372	15396
48	29	27792	40428	12636	40848	13056	40476	12684	43692	15900	42672	14880	43692	15900	43740	15948	43740	15948
49	30	28608	41772	13164	42204	13596	41820	13212	45060	16452	44064	15456	45060	16452	45108	16500	45108	16500
50	31	29424	43116	13692	43560	14136	43164	13740	46428	17004	45456	16032	46428	17004	46476	17052	46476	17052
51	32	30240	44460	14220	44916	14676	44508	14268	47796	17556	46848	16608	47796	17556	47844	17604	47844	17604
52	33	31056	45804	14748	46272	15216	45852	14796	49164	18108	48240	17184	49164	18108	49212	18156	49212	18156
53	34	31872	47148	15276	47628	15756	47196	15324	50532	18660	49632	17760	50532	18660	50580	18708	50580	18708
54	35	32688	48492	15804	48984	16296	48540	15852	51900	19212	51024	18336	51900	19212	51948	19260	51948	19260
55	36	33504	49836	16332	50340	16836	49884	16380	53268	19764	52416	18912	53268	19764	53316	19812	53316	19812
	Internal Rate of Return			11%		11%		11%		10%		7%		10%		14%		13%

Case 3: Public Sector Respondents (estimated private sector wages)																			
		Secondary	Arts		Econ		Educ		Law		Medic		Engine		IT		Science	
Age	Yr	Income	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft
20	1	9960	-4904.5	-14864.5	-5350	-15310	-4800	-14760	-5434.47	-15394.5	-6170.6	-16130.6	-6098.6	-16058.6	-4797.7	-14757.7	-5555.7	-15515.7
21	2	10512	-4904.5	-15416.5	-5350	-15862	-4800	-15312	-5434.47	-15946.5	-6170.6	-16682.6	-6098.6	-16610.6	-4797.7	-15309.7	-5555.7	-16067.7
22	3	11064	-4904.5	-15968.5	-5350	-16414	-4800	-15864	-5434.47	-16498.5	-6170.6	-17234.6	-6098.6	-17162.6	-4797.7	-15861.7	-5555.7	-16619.7
23	4	11616	16960.2	5344.2	17098.2	5482.2	17015.4	5399.4	-5434.47	-17050.5	-6170.6	-17786.6	-6098.6	-17714.6	19044	7428	19044	7428
24	5	12168	17898.6	5730.6	18050.4	5882.4	17953.8	5785.8	19941	7773	-6170.6	-18338.6	19941	7773	19996.2	7828.2	19996.2	7828.2
25	6	12720	18837	6117	19002.6	6282.6	18892.2	6172.2	20893.2	8173.2	20037.6	7317.6	20893.2	8173.2	20948.4	8228.4	20948.4	8228.4
26	7	13272	19775.4	6503.4	19954.8	6682.8	19830.6	6558.6	21845.4	8573.4	20989.8	7717.8	21845.4	8573.4	21900.6	8628.6	21900.6	8628.6
27	8	13824	20713.8	6889.8	20907	7083	20769	6945	22797.6	8973.6	21942	8118	22797.6	8973.6	22852.8	9028.8	22852.8	9028.8
28	9	14376	21652.2	7276.2	21859.2	7483.2	21707.4	7331.4	23749.8	9373.8	22894.2	8518.2	23749.8	9373.8	23805	9429	23805	9429
29	10	14928	22590.6	7662.6	22811.4	7883.4	22645.8	7717.8	24702	9774	23846.4	8918.4	24702	9774	24757.2	9829.2	24757.2	9829.2
30	11	15480	23529	8049	23763.6	8283.6	23584.2	8104.2	25654.2	10174.2	24798.6	9318.6	25654.2	10174.2	25709.4	10229.4	25709.4	10229.4
31	12	16032	24467.4	8435.4	24715.8	8683.8	24522.6	8490.6	26606.4	10574.4	25750.8	9718.8	26606.4	10574.4	26661.6	10629.6	26661.6	10629.6
32	13	16584	25405.8	8821.8	25668	9084	25461	8877	27558.6	10974.6	26703	10119	27558.6	10974.6	27613.8	11029.8	27613.8	11029.8
33	14	17136	26344.2	9208.2	26620.2	9484.2	26399.4	9263.4	28510.8	11374.8	27655.2	10519.2	28510.8	11374.8	28566	11430	28566	11430
34	15	17688	27282.6	9594.6	27572.4	9884.4	27337.8	9649.8	29463	11775	28607.4	10919.4	29463	11775	29518.2	11830.2	29518.2	11830.2
35	16	18240	28221	9981	28524.6	10284.6	28276.2	10036.2	30415.2	12175.2	29559.6	11319.6	30415.2	12175.2	30470.4	12230.4	30470.4	12230.4
36	17	18792	29159.4	10367.4	29476.8	10684.8	29214.6	10422.6	31367.4	12575.4	30511.8	11719.8	31367.4	12575.4	31422.6	12630.6	31422.6	12630.6
37	18	19344	30097.8	10753.8	30429	11085	30153	10809	32940.6	13596.6	31464	12120	32940.6	13596.6	32995.8	13651.8	31995.8	12651.8
38	19	19896	31036.2	11140.2	31381.2	11485.2	31091.4	11195.4	34513.8	14617.8	33064.8	13168.8	34513.8	14617.8	34569	14673	34569	14673
39	20	20448	32581.8	12133.8	32940.6	12492.6	32637	12189	36087	15639	34665.6	14217.6	36087	15639	36142.2	15694.2	36142.2	15694.2
40	21	21264	34127.4	12863.4	34500	13236	34182.6	12918.6	37660.2	16396.2	36266.4	15002.4	37660.2	16396.2	37715.4	16451.4	37715.4	16451.4
41	22	22080	35673	13593	36059.4	13979.4	35728.2	13648.2	39233.4	17153.4	37867.2	15787.2	39233.4	17153.4	39288.6	17208.6	39288.6	17208.6
42	23	22896	37218.6	14322.6	37618.8	14722.8	37273.8	14377.8	40806.6	17910.6	39468	16572	40806.6	17910.6	40861.8	17965.8	40861.8	17965.8
43	24	23712	38764.2	15052.2	39178.2	15466.2	38819.4	15107.4	42379.8	18667.8	41068.8	17356.8	42379.8	18667.8	42435	18723	42435	18723
44	25	24528	40309.8	15781.8	40737.6	16209.6	40365	15837	43953	19425	42669.6	18141.6	43953	19425	44008.2	19480.2	44008.2	19480.2

45	26	25344	41855.4	16511.4	42297	16953	41910.6	16566.6	45526.2	20182.2	44270.4	18926.4	45526.2	20182.2	45581.4	20237.4	45581.4	20237.4
46	27	26160	43401	17241	43856.4	17696.4	43456.2	17296.2	47099.4	20939.4	45871.2	19711.2	47099.4	20939.4	47154.6	20994.6	47154.6	20994.6
47	28	26976	44946.6	17970.6	45415.8	18439.8	45001.8	18025.8	48672.6	21696.6	47472	20496	48672.6	21696.6	48727.8	21751.8	48727.8	21751.8
48	29	27792	46492.2	18700.2	46975.2	19183.2	46547.4	18755.4	50245.8	22453.8	49072.8	21280.8	50245.8	22453.8	50301	22509	50301	22509
49	30	28608	48037.8	19429.8	48534.6	19926.6	48093	19485	51819	23211	50673.6	22065.6	51819	23211	51874.2	23266.2	51874.2	23266.2
50	31	29424	49583.4	20159.4	50094	20670	49638.6	20214.6	53392.2	23968.2	52274.4	22850.4	53392.2	23968.2	53447.4	24023.4	53447.4	24023.4
51	32	30240	51129	20889	51653.4	21413.4	51184.2	20944.2	54965.4	24725.4	53875.2	23635.2	54965.4	24725.4	55020.6	24780.6	55020.6	24780.6
52	33	31056	52674.6	21618.6	53212.8	22156.8	52729.8	21673.8	56538.6	25482.6	55476	24420	56538.6	25482.6	56593.8	25537.8	56593.8	25537.8
53	34	31872	54220.2	22348.2	54772.2	22900.2	54275.4	22403.4	58111.8	26239.8	57076.8	25204.8	58111.8	26239.8	58167	26295	58167	26295
54	35	32688	55765.8	23077.8	56331.6	23643.6	55821	23133	59685	26997	58677.6	25989.6	59685	26997	59740.2	27052.2	59740.2	27052.2
55	36	33504	57311.4	23807.4	57891	24387	57366.6	23862.6	61258.2	27754.2	60278.4	26774.4	61258.2	27754.2	61313.4	27809.4	61313.4	27809.4
	Internal Rate of Return			15%		15%		15%		14%		10%		13%		18%		17%

Case 1: Private Sector Respondents (Respondents expectation on employment)																			
		Secondary	Arts		Econ		Educ		Law		Medic		Engine		IT		Science	
Age	Yr	Income	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft
20	1	9960	-13138	-23097.5	-14424	-24383.6	NA	#VALUE!	-10400	-20360	-22000	-31960	-16174.39	-26134.4	-14241.31	-24201.3	NA	#VALUE!
21	2	10512	-13138	-23649.5	-14424	-24935.6	NA	#VALUE!	-10400	-20912	-22000	-32512	-16174.39	-26686.4	-14241.31	-24753.3	NA	#VALUE!
22	3	11064	-13138	-24201.5	-14424	-25487.6	NA	#VALUE!	-10400	-21464	-22000	-33064	-16174.39	-27238.4	-14241.31	-25305.3	NA	#VALUE!
23	4	11616	23460	11844	26254.3	14638.32	NA	#VALUE!	-10400	-22016	-22000	-33616	-16174.39	-27790.4	25828.56	14212.56	NA	#VALUE!
24	5	12168	25320	13152	28838.6	16670.6	NA	#VALUE!	21600	9432	-22000	-34168	27272.76	15104.76	28347.6	16179.6	NA	#VALUE!
25	6	12720	27180	14460	31422.9	18702.9	NA	#VALUE!	23600	10880	50000.04	37280.04	29800.02	17080.02	30866.64	18146.64	NA	#VALUE!
26	7	13272	29040	15768	34007.1	20735.1	NA	#VALUE!	25600	12328	55666.7	42394.7	32327.28	19055.28	33385.68	20113.68	NA	#VALUE!
27	8	13824	30900	17076	36591.4	22767.4	NA	#VALUE!	27600	13776	61333.4	47509.4	34854.54	21030.54	35904.72	22080.72	NA	#VALUE!
28	9	14376	32760	18384	39175.7	24799.7	NA	#VALUE!	29600	15224	67000	52624	37381.8	23005.8	38423.76	24047.76	NA	#VALUE!
29	10	14928	34620	19692	41760	26832	NA	#VALUE!	31600	16672	72666.7	57738.7	39909.06	24981.06	40942.8	26014.8	NA	#VALUE!
30	11	15480	36570	21090	44411.4	28931.4	NA	#VALUE!	33600	18120	78333.3	62853.3	42436.32	26956.32	43611.86	28131.86	NA	#VALUE!
31	12	16032	38520	22488	47062.8	31030.8	NA	#VALUE!	35600	19568	84000	67968	45290.88	29258.88	46280.92	30248.92	NA	#VALUE!
32	13	16584	40470	23886	49714.2	33130.2	NA	#VALUE!	37600	21016	89666.7	73082.7	48145.44	31561.44	48949.98	32365.98	NA	#VALUE!
33	14	17136	42420	25284	52365.6	35229.6	NA	#VALUE!	39600	22464	95333.3	78197.3	51000	33864	51619.04	34483.04	NA	#VALUE!
34	15	17688	44370	26682	55017	37329	NA	#VALUE!	41600	23912	101000	83312	53854.56	36166.56	54288.1	36600.1	NA	#VALUE!
35	16	18240	46320	28080	57668.4	39428.4	NA	#VALUE!	43600	25360	106666.6	88426.6	56709.12	38469.12	56957.16	38717.16	NA	#VALUE!
36	17	18792	48400	29608	60112.7	41320.7	NA	#VALUE!	45600	26808	112333.3	93541.3	59563.68	40771.68	59376.2	40584.2	NA	#VALUE!
37	18	19344	50480	31136	62557	43213	NA	#VALUE!	47600	28256	118000	98656	62321.24	42977.24	61795.24	42451.24	NA	#VALUE!
38	19	19896	52560	32664	65001.3	45105.3	NA	#VALUE!	49600	29704	123333.3	103437.3	65078.8	45182.8	64214.28	44318.28	NA	#VALUE!
39	20	20448	54640	34192	67445.7	46997.7	NA	#VALUE!	51600	31152	128666.6	108218.6	67836.36	47388.36	66633.32	46185.32	NA	#VALUE!
40	21	21264	56720	35456	69890	48626	NA	#VALUE!	53600	32336	134000	112736	70593.92	49329.92	69052.36	47788.36	NA	#VALUE!
41	22	22080	58800	36720	72334.3	50254.3	NA	#VALUE!	55600	33520	139333.3	117253.3	73351.48	51271.48	71471.4	49391.4	NA	#VALUE!
42	23	22896	60800	37904	74924.3	52028.3	NA	#VALUE!	57600	34704	144666.6	121770.6	76109.04	53213.04	74502.36	51606.36	NA	#VALUE!
43	24	23712	62800	39088	77514.3	53802.3	NA	#VALUE!	60200	36488	149999.9	126287.9	79430.26	55718.26	77533.32	53821.32	NA	#VALUE!
44	25	24528	64800	40272	80104.3	55576.3	NA	#VALUE!	62800	38272	156333.3	131805.3	82751.48	58223.48	80564.28	56036.28	NA	#VALUE!

45	26	25344	66800	41456	82694.3	57350.3	NA	#VALUE!	65400	40056	162666.6	137322.6	86072.7	60728.7	83595.24	58251.24	NA	#VALUE!
46	27	26160	68800	42640	85284.3	59124.3	NA	#VALUE!	68000	41840	168999.9	142839.9	89393.92	63233.92	86626.2	60466.2	NA	#VALUE!
47	28	26976	70800	43824	87874.3	60898.3	NA	#VALUE!	70600	43624	175333.3	148357.3	92715.14	65739.14	89657.16	62681.16	NA	#VALUE!
48	29	27792	72800	45008	90464.3	62672.3	NA	#VALUE!	73200	45408	181666.6	153874.6	96036.36	68244.36	92688.12	64896.12	NA	#VALUE!
49	30	28608	74800	46192	93054.3	64446.3	NA	#VALUE!	75800	47192	187999.9	159391.9	99357.58	70749.58	95719.08	67111.08	NA	#VALUE!
50	31	29424	76800	47376	95644.3	66220.3	NA	#VALUE!	78400	48976	194333.3	164909.3	102678.8	73254.8	98750.04	69326.04	NA	#VALUE!
51	32	30240	78800	48560	98234.3	67994.3	NA	#VALUE!	81000	50760	200666.6	170426.6	106000	75760	101781	71541	NA	#VALUE!
52	33	31056	80800	49744	100824	69768.3	NA	#VALUE!	83600	52544	206999.9	175943.9	109321.2	78265.2	104812	73756	NA	#VALUE!
53	34	31872	82800	50928	103414	71542.3	NA	#VALUE!	86200	54328	213333.2	181461.2	112642.5	80770.5	107842.9	75970.9	NA	#VALUE!
54	35	32688	84800	52112	106004	73316.3	NA	#VALUE!	88800	56112	219666.6	186978.6	115963.7	83275.7	110873.9	78185.9	NA	#VALUE!
55	36	33504	86800	53296	108594	75090.3	NA	#VALUE!	91400	57896	225999.9	192495.9	119284.9	85780.9	113904.8	80400.8	NA	#VALUE!
	Internal Rate of Return			21%		24%		#VALUE!		16%		23%		18%		24%		#VALUE!

Case 2: Private Sector Respondents (Normal public service employment)																			
		Secondary	Arts		Econ		Educ		Law		Medic		Engine		IT		Science	
Age	Yr	Income	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft
20	1	9960	-13138	-23097.5	-14424	-24383.6	NA	#VALUE!	-10400	-20360	-22000	-31960	-16174	-26134.4	-14241	-24201.3	NA	#VALUE!
21	2	10512	-13138	-23649.5	-14424	-24935.6	NA	#VALUE!	-10400	-20912	-22000	-32512	-16174	-26686.4	-14241	-24753.3	NA	#VALUE!
22	3	11064	-13138	-24201.5	-14424	-25487.6	NA	#VALUE!	-10400	-21464	-22000	-33064	-16174	-27238.4	-14241	-25305.3	NA	#VALUE!
23	4	11616	14748	3132	14868	3252	NA	#VALUE!	-10400	-22016	-22000	-33616	-16174	-27790.4	16560	4944	NA	#VALUE!
24	5	12168	15564	3396	15696	3528	NA	#VALUE!	17340	5172	-22000	-34168	17340	5172	17388	5220	NA	#VALUE!
25	6	12720	16380	3660	16524	3804	NA	#VALUE!	18168	5448	17424	4704	18168	5448	18216	5496	NA	#VALUE!
26	7	13272	17196	3924	17352	4080	NA	#VALUE!	18996	5724	18252	4980	18996	5724	19044	5772	NA	#VALUE!
27	8	13824	18012	4188	18180	4356	NA	#VALUE!	19824	6000	19080	5256	19824	6000	19872	6048	NA	#VALUE!
28	9	14376	18828	4452	19008	4632	NA	#VALUE!	20652	6276	19908	5532	20652	6276	20700	6324	NA	#VALUE!
29	10	14928	19644	4716	19836	4908	NA	#VALUE!	21480	6552	20736	5808	21480	6552	21528	6600	NA	#VALUE!
30	11	15480	20460	4980	20664	5184	NA	#VALUE!	22308	6828	21564	6084	22308	6828	22356	6876	NA	#VALUE!
31	12	16032	21276	5244	21492	5460	NA	#VALUE!	23136	7104	22392	6360	23136	7104	23184	7152	NA	#VALUE!
32	13	16584	22092	5508	22320	5736	NA	#VALUE!	23964	7380	23220	6636	23964	7380	24012	7428	NA	#VALUE!
33	14	17136	22908	5772	23148	6012	NA	#VALUE!	24792	7656	24048	6912	24792	7656	24840	7704	NA	#VALUE!
34	15	17688	23724	6036	23976	6288	NA	#VALUE!	25620	7932	24876	7188	25620	7932	25668	7980	NA	#VALUE!
35	16	18240	24540	6300	24804	6564	NA	#VALUE!	26448	8208	25704	7464	26448	8208	26496	8256	NA	#VALUE!
36	17	18792	25356	6564	25632	6840	NA	#VALUE!	27276	8484	26532	7740	27276	8484	27324	8532	NA	#VALUE!
37	18	19344	26172	6828	26460	7116	NA	#VALUE!	28644	9300	27360	8016	28644	9300	28692	9348	NA	#VALUE!
38	19	19896	26988	7092	27288	7392	NA	#VALUE!	30012	10116	28752	8856	30012	10116	30060	10164	NA	#VALUE!
39	20	20448	28332	7884	28644	8196	NA	#VALUE!	31380	10932	30144	9696	31380	10932	31428	10980	NA	#VALUE!
40	21	21264	29676	8412	30000	8736	NA	#VALUE!	32748	11484	31536	10272	32748	11484	32796	11532	NA	#VALUE!
41	22	22080	31020	8940	31356	9276	NA	#VALUE!	34116	12036	32928	10848	34116	12036	34164	12084	NA	#VALUE!
42	23	22896	32364	9468	32712	9816	NA	#VALUE!	35484	12588	34320	11424	35484	12588	35532	12636	NA	#VALUE!
43	24	23712	33708	9996	34068	10356	NA	#VALUE!	36852	13140	35712	12000	36852	13140	36900	13188	NA	#VALUE!
44	25	24528	35052	10524	35424	10896	NA	#VALUE!	38220	13692	37104	12576	38220	13692	38268	13740	NA	#VALUE!

45	26	25344	36396	11052	36780	11436	NA	#VALUE!	39588	14244	38496	13152	39588	14244	39636	14292	NA	#VALUE!
46	27	26160	37740	11580	38136	11976	NA	#VALUE!	40956	14796	39888	13728	40956	14796	41004	14844	NA	#VALUE!
47	28	26976	39084	12108	39492	12516	NA	#VALUE!	42324	15348	41280	14304	42324	15348	42372	15396	NA	#VALUE!
48	29	27792	40428	12636	40848	13056	NA	#VALUE!	43692	15900	42672	14880	43692	15900	43740	15948	NA	#VALUE!
49	30	28608	41772	13164	42204	13596	NA	#VALUE!	45060	16452	44064	15456	45060	16452	45108	16500	NA	#VALUE!
50	31	29424	43116	13692	43560	14136	NA	#VALUE!	46428	17004	45456	16032	46428	17004	46476	17052	NA	#VALUE!
51	32	30240	44460	14220	44916	14676	NA	#VALUE!	47796	17556	46848	16608	47796	17556	47844	17604	NA	#VALUE!
52	33	31056	45804	14748	46272	15216	NA	#VALUE!	49164	18108	48240	17184	49164	18108	49212	18156	NA	#VALUE!
53	34	31872	47148	15276	47628	15756	NA	#VALUE!	50532	18660	49632	17760	50532	18660	50580	18708	NA	#VALUE!
54	35	32688	48492	15804	48984	16296	NA	#VALUE!	51900	19212	51024	18336	51900	19212	51948	19260	NA	#VALUE!
55	36	33504	49836	16332	50340	16836	NA	#VALUE!	53268	19764	52416	18912	53268	19764	53316	19812	NA	#VALUE!
	Internal Rate of Return			8%		7%		#VALUE!		8%		4%		7%		9%		#VALUE!

Case 3: Private Sector Respondents (estimated private sector wages)																			
		Secondary	Arts		Econ		Educ		Law		Medic		Engine		IT		Science	
Age	Yr	Income	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft	Income	AnnBenft
20	1	9960	-13138	-23097.5	-14424	-24383.6	NA	#VALUE!	-10400	-20360	-22000	-31960	-16174	-26134.4	-14241	-24201.3	NA	#VALUE!
21	2	10512	-13138	-23649.5	-14424	-24935.6	NA	#VALUE!	-10400	-20912	-22000	-32512	-16174	-26686.4	-14241	-24753.3	NA	#VALUE!
22	3	11064	-13138	-24201.5	-14424	-25487.6	NA	#VALUE!	-10400	-21464	-22000	-33064	-16174	-27238.4	-14241	-25305.3	NA	#VALUE!
23	4	11616	16960.2	5344.2	17098.2	5482.2	NA	#VALUE!	-10400	-22016	-22000	-33616	-16174	-27790.4	19044	7428	NA	#VALUE!
24	5	12168	17898.6	5730.6	18050.4	5882.4	NA	#VALUE!	19941	7773	-22000	-34168	19941	7773	19996.2	7828.2	NA	#VALUE!
25	6	12720	18837	6117	19002.6	6282.6	NA	#VALUE!	20893.2	8173.2	20037.6	7317.6	20893.2	8173.2	20948.4	8228.4	NA	#VALUE!
26	7	13272	19775.4	6503.4	19954.8	6682.8	NA	#VALUE!	21845.4	8573.4	20989.8	7717.8	21845.4	8573.4	21900.6	8628.6	NA	#VALUE!
27	8	13824	20713.8	6889.8	20907	7083	NA	#VALUE!	22797.6	8973.6	21942	8118	22797.6	8973.6	22852.8	9028.8	NA	#VALUE!
28	9	14376	21652.2	7276.2	21859.2	7483.2	NA	#VALUE!	23749.8	9373.8	22894.2	8518.2	23749.8	9373.8	23805	9429	NA	#VALUE!
29	10	14928	22590.6	7662.6	22811.4	7883.4	NA	#VALUE!	24702	9774	23846.4	8918.4	24702	9774	24757.2	9829.2	NA	#VALUE!
30	11	15480	23529	8049	23763.6	8283.6	NA	#VALUE!	25654.2	10174.2	24798.6	9318.6	25654.2	10174.2	25709.4	10229.4	NA	#VALUE!
31	12	16032	24467.4	8435.4	24715.8	8683.8	NA	#VALUE!	26606.4	10574.4	25750.8	9718.8	26606.4	10574.4	26661.6	10629.6	NA	#VALUE!
32	13	16584	25405.8	8821.8	25668	9084	NA	#VALUE!	27558.6	10974.6	26703	10119	27558.6	10974.6	27613.8	11029.8	NA	#VALUE!
33	14	17136	26344.2	9208.2	26620.2	9484.2	NA	#VALUE!	28510.8	11374.8	27655.2	10519.2	28510.8	11374.8	28566	11430	NA	#VALUE!
34	15	17688	27282.6	9594.6	27572.4	9884.4	NA	#VALUE!	29463	11775	28607.4	10919.4	29463	11775	29518.2	11830.2	NA	#VALUE!
35	16	18240	28221	9981	28524.6	10284.6	NA	#VALUE!	30415.2	12175.2	29559.6	11319.6	30415.2	12175.2	30470.4	12230.4	NA	#VALUE!
36	17	18792	29159.4	10367.4	29476.8	10684.8	NA	#VALUE!	31367.4	12575.4	30511.8	11719.8	31367.4	12575.4	31422.6	12630.6	NA	#VALUE!
37	18	19344	30097.8	10753.8	30429	11085	NA	#VALUE!	32940.6	13596.6	31464	12120	32940.6	13596.6	32995.8	13651.8	NA	#VALUE!
38	19	19896	31036.2	11140.2	31381.2	11485.2	NA	#VALUE!	34513.8	14617.8	33064.8	13168.8	34513.8	14617.8	34569	14673	NA	#VALUE!
39	20	20448	32581.8	12133.8	32940.6	12492.6	NA	#VALUE!	36087	15639	34665.6	14217.6	36087	15639	36142.2	15694.2	NA	#VALUE!
40	21	21264	34127.4	12863.4	34500	13236	NA	#VALUE!	37660.2	16396.2	36266.4	15002.4	37660.2	16396.2	37715.4	16451.4	NA	#VALUE!
41	22	22080	35673	13593	36059.4	13979.4	NA	#VALUE!	39233.4	17153.4	37867.2	15787.2	39233.4	17153.4	39288.6	17208.6	NA	#VALUE!
42	23	22896	37218.6	14322.6	37618.8	14722.8	NA	#VALUE!	40806.6	17910.6	39468	16572	40806.6	17910.6	40861.8	17965.8	NA	#VALUE!
43	24	23712	38764.2	15052.2	39178.2	15466.2	NA	#VALUE!	42379.8	18667.8	41068.8	17356.8	42379.8	18667.8	42435	18723	NA	#VALUE!
44	25	24528	40309.8	15781.8	40737.6	16209.6	NA	#VALUE!	43953	19425	42669.6	18141.6	43953	19425	44008.2	19480.2	NA	#VALUE!

45	26	25344	41855.4	16511.4	42297	16953	NA	#VALUE!	45526.2	20182.2	44270.4	18926.4	45526.2	20182.2	45581.4	20237.4	NA	#VALUE!
46	27	26160	43401	17241	43856.4	17696.4	NA	#VALUE!	47099.4	20939.4	45871.2	19711.2	47099.4	20939.4	47154.6	20994.6	NA	#VALUE!
47	28	26976	44946.6	17970.6	45415.8	18439.8	NA	#VALUE!	48672.6	21696.6	47472	20496	48672.6	21696.6	48727.8	21751.8	NA	#VALUE!
48	29	27792	46492.2	18700.2	46975.2	19183.2	NA	#VALUE!	50245.8	22453.8	49072.8	21280.8	50245.8	22453.8	50301	22509	NA	#VALUE!
49	30	28608	48037.8	19429.8	48534.6	19926.6	NA	#VALUE!	51819	23211	50673.6	22065.6	51819	23211	51874.2	23266.2	NA	#VALUE!
50	31	29424	49583.4	20159.4	50094	20670	NA	#VALUE!	53392.2	23968.2	52274.4	22850.4	53392.2	23968.2	53447.4	24023.4	NA	#VALUE!
51	32	30240	51129	20889	51653.4	21413.4	NA	#VALUE!	54965.4	24725.4	53875.2	23635.2	54965.4	24725.4	55020.6	24780.6	NA	#VALUE!
52	33	31056	52674.6	21618.6	53212.8	22156.8	NA	#VALUE!	56538.6	25482.6	55476	24420	56538.6	25482.6	56593.8	25537.8	NA	#VALUE!
53	34	31872	54220.2	22348.2	54772.2	22900.2	NA	#VALUE!	58111.8	26239.8	57076.8	25204.8	58111.8	26239.8	58167	26295	NA	#VALUE!
54	35	32688	55765.8	23077.8	56331.6	23643.6	NA	#VALUE!	59685	26997	58677.6	25989.6	59685	26997	59740.2	27052.2	NA	#VALUE!
55	36	33504	57311.4	23807.4	57891	24387	NA	#VALUE!	61258.2	27754.2	60278.4	26774.4	61258.2	27754.2	61313.4	27809.4	NA	#VALUE!
	Internal Rate of Return			11%		11%		#VALUE!		11%		6%		9%		13%		#VALUE!