

The Cost and Benefits of Higher Education

by

Lau Hieng Soon

Maktab Perguruan Rajang
96509 Bintangor, Sarawak

ABSTRACT

The democratisation of higher education for a civil society as well as other political and economic demands has recently led to the dramatic expansion of higher education sector throughout the world. Consequently, this causes financial crisis in the higher education sector. Inevitably, governments world-wide are confronted with decisions of how limited resources would be allocated for higher education. This essay therefore examines the costs and benefits of higher education, which are both being paid while also accrued by individual as well as society co-currently. The author argues that higher education accrues much more benefits to individuals than to society. Hence it is equitable and efficient that a major portion of the costs should be borne by those directly benefited. However, policy makers should consider the mechanisms involved in financing higher education so that every qualified candidate should not be denied in accessing to higher education because of financial constraint. The arguments on the financing for higher education may also provide us some valuable thoughts regarding the financing of teachers training in Malaysia. This is particularly the case when teachers training colleges would be upgraded into college universities for providing more effective training in pedagogy and researches in meeting the challenges of the 21st century.

1.0 Introduction

Higher education has been regarded as a beneficial investment in human capital. It is undeniable that higher education accrues monetary and non-monetary benefits to individuals though individuals have to pay partially for it. This is inline with the argument of the Human Capital theory that higher education enhances productivity and hence raises the earnings of individuals and contributes to economic growth (Cohn and Geske, 1990).

In the debate on equity, one group of economists suggests that “he who benefits should pay for it” (Barden, et al 1991; Ziderman and Albrecht, 1995) since he/she would accrue private returns from pursuing higher education. The counter-group of economists argues that higher education is a public good and therefore should be subsidised (Blaug, 1990). However, education can also be regarded as a partly- public good so that private and

public interests should share the cost of it. We should therefore examine the costs and benefits of higher education both to individuals and society, prior to suggestion the extent in which higher education could be subsidised. The arguments can be applicable to the teachers training when training colleges would be upgraded into college universities for more effective training provided to the K PLI trainees.

1.1 Costs

There is a wide range of definitions of the costs of higher education. Johnstone 1986; 1993) suggests that the total costs of higher education comprise both direct costs (as shown in i and ii) and indirect costs (as indicated in iii).

- i) costs of students' living including room, board and other living expenses; stationery costs, which include books, supplies and educational expenses; others such as travelling and entertainment. Room, board and living expenses are assumed to equal the outlay he/she would have made had he/she chosen to enter the labour force instead of study (Verry, 1977) and hence may not represent the private opportunity cost of education. However, the difference between such costs would represent the private opportunity costs if individuals decide to study away from home. Stationery costs and other costs are also considered as the private opportunity costs of education.
- ii) costs of instruction, including tuition and fees, faculty and staff salaries, the operation and maintenance of plant, supplies and equipment, and the amortisation and depreciation of plant. Tuition and fees are transfer payments if students are given maintenance grants, and in that case do not represent opportunity costs. Other components of the cost of instruction are the social opportunity costs of education.
- iii) earnings forgone, which are the earnings or wages which individuals would obtain had they not opted for university education. The earnings (net of tax) represent the opportunity cost to individuals. They represent part of the social opportunity costs, if measured pre-tax.

In making decisions whether to invest in higher education or not, individuals need to consider the costs incurred, and more importantly who is paying or partially paying for them, and also the benefits accrued later on. Students have to consider how much they pay for pursuing higher education. They may consider loans they could borrow, term-time earnings, and past savings as well as future benefits they could gain after graduation, before they decide to make an investment choice. Johnstone (1986) has listed the parents, student themselves, taxpayers, institutions/philanthropists and business as possible sources of revenues for paying the costs of higher education.

Table 1: Costs of Higher Education and Sources of Revenue

Sources of Revenue	Costs of Higher Education	
	<i>Costs of educational living</i>	<i>Costs of instruction</i>
	Room Board Books, travel, entertainment, and all other	Faculty and staff salaries Operation and maintenance of plant Supplies and equipment Amortization and depreciation of plant
Parents	Any parental contribution toward children's education living expenses.	Tuition and fees as paid by parents, net of any portion covered by grants, scholarships, or loan subsidies.
Students	Any student contribution from savings or own assets, plus term-time work and summer savings.....plus loans net of governmental subsidies	Tuition and fees as paid by students, net of any portion covered by grants, scholarships, or loan subsidies.
Taxpayers	Any student grants, need-based or otherwise, for cost of living...plus any direct governmental subsidies specially for students' room and board.....plus indirect subsidies via tax preferences to parents of students or loan repayment subsidies	Educational and general portions of public institution budgets, net of any revenues derived directly from students or parents via tuitions and fees....plus any portion of that tuition and fee revenue that is covered by governmental grants or loan subsidies...plus governmental grants to private institutions.
Institutions/Philanthropists	Scholarships or grants to defray living costs supported by endowment earnings or current gifts	Current gifts or endowment earnings for the support of basic instructional budgets plus any portion of philanthropically originated scholarships covering tuitions or fees.
Business* (Consumers, employees, or stockholders)	Scholarships or grants to defray living costs through gifts to institutions	Unrestricted gifts to institutions plus any portion of tuition or fees paid on behalf of employees or other grant recipients

* Business is presented here as a potential fifth source of revenue. The true incidence, or impact, of business contributions, however, is passed on to consumers, employees, stockholders, or even to the general taxpayer. For this reason, as explained in the text, and because its contributions are generally minor, "business" will not be covered in this text as an independent fifth "bearer of costs".

1.1.1 The Parents

In most countries, parents are expected to pay at least the costs of living for their children while the latter are attending higher education at their teenage. Therefore, it is argued that the basic costs of living such as room, board, clothing and entertainment can be excluded from the costs of higher education because they would be expended whether or not students are attending higher education or not.

However, the above view may not be true if students have to leave their families while attending higher education in institutions usually located in the metropolitan areas, far away from their hometowns. In Malaysia, students from small towns and rural areas need to travel by land, sea and even by air from their hometowns to destinations where universities are located. Students from East Malaysia have to travel by air to attend universities in the West Malaysia and vice versa. The costs of transportation are high. Moreover, students need to pay the accommodation costs either provided by the universities or privately.

Besides the living costs, parents may also help to pay part of the costs of instruction. The portion of parental contributions depends on the types of higher institutions their children are attending, and whether the latter are receiving other forms of financial support. In Malaysia, parents share a bigger portion of paying the costs for their children for attending the public universities if the former do not receive any form of financial support. If students are attending the private colleges without other financial support, parents have to pay even more. In the US, parents are expected to pay a portion of the instructional costs through the payment of tuition and fees. But, in Sweden, parents are not expected to pay for their children higher education.

Parental contributions (if parents have to contribute) towards their children higher education however, is limited by their ability to pay and willingness to pay. The ability to pay is usually measured by current income, savings and wealth or assets (Johnstone, 1986). The willingness to pay is determined by whether parents are willing to forego some other expenditure such as leisure activities for the sake of paying their children higher education. In Malaysia, parents highly value their children higher education by even willing to sell off their properties to send their children to study in the local or overseas universities. Having children with higher education would bring glory to their families. In cases, having higher education for a child coming from a poor family may have chain effect, that is to bring the family out from the poverty cycle.

1.1.2 Students Contribution

Students also need to share part of the costs of their own education while attending universities, especially if their parents cannot afford or unwilling to pay them. Students may pay a portion of their living costs, tuition fees as well as a portion of the instructional costs. In Malaysia, students are charged with tuition fees of ranging between \$M 1400 to \$M2500 annually depending on the types of courses understudy¹. In UK, students are charged with a thousand pounds per year since the academic year of 1998/99. Students' revenues may be from their own savings or assets, term-time incomes or repayable loans from future earnings. In some cases, spouses may also contribute to the costs of their partners' higher education. Sometimes, unmarried couples in France may also contribute for their partners' higher education. But, in some countries in Scandinavia, the public policy prohibits the working spouse to contribute to the costs of his/her student spouse.

¹ Samples of the tuition fees for different courses are shown in table 1 and table 2 in the appendix 2

1.1.3 Taxpayers /Government/Public

Taxpayers or the public in many countries world-wide are still playing an important role in subsidising the costs of higher education even though there is now a trend of shifting it more to private funding. In most European countries, for example, the state typically still pays for the institutional costs of instruction while students pay little or no tuition. Moreover, most European countries are public which, means that universities receive grants from the states to finance most of the costs of higher education. In Malaysia, all public national universities receive annual grants from government and hence heavily subsidised².

Some poor countries in Africa not only provide free higher education but also virtually free board and room as well (Altbach, 1998). Sometimes free meals are also provided. In this case, the public or the taxpayers bear the full costs of higher education.

In the US, the public still has to pay a large portion for the actual cost of instruction, as students in the public universities need to pay tuition fees amounting to about only 25 per cent of the actual cost of instruction. Moreover, taxpayers in the USA and in most European countries also subsidise the costs of living of students through some combinations of direct cash grants, subsidised loans and also indirect subsidies of room, board and other expenses.

There may have allowances for deduction of taxable incomes. In Malaysia, for example, parents are eligible to have deduction of their taxable incomes of \$M2400 for each child attending higher education in the local public university. Prior to 1997, the parents who have children studying overseas can also have a deduction of the taxable income of RM1600 per child . However, this privilege for parents who have children studying overseas has been abolished because of the currency crisis since 1997.

Nevertheless, in most countries, living costs of students are supported according to parental means or “need”, that is, are reduced as parents’ incomes increase and as the need for the taxpayer subsidy declines.

1.1.4 Institutions/Philanthropic

In many countries, institutions or philanthropic bodies are also contributing to the instructional costs of higher education through endowment income, current gift or donations to universities. This is particularly true in the case of the USA where institutional /philanthropic support is prevalent because of the autonomous private institutions whose survival also depends on the alumni support. The real cost of giving is greatly reduced if donations are exempted from taxes and hence encouraging business sector to donate. In the USA, the spirit of loyalty among alumni towards alma mater also

² Details about the annual grants given to the Public Universities in Malaysia are shown in table 3.

promotes this culture of donations. Sometimes, these endowments may pay partially the living costs of students through grants and scholarships.

In Malaysia, public universities also receive donations and endowments from philanthropic bodies as well as from the business sector. However, this still forms a small percentage of the total costs of higher education. However, the philanthropic rather want to set up their own trust funds or scholarship or loan programmes to help students based on merit and need grounds.

1.1.5 Industry/Business Sector

It is argued that since industry accrue benefits by employing graduates who are more productive because of skills acquired in the higher education, it is equitable that the industry should also share the costs of higher education.

1.2 The Future Trend of Public-Private Funding of Higher Education

We have discussed /explored the private-public payments on the costs of higher education. The proportions of payments between the taxpayers, students, parents, philanthropic bodies and the business sector depend largely on the types of institutions students are attending and the education policy. If students are attending the public universities, taxpayers tend to bear most of the costs. But, if students are attending the private institutions, student themselves/ their families have to bear most of the costs. It is understood that the proportions of contributions from different parties are not mutually exclusive. Thus, if one party contributes less, then the other parties have to pay more for the costs of higher education.

However, the balance between the public funding (taxpayers or states) and the private finance (students, parents, philanthropists and industry) for the public institutions are now changing. In the USA, the balance of funding higher education is being shifted and will be shifting more and more to the individuals.

“Even the public universities are increasingly funded by non-governmental sources, especially student tuition and fees, donations raised from alumni and others and direct payment from businesses for services provided by universities (Altbach, 1998:2)”

This suggests that the costs of attending higher education in the public institutions in the years to come will be shifted more to the individuals or the private finance. In fact, many of the public colleges and universities in the US cease to become public institutions but “publicly assisted” non-profit schools. Similar trends are also occurring in Europe and Latin America and Asia. In Europe, Britain takes the lead of the change by charging tuition fees of a thousand pounds in the academic year of 1998/1999. Other European

counter parts will follow this. In Australia, by 1994, the government's share in higher education funding had fallen to 62% from 91% in 1983. The main portion of increased private funding was tuition payments from students, which rose from less than 1% in 1987 to 20% in 1994. Funding from commercial research, consultancy and corporate service grew (Marginson, 1997). In the August 1996 budget, the Australian government announced that salary increases would no longer be funded while reducing the Commonwealth operation grants by 4.9 %. These bring a further reduction of 12-15 % of public funding (Marginson, 1997).

In addition, many countries world-wide are also in the transition to privatise higher education. This will further shift the burdens of payment from the public to private finance. Higher education will expand without additional public funding. This has been the case and continue will be in Russia, Central and Eastern Europe. In Latin America, private institutions are blooming.

In Malaysia, the corporatisation and then privatisation of higher education starts with the university of Malaya. Other public universities will follow this trend. Moreover, private universities have set up to accommodate the increasingly demands of higher education. Foreign universities have also established their branch campuses. The Monash University, for example in Australia is the first foreign university, which set up the branch campus in Malaysia in July, 1998.

Subsequently, we examine the benefits of higher education to argue who should pay for higher education.

2.0 Benefits

Education brings direct and indirect benefits to both individuals and to society (Psacharopoulos and Woodhall, 1991; Chapman 1996).

2.1 Private Benefits

One of the private benefits which higher education brings to individuals is monetary rewards. Using age-earning profiles, Psacharopoulos and Woodhall (1985) show that earnings are highly correlated with education. This means that highly educated workers earn more than workers with less education in both lifetime and average annual income terms (Merisotis, 1998). Many studies have also shown that there is a correlation between earnings and the educational level which an individual attains, though genetic and other factors may also contribute to both (Chapman, 1996). The study of Harkness and Machine (1999) about graduate earnings in the UK over the period 1974-95 indicated that although graduate earnings fell in the 1970s, increased markedly during the 1980s and 1990s (cited by Greenaway and Haynes, 2000).

The evidence tend to support the Human Capital Theory, which hypothesises that an individual would become more productive if the duration (quantity) and quality of education he/she obtains contributes to his/her human capital (Schultz, 1961). The work of Becker (1983), Taubman and Wales (1974) Solomon (1981), Rumberger(1987), and Murphy and Welch (1989) seems to validate the Human Capital Theory by employing different longitudinal databases. Psacharopolous and Woodhall, (1985) using social rates of return results, assume that earnings are a proxy for productivity.

However, the Human Capital theory has been criticised. For example, Thurow (1970) and Berg (1970) cited by Groot and Hartog (1995) both suggest that the higher earnings of the more educated over-state their contribution to productivity. Nevertheless, both studies suffer from certain methodological shortcomings (Mace, 1987). Critics also point out that other factors such as family background and intelligence may contribute to productivity other than higher education. My position is that higher education does bring direct financial benefits to an individual, though other factors such as on- the-job training, innate ability and personal characteristics may influence earning capacity. Through regression analysis, studies in the US and other developed countries show that the alpha coefficient (extra earnings attributed to education) is between 0.7 and 0.8.

In a more subtle way, Lazear (1977) argues that it is difficult to isolate the effect of education on job performance. This is true because in an imperfect market operation, earnings may be a poor measure of one's contribution to output. Solomon and Fagnano (1995) also argue that the observation of college graduates earning more than high school students should not lead to the conclusion that going to college yields higher income, as it is difficult to identify, measure and evaluate the benefits of education.

Mace (1987) suggests that we should measure education's effect on output directly in real terms rather than using wages as a proxy for productivity. By using 37 data sets, Lockheed et al (1980) concluded that farm productivity increases on the average by 7.4 per cent as a result of a farmer completing four years of elementary education rather than none (Mace, 1987).

Critics of the Human Capital Theory also argue that the acquisition of a degree merely acts as a screening device for the selection of workers, and is not valuable because of greater labour productivity correlated to higher education. Thus, the screening approach hypothesises that since persons selected for an educational (or training) programme possess the kinds of attributes sought by employers, higher earnings are paid, though no productivity effect is discernible (Geske and Cohn, 1990). This may not be true, since higher education may not be absolutely related to such attributes such as being hard-working and honest. Some highly educated persons may not have desirable ethical values. Psacharopoulos (1979) distinguished between the weak version and the strong version of screening hypothesis. The weak version refers to employers offering high starting wages to the more highly educated owing to inadequate information regarding the potential productivity of workers, whereas the stronger version refers to the continued payment of higher wages to the more educated, even though evaluation of job performance is then possible. To a certain extent, I agree with the weak version of the

screening hypothesis, as it takes time to evaluate the job performance of workers. In Malaysia, though graduates earn higher salaries than non-graduates, the annual salary increment is based on the job performance of employees. However, some universities may offer diplomas or degrees which may be of low standard. Under this situation, if the screening hypothesis is true, requiring graduation would be a poor device for the selection of workers. If the screening hypothesis on higher education is true as such education discovers ability and other desirable productive traits, a less expensive means rather than education could be developed to serve the same purpose.

Empirical evidence shows mixed results on the validity of screening models (Winkler, 1987). Some studies yielded results that support both the screening hypothesis and the human capital theory of education; for example, the study of Rao and Datta for the case of India (Groot and Hartog, 1995) whereas others only support either the weak or the strong version of it. Groot and Hartog (1995) concludes that the strong version of the screening hypothesis must be rejected though education seems to have signaling aspects. I agree with Groot and Hartog (1995) that the screening theory and human capital theory should not be seen as mutually exclusive but rather as complementary especially when mass higher education reduces the effectiveness of higher education as a screen (Williams, 1999).

Another private benefit which accrues to individuals is that added education permits an individual to have a wide selection of employment options which provide non-monetary reward, such as greater security, at the expense of monetary reward. Many PhDs or graduates may pursue prestigious jobs in government and academe, which earn lower salaries compared to other settings, such as the private sector (Blaug, 1990; Solomon and Fagnano, 1995). These graduates would prefer more job satisfactions, challenge and status to more pay. Thus, earnings are inadequate measure as they do not include non-pecuniary benefits.

People with higher education are also likely to adjust themselves to changing job opportunities more readily than those with less education, especially in a time of technological change. I take the position that higher education does accrue private benefits.

2.2 Social Benefits

Education also contributes external benefits to society, which the individuals concerned cannot capture for themselves. The manner in which schooling is provided may result in incidental, even accidental, additional services, such as child-care in the case of elementary primary education (Weisbrod, 1962). Schools make it possible for mothers to do other things rather than supervise their youngsters. The alternative costs for mothers who choose to work would be the productivity of the child-care services reflected in the earnings of the latter (if there is no distortion of the market).

Education also affects individuals by inculcating acceptable social values and behavioural

norms in the community. This can be in the form of voting behaviour, preserving and encouraging democratic freedoms (Wolfe, 1995; Halimi, 1998), which may be realised by other communities also. After controlling for per capita income, human rights or civil rights improve significantly with democratisation (McMahon, 1998) as a result of higher levels of education. All OECD countries which have higher levels of education also have democracy, compared to most sub-Sahara Africa countries which have less education with authoritarian rules (McMahon, 1998).

There is an inverse link between education and crime rates (Haveman and Wolfe, 1984; Psacharopoulos and Woodhall, 1985, Leslie and Brinkman, 1993; Chapman, 1996; Merisotis, 1998). Education therefore saves the taxpayers' money as the cost of enforcement is reduced. However, this view may not take into account "white-collar" crime (Wolfe, 1995), which is more sophisticated but also devastating.

The education and training of one worker may also bring external benefits to his/her fellow workers. This means that the productivity of each member of the group influences the productivity of each other member. Each worker therefore has a financial interest in the education of his fellow workers. Thus, college-educated individuals not only contribute more to research and the development of products and services that enhance the quality of other lives, but also promote the diffusion of technology (Merisotis, 1998) thereby improving the quality of the labour force. Thus, higher education, contributes to improvements in the application of knowledge (Leslie and Brinkman, 1988). Wolf and Gittlement (1993) and Wolf (1994) found that university enrolment rates are positively associated with labour productivity growth, suggesting that the externalities of higher education contribute to the productivity of the labour force. Through cultural activities, university-educated graduates may also contribute to the social milieu in ways which benefit others, from which the less educated also benefit (Dearing Report, July 1997). The endogenous growth theory of Lucas (1988) advocates that the average education level in the community as an externality in achieving increasing to scale is responsible for economic growth. This has been tested by Barro (1992; Barro & Sala-Imartin, 1995) as cited by McMahon (1998). The results show that the richer OECD countries are getting richer while the Sub-Saharan Africa countries are getting poorer. The main factor for this is human-resource development, after controlling for investment in physical capital (Mankiw et al, 1992; Kim and Lau, 1996; McMahon, 1997a), cited by McMahon, (1998). I believe that externalities are relevant in Malaysia, as the country is rapidly moving towards industrialisation. The emphasis on human resource development through the rapid expansion of higher education would improve health, and medical personnel are still critically needed by the economy. Higher education also promotes democracy and literacy among Malaysians. Expertise in science and technology would also not only bring about efficiency in administration and increases in productivity but also indirect benefits to the public such as easy accessibility to information, reducing red-tape and may encourage a more transparent system of administration. Externalities may not result in inadequate private demand for higher education, as there has been always "excess demand" for higher education in Malaysia.

3.0 Conclusion

To conclude, the fact that private returns from education realised directly by the students and are taken up by them (assuming utility-maximising behaviour) implies that individuals should pay for at least a major part of the cost of attending higher education. Conversely, the positive externalities captured by society may also justify the public subsidisation of higher education, though these cannot be accurately quantified it (Chapman, 1996; Blaug, 1990). However, the level of subsidy could base on whether the optimal subsidy has been achieved and the mechanisms of financing; that is, directly to students via loans or scholarships, or direct grants to universities. If the optimal subsidy has not been attained, scholarships/grants could be a better form of subsidy as it would encourage participation from the lower income –groups. Income contingent loans can be given to qualified candidates from the middle and higher income groups till the level of subsidy achieve the pareto optimality. The arguments on the financing for higher education may also provide us food for thought regarding the financing of teachers training in Malaysia. This is especially the case when teachers training colleges would be upgraded into college universities for providing more effective and high-standard training to trainees in pedagogy and also researches in education in meeting the challenges of the 21st century.

Bibliography and References

Altbach, P. G. (1998) “Let the Buyer Pay: International Trends in Funding For Higher Education”. International Higher Education, The Boston College Centre for International Higher Education, Number 9 Fall 1997, pp15-16.

Barro R J (1992) “Economic growth in a Cross Section of Countries”, Quarterly Journal of Economics, CV1(2) (May 1991), pp 407-444.

Barro R J and Sala-I-Martin X (1995) Economic Growth, New York: McGraw-Hill.

Blaug, M. (1990), The Economic Value of Higher Education, UHLENBECK LECTURE VIII: 1990. NIAS.

Becker, G. S. (1983) Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education, Second Edition, Illinois : University of Chicago.

Berg, I (1970) Education and Jobs: The Great Training Robbery, Praeger: New York

Chapman, B.(1996) “The Rationale for the Higher Education Contribution Scheme” Australian Universities Review, Vol 39. Number 1, 1996, pp 43-50.

Geske, T.G. and Cohn, E. (1998) “Why is a High School Diploma No Longer Enough? The Economic and Social Benefits of Higher Education “ Condemning Students to Debt College Loans and Public Policy, in Fossey R. and Bateman M. (eds.) 1998. Teachers College, New York and London: Columbia University Press.

Greenaway, D and Haynes M (2000) "Funding Universities to Meet National and International Challenges", School of Economics Policy Report, Nottingham: University of Nottingham.

Groot, W and Hartog, J (1995) "Screening Models and Education" in Carnoy, M. (ed.) International Encyclopedia of Economics of Education (Second Edition), Oxford, New York and Tokyo : Elsevier Science.

Halimi, S (1998) " Oral Report at the Closing Ceremony of the World Conference on Higher Education" in World Conference on Higher Education: Higher Education in the Twenty First Century, Vision and Action, 5-9 October 1998, Volume 1, Final Report. Paris: UNESCO.

Haveman, R., and B. Wolfe (1984), "Education and Economic Well-Being: The Role of Non-Market Effects", Journal of Human Resources 19(3): 377-407.

Johnstone, D.B. (1986), Sharing the Costs of Higher Education : Student Financial Assistance in the United Kingdom, the Federal Republic of Germany, France, Sweden, and the United States.New York: College Entrance Examination Board.

Johnstone, D.B. (1993), "The Costs of Higher Education: Worldwide Issues and Trends for the 1990s" in Altbach, P.G. and Jonstone,, D.B. (eds) The Funding of Higher Education-International Perspectives, NewYork and London : Garland Publishing, Inc.

Kim,J.II & Lau, I. (1996) "The Sources of Economic Growth of East Asian Newly Industrialised Countries: Some Further Evidence", in Faculty Working Paper (Stanford,CA, Department of Economics, Stanford University) (Summarised in AEA Papers and Proceedings, May 1996)

Lazear, E (1977) "Academic Achievement and Job Performance: Note" American Economic Review, March 1977, pp 252-254.

Leslie, L. and Brinkman, P. (1993), The Economic Value of Higher Education, Second Edition, New York: The Oxford University Press

Lockheed et al (1980) "Farmer Education and Farm Efficiency: A Survey" in King.T (ed) Education and Income, Washington D. C: World Bank Staff Working Paper No 402.

Lucas, R.E (1988) "On the Mechanics of Economic Development", in Journal of Monetary Economics, 22, pp3-42

Mace, J. (1987) Economics And Finance Of Education Block 1, Unit 10. Institute of Education, University of London.

Mankiw, N.G. et al (1992) " A Contribution to the Empiricals of Economic Growth", Quarterly Journal of Economics, 107, pp407-438.

Marginson, S. (1997) "Investment in the Self: the Government of Student Financing in Australia" Studies in Higher Education, Volume 22, No. 2, 1997, pp119-131

McMahon, W. W. (1998), "Conceptual Framework for the Analysis of the Social Benefits of Lifelong Learning" in Education Economics, Vol.6 No 3, December, 1998, pp 309-341

Merisotis, J.P. (1998) "Who Benefits from Higher Education? An American Perspective" in International Higher Education, Summer 1998, http://www.bc.edu/bc_org/avp/soe/cihe/direct1/News12/text1.htm

Murphy K, Welch, F (1989), "Wage premiums for College Graduates: Recent Growth and Possible Explanations", in Education Researcher Volume18, No 4, pp17-26

Psacharopoulos, G. (1979) "On the Weak Versus the Strong Version of the Screening Hypothesis", Economics Letters No 4, pp 181-185.

Psacharopoulos, G. and Woodhall, M. (1985), Education For Development: An Analysis for Investment Choices, New York: Oxford University Press, A World Bank Publication.

Rumberger, R W (1987) "The Impact of Surplus Schooling on Productivity and Earnings" Journal of Human Resources, 22(1):24-50.

Schultz, T. (1961) "Investment in Human Capital", American Economic Review, volume 51, 1961

Solomon L.C (1981) "New Findings on the Links Between College Education and Work" Higher Education, Volume10 No 6, pp 615-648.

Solomon L.C. and Fagnano, C.L. (1995) "Benefits of Education" in Carnoy, M. (ed) International Encyclopedia of Economics of Education (Second Edition), Oxford: Pergamon, pp 114-124

Taubman P, and Wales, T (1974) "Higher Education and Earnings: College as an Investment and a Screening Device." Report Prepared for the Carnegie Commission on Higher Education and the National Bureau of Economic Research, General Series 101. New York: McGraw-Hill.

Thurow, L (1970) Investment in Human Capital, Wadsworth, Belmont, California.

Verry, D. (1977) "Some Distributional and Equity Aspects of the Student Loans Debate" in Economics and Educational Policy, Block V, Open University.

Williams, G (1999) "State Finance of Higher Education: An Overview of Theoretical and Empirical Issues" in Henkel, M and Little, B (eds) Changing Relationships Between Higher Education and the State, London and Philadelphia: Jessica Kingsley Publishers.

Weisbrod (1962), "External Effects of Investment in Education" in Blaug, M (ed) Economics of Education. Middlesex: Penguin.

Winkler, D R (1987) "Screening Models and Education" in Psacharopoulos (ed) Economics of Education: Research and Studies, Pergamon Press, Oxford: The World Bank, pp287-291

Wolf, E N (1994) Human Capital Investment and Economic Growth: Macro-Economics Perspectives and Evidence from Industrialised Countries. International Conference on Human Capital Investments and Economic Performance, Santa Barbara, Calif.

Wolfe, B.L.(1995) "External Benefits of Education" in in Carnoy, M. (ed) International Encyclopedia of Economics of Education (Second Edition), Pergamon, Cambridge University Press, pp159-163.

Wolf and Gittleman M (1993) "The Role of Education in Productivity Convergence: Does Education Matter?" in A Szirmai, B Van Ark and D Pilat (eds) Explaining Economic Growth, Amsterdam: North-Holland.