EDUCATION - AN INVESTMENT OR A LIABILITY ?

AN ECONOMIC ANALYSIS OF EDUCATION AND ITS ROLE IN THE DEVELOPMENT OF UNDERDEVELOPED COUNTRIES, WITH SPECIAL REFERENCE TO THE CONCEPT OF HUMAN CAPITAL.

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INTRODUCTION

Education, in the broadest sense of the term, is as old as man himself, but the attention devoted to it has fluctuated to extremities over time. The "Economics of Education", as a separate study, has suffered the same cyclical life, but has in recent years experienced a prolonged revival of interest, especially with regard to the concept of "Human Capital".

In the writings of the early economists the importance of education was stressed, but detailed economic analysis gave way to the reputations of subsequent great writers and to the pressures of strongly held opinion. As a result, at the present point in the history of economic thought, there is no "received doctrine" on the subject comparable, in extent, to the other fields of economic theory and the range of agreement on the vital concept of human capital is extremely narrow, and much theory is based on a dichotomisation.

The present up-swing in interest may represent a mere phase in the cyclical movement witnessed in the history of the concept, but the fact that it has come to be treated in terms of a "missing link" in underdevelopment theory, proposes the idea that human capital could become a major, permanent consideration in economics, whatever the state of the economic theory concerning it. By returning to the field of original concern in human capital, contemporary economists have been thrust into a whole galaxy of peripheral fields on a somewhat unsure footing.

This paper is an attempt to present some insight into the basic questions and institutions of the economic aspects of education, with special reference to the fundamental concept of human capital. First the historical course of the concept is sketched, followed by an outline of the major economic tenets embodied within education, and then by an indication as to its applicability and importance in the development process of underdeveloped countries. The essence of this

dissertation is the dealing with a topic of contemporary and intellectual importance, employing techniques drawn from a well-established discipline.

Economics has been, and is, concerned with the less noble side of life, whereas education is basically adjudged as a virtuous activity and it is questionable whether the two can be reconciled. A modern belief is that education can help to make a country rich, and once rich it can be free to be uneconomic. This infers that education can be a contributory force to economic development, but that it is essentially an uneconomic one. The object of this paper is to show how education is in fact a positive economic force.

The volume of relevant research and literature on the topic has been increasing at an explosive rate, especially over the last decade, and this paper aims to focus attention on the complex and interrelated problems that attend the role of education in the development process. The field is broad and much comprehension has been necessary, and no apology is offered for the emphasis on the human capital concept, for this is fundamental to the main problem, as this work attempts to illustrate.

The topic of education can be classified into an analysis of the economic value of education and an analysis of the economic aspects of education systems. The emphasis of this paper is largely confined to the former classification, though this is in no way meant to detract from the importance of the latter. The motivation behind the virtual exclusion of education systems is that they are subsequential to the acceptance of the conviction that education is desirable. The central theme of this work is to show that education is in reality an economic proposition and that this renders it both desirable and viable. It aims at answering the purely statistical question of the value of education, which is a necessary precondition before the economist can rationally pursue the matter in terms of political economy.

There appears to have been a marked tendency in the writings of economists merely to assume that education was economically, apart from socially, justifiable and then to analyse which system was most beneficial under given conditions. The essential problem is not so much which alternative system is preferable, but whether education is actually economically viable in itself. This implies that a tailor-made system of education can only be implanted for optimal benefit once it is ascertained exactly how, if at all, education encourages, or hinders, economic growth and development.

PART ONE

HISTORICAL DEVELOPMENT OF THE CONCEPT

"The most valuable of all capital is that vested in Human Beings".

Alfred Marshall

CHAPTER 1 :- THE CLASSICAL ROOTS OF HUMAN CAPITAL

> "It is human because it becomes part of man, and it is capital because it is a source of future satisfaction, or of future earning, or both of these."
>
> - Theodore W. Schultz

The fact that there has been a recent emphasis on the economics of education in contemporary economic literature, does not necessarily suggest that this is an example of "clustered innovation" resulting from an entirely new field of study, or even that the constituent components have latterly been discovered. It is, in fact, representative of an upswing in the cyclical history of the concept.

The concept of human capital was prevalent, both explicitly and implicitly, in the writings of the early economists,[1] but due to a concatenation of forces, was subsequently suppressed into obscurity and the primacy of material capital became the order of the day. The modern revival of interest in the original field of human capital and human resource development represents a current (and probably permanent) reversal from a purely materialistic orientation towards capital, as expounded by latter-day economists.

Adam Smith (1776)[2] believed that a person's capital was that part of his stock from which he expected to derive an income, and boldly included all useful abilities of inhabitants of a country, whether inherited or acquired,[3] as part of capital. He does not, how-

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[1] Those in whose writings the concept appeared include A. Smith (1776), W. Petty (1691 - posthumously), D. Hume (1752), J. Bentham (1748-1832), J.B. Say (1803), Ricardo (1817), T. Malthos (1820), J.S. Mill (1829), F. List (1841), Angel (1883), A. Marshall (1890), and others. It is, however, important to note that none of these writers recognised education as a prime mover of economic growth.

[2] A. Smith, The Wealth of Nations (London, 1869).

[3] Though these abilities differ importantly in the formation of human capital, they are a clear effort to incorporate human capital within the overall definition of capital.

ever specifically define the term "capital", but includes in his category of fixed capital, the skills and useful abilities of human beings.[4] He does, however, enumerate four different methods whereby capital is employed; in application to natural resources, manufacturing, wholesaling and retailing.[5] Here no specific mention of human capital is made, but his statement that, "The expense of the institutions for education (is) ... no doubt, beneficial to the whole society, and may therefore, without injustice be defrayed by the general contribution of the whole society",[6] implies that skilled labour is not excluded from the catalogue of human wealth, nor is the outlay devoted to the production of such labour denied the name of an investment of capital. It is, however, not easy to determine under which of the preceding schedules such a form of expenditure would come.[7]

Others who contended that human capital was part of the capital concept as it increased skills and abilities, was acquired at a cost and induced higher labour productivity, were Say, Mill, Bentham and List. All believed that capital was defined as "a produced means of production", but they did not include the human being himself, only his acquired capabilities, as they considered it necessary to have a clear division between capital and labour to some extent.[8] Bentham distinguished labour into its physical exertion and skill or mental power components; Mill stated; "That the productiveness of the labour of a people is limited by their knowledge of the arts of life, is self-evident; and that any progress in these arts ... enables the same

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4 Where the skill of a man may be regarded as a machine which has a genuine cost and returns a profit.

5 A. Smith, ibid., Vol. 1, Bk.2, Ch.5, pp. 363-4.

6 ibid., Vol. 2, Bk.5, Ch.1, p.403.

7 It would, perhaps, be best to include a fifth head to incorporate it.

8 The modern approach, in general, does away with this exclusion, but as will be shown later, this is at the expense of disregarding an inherent trait resisting the subjection of man to the indignity of pure statistical analysis and the diminution of his freedom and rights in any way. Yet, even at that stage in the history of economic thought, there were others who claimed that economic analysis had to abstract from considerations of justice and practical expediency, and regard human beings exclusively from the point of view of exchange.

quantity of labour to raise a greater produce."[9]

Sir William Petty was one of the first to attempt to estimate the money value of a human being. To him labour was the "father of wealth" and had to be included in any estimation of national wealth. He attempted his evaluation of the stock of human capital by capitalising the wage bill to perpetuity at the market rate of interest. Such an analysis was obviously very general and therefore inadequate, and Petty was heavily criticised for his efforts,[10] because it required too restrictive assumptions, and the price paid for the simplification of his basic hypothesis to render it practical, was too great to afford any really meaningful conclusions.

William Farr (1853) attempted an analysis of the present value of the individuals net future earnings,[11] making allowances for untimely death and length of life. To him, however, human capital raised an irreconcilable contradiction, for if human beings were capital, he believed they should be treated as such. This would, however, oblige people to pay tax on wealth they did not have on hand and would lead to absurd results. Engel (1883) preferred the cost-of-production procedure (based on Petty's approach) and considered it a way of overcoming Farr's complications.

During this period many empirical and analytical studies of human capital were carried out, but the results of all were generally inconclusive and devoid of any real accuracy and significance. One of the latest such studies was based on the belief that the yield value of certain human beings (for example, a Newton) could not be determined,

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9 J.S. Mill, Principles of Political Economy (London, 1862), Bk.1, Ch.7, p.130.

10 The greatest failing of Petty's attempt was that it took no cognisance of values by age, sex and economic status. A bitter satire of his analysis was rendered by D. Swift in his "A Modest Proposal for Preventing the Children of Poor People from Being a Burden to their Parents or the Country".

11 Here net means "net of maintenance". It is derived from future earnings less personal living expenses.

but as their rearing was a positive cost, they had a social money value.[12]

Analytically, the hypothesis was as follows:-

$$Cx = Co \left[1 + x + k \left(X \, (x+1) \,/\, 2 \right) \right]$$

where x = any age.

Cx = total cost of producing a human being.

Co = costs incurred up to point of birth.

k = annual percentage increase in costs.[13]

In general, both the cost-of-production and the capitalised-earning approaches of the early writers had insignificant and inconsequential results in further developing and quantifying the concept of human capital. Throughout the early stages of the history of economic thought, estimates of the value of human capital were attempted, based on the belief that the costs of rearing were real, the resultant product added to national wealth and any expenditure on human beings, which increased individual production, ceteris paribus, increased national wealth. Although no exact theoretical formulation or accurate empirical research emanated from the early economists, they were undoubtedly aware of the existence of the concept; all they lacked was the adequate apparatus to quantify it and the perception to appreciate its real significance.

The fact that there was so long a time interval between the prevalence of the concept in the era of the early writers and the modern revival of interest in it, has often been attributed to the works of Alfred Marshall (1890). It was his opinions, and the esteem in which

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12 A study by Dublin and Lotka, quoted in : B.F. Kiker, "The Historical Roots of the Concept of Human Capital", Journal of Political Economy, Vol. 74, (1966) p.485.

13 This formulation has an inherent fallacy in that there is no simple and necessary relationship between the cost of producing an item and its economic value - especially human beings, where costs are by no means always profit motivated. (Social costs are as appropriate as economic costs). Also its accuracy depends upon the doubtful proposition of obtaining accurate cost figures.

they were held, that was perhaps the greatest single motivating force which can be said to account for the heyday of a materialistic capital concept orientation.[14]

Marshall, under the heading of wealth,[15] gives a detailed exposé of a man's wealth. He classifies "non-material" goods into an "external" and an "internal" group; "One consists of his own qualities and faculties for action and enjoyment; ... All these lie within himself and are called 'internal'. The second class are called 'external' because they consist of relations beneficial to him with other people."[16] Marshall then further subdivides each class into "transferable" and "non-transferable" aspects and in all gives a fully comprehensive classification of wealth,[17] which includes the concept of human capital as internal personal goods - that which man finds in himself, given to him by nature, or which he educates in himself by his own free action, such as muscular strength, health and mental attainment. Everything that the out-world offers for the satisfaction of his wants is considered an external good to him.

After an exacting analysis of wealth Marshall then states that in general, a man's "wealth" is taken to exclude all his own personal

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[14] There appears to be a strange conflict of opinion over the evaluation of the role played by Marshall. Although all writers concede that he commented in detail about education and human capital and acquiesed that such a concept did exist, they do not unanimously acclaim that he believed it did not have great relevance to the ordinary economics of everyday life. J. Vaizey, in his works, makes no reference to the important Marshallian view that human capital is of no real importance in "the market place", and only refers to the favourable analysis performed by the great economist. In the author's opinion, such a preclusion of an essential view and the "other side" of the argument, tends to give a false impression of the essence of Marshall's credo in the human capital concept.

[15] A. Marshall, Principles of Economics (London,1898) Bk.2, Ch.2, p.45-6.

[16] ibid., p.45.

[17] This classification may be shown as follows:-

Goods
- material - external - transferable
- material - external - non-transferable
- personal - external - transferable
- personal - external - non-transferable
- personal - internal - non-transferable

qualities and faculties, even those which earn him a living. This is a complete rejection of the concept of human capital, a concept over which he went to great pains to include in wealth. His justification for this apparent contradiction and the acceptance of a narrow, more restricted definition of wealth is;

"This use of the term wealth is in harmony with the usage of ordinary life ... For it includes all those things, external to a man, which (i) belong to him ... and (ii) are directly capable of a money measure; ..."[18]

Altogether, though Marshall admits that a broader view of wealth does exist, and that it is useful for some purposes, he maintains recourse must be had to a special interpretation clause to prevent confusion, that is, a definition of personal wealth to include everything which directly contributes to human capital. He believed that "Confusion would certainly be caused by using the term wealth by itself when we desire to include a person's industrial qualities..." and that "the question whether it is ever worth to speak of them as wealth is merely one of convenience, though it has been much discussed as if it were one of principle."[19]

To Alfred Marshall there was a necessary distinction between human capital and material capital and this laid the foundation to the capital dichotomisation, which was perpetuated until the present decade. His basis for this is summed up in his own words, "... the term Capital has many different uses both in the language of the market place and in the writings of economists. In fact there is no other part of economics in which temptation is so strong to invent a completely new set of technical terms ... (but) This would throw the science out of touch with real life; our uses of the term must be based upon the uses of the market place."[20]

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[18] ibid., p.47.

[19] ibid., p.48.

[20] ibid., 7th ed., Bk.2, Ch.4, p.141.

Although Marshall rejected the incorporation of human capital in the ordinary economic use, he did not believe that it was insignificant - "The growth of mankind in numbers, in health and strength, in knowledge, ability, and in readiness of character, is the end of all our studies..."[21] To this end he maintained that education, in its broadest definition, was the ultimate means. So important did he consider education that, even though he explicitly maintained that the economics of education and human resource development were extraneous to the useful definitions of wealth and capital and could be omitted in the ordinary sense of the terms, he went to extreme lengths to elucidate the value of education. On education, he declared; "It is true that there are many kinds of work which can be done as efficiently by an uneducated as by an educated workman; ... But a good education confers great indirect benefits even on the ordinary workman. It stimulates his mental activity; it fosters in him a habit of wise inquisitiveness; it makes him more intelligent, ...; it is thus an important means towards the production of material wealth."[22]

He believed that education was a means of securing greater material and non-material wealth, and that an education was a necessary investment of both capital and labour "up to that margin at which any further investment appears to offer no balance or gain, no excessor surplus of utility or disutility."[23] To him education and human capital were of paramount importance and he believed that, "There is no extravagance more prejudicial to the growth of national wealth than that wasteful negligence which allows genius that happens to be born of lowly parentage to expend itself on lowly work."[24] Marshall, on these grounds, believed that material wealth, when wisely used to increase human resources via health and education, was fulfilling its chief role, and

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21 ibid., Bk.4, Ch.1, p.212.

22 ibid., Ch.6, p.291.

23 ibid., Ch.8, p.700. Here Marshall uses the investment approach and the criterion of marginal returns. This approach has become more sophisticated, but is essentially in its present form, a manifestation of the above Marshallian ideas.

24 ibid., p.292, Ch.6.

that there was wisdom in expending both public and private funds for such purposes.

Altogether Marshall, like many of the classical economists, appreciated the essence of the concept of human capital. His analysis of the concept indicates the importance he attached to it in a theoretical capacity, but he rejected the incorporation of the concept into the practical economics of everyday life upon grounds which to him, and the majority of his successors in the neo-classical schools, seemed justifiable. It was a combination of the pressures of such forces which created a situation in which the economics of education could be refounded in the present era. The main point is, however, that "the concept of human capital is by no means new ... (it) was somewhat prevalent in economic thinking, until Marshall discarded the notion as 'unrealistic' ".[25]

Since the writings of Adam Smith many great economists have been interested in education and human resource development, and although the main statements were '<u>obiter dicta</u>', there "is a long and honourable tradition from Adam Smith to Alfred Marshall which assigns to publicly supported education a major role not only in promoting social peace and harmony and self-improvement, but in the process of wealth creation itself."[26]

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[25] B.F. Kiker, op.cit., p.481.

[26] J. Vaizey, <u>The Economics of Education</u> (London, 1962), p.23.

CHAPTER 2 :- REJUVENATION OF THE CONCEPT

"This is the age of ascendant man,
not triumphant machine."

- J.K. Galbraith

After the Marshallian approach to the concept of capital and human resource development, most economists employed a narrower concept that identified capital with material capital goods and equipment used in the production process, distinguishing it sharply from labour. This departure from the "classical"[27] outlook was entrenched in economic thought until a new upsurge in the field of education and human capital was initiated by very recent writings. During the depression of interest in the concept, there were a few prominent economists who challenged the materialistic orientation of capital, but in general it can be safely asserted that the "more modern economists have not paid as much explicit attention to human resources in economic growth as did some of the great classical economists like Smith and Marshall."[28]

For a long time after the Classical concept had been abandoned, material capital held the centre of the stage, but the overall importance of its position was increasingly challenged by the supporters of the "non-conventional", or human, aspect of capital. The use of the restricted wealth concept accounted for only those classes of wealth that were bought and sold, and this excluded human capital by definition.

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[27] The term "Classical" as cited from here onwards will be taken to indicate the basic views on human capital as enunciated in the previous chapter. Such views will be taken to be representative of the whole classical school of thought, though it is probable that many of the Classical group never held the exact views as those ascribed to them. This generalisation of their individual analysis is taken to be representative of the basic ideas of their writings on the concept, though it is obvious that the generalisation of such a heterogeneous group will tend to violate the postulations of some of its members.

[28] F. Harbison and C.A. Meyers, (eds.) Education, Manpower and Economic Growth (New York, 1964), p.4.

In 1906 Fisher clearly and cogently established the economic basis for an all-inclusive concept of wealth.[29] The prestige of Marshall, however, proved to be too great and his ideas prevailed over Fisher's. Of the Fisherian concept Marshall said, "Regarded from the abstract and mathematical point of view, his (Fisher's) position is incontestable. But he seems to take too little account of the necessity for keeping realistic discussions in touch with the language of the market place."[30] In an appendix on the "Definition of Capital" Marshall enhances his argument by stating "we are seeking a definition that will keep realistic economics in touch with the market place."[31] In all, Marshall's market place restriction overcame all early (and logical) attempts to incorporate into "capital" that capital which becomes part of a person.

The incorporation of human capital into the concept of wealth, though logical in theory even in the immediate post-Classical years, was hindered so effectively that by the 1950's there was hardly such a subject as the economics of education and human resource development. The stranglehold of material capital was re-inforced by the fact that during the industrialisation of the Western economies a sharp distinction between capital goods and raw labour power made more sense than it does under modern industrial conditions. Also the impact of Keynes' "General Theory" (1936) further entrenched its position, for he emphasised fixed capital

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[29] I. Fisher, The Nature of Capital and Income (New York, 1906). In this work Irving Fisher laid a basis for the attack on the Marshallian restrictive wealth concept by expounding a broader concept, referred to as "The Fisherian Concept of Capital." Borrowing from Milton Friedman's terminology, Fisher's postulation was in essence as follows:-

$WT = WH + WN - H$ where WT = total wealth; WH = human wealth; WN-H = non-human wealth

$Y = r\,W$ where Y = income stream; r = return rate on wealth

and wealth represented the capitalised value of an income stream. (This formed the basis of Friedman's permanent income hypothesis). The fact that WH was non-transferable and could only be sold from a sellers viewpoint (e.g. knowledge), precluded it by definition from the Marshallian concept, but because of its importance in the overall concept, Fisher challenged the restrictive definition.

[30] A. Marshall, op.cit., (7th. ed.), pp. 787-8.

[31] ibid., p.790.

investment as the key variable in the economic system and assumed a homogeneous labour force of a given quality.[32] Another obstacle in the path of the rise of human capital was that the treatment of human beings as capital, even if only conceptually, appeared offensive to many economists as being contrary to democratic political philosophy. The end result was that the overwhelming majority of economists, following Alfred Marshall, tended to use the concept of capital as applicable only to that portion of the non-human, material, man-made stock of wealth which is utilised directly in further production.

Nevertheless, in spite of "majority opinion", the application of human capital in economics did not disappear from economic literature, and has, in the past decade especially, experienced a dramatic revival. In the forefront of the efforts in this direction stand the works of Theodore Schultz.[33] Although writings appeared under the label of "economics of education", it is generally concurred that his works represent the "take-off" stage (in Rostowian terms) of the revival of a disused subject, and that the "birth" of the economics of education can clearly be dated to his presidential address to the 73rd. Annual Meeting of the American Economic Association in December 1960.

The revival of the concept of human capital, based on Fisherian terms,[34] has challenged the Marshallian view that human capital is a metaphor without substantive economic meaning. The modern view is couched in the belief that education is a form of investment in human beings, (besides having a purely consumption element). It is maintained that the acquisition of skills and capabilities form human capital,

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[32] Although the Keynesian assumption was obviously for a short-run period, the subsequent conversion of this equilibrium model (albeit a short-run one) into the Harrod growth model, rendered a setback to the human capital concept.

[33] A fairly comprehensive list of his relevant and more important works is indicated in the bibliography (see items numbered from 60 following).

[34] The basic tenets are that the absence of a capital market for human labour does not preclude an examination of the services of human investment "as if" they were capitalised.

which is an integral part of total capital, and that this human capital is the product of a deliberate investment (that is, a produced means of production), which has grown in Westernised societies at a noticeably faster rate than the conventional, non-human capital.[35] It appears then, that this modern concept is, in many respects, very much akin to the Classical concept of human capital which existed prior to Marshall. The only major difference, however, was that the Classicists were not aware of the significance of their concept. Prior to as late a date as 1960 economists were generally unaware of the fact that widely different observed economic phenomena could be rendered intelligible by the idea of human capital formation.

Altogether the absence from popular economics of the notion of human resource development has been ascribed to a range of factors varying from unrealistic to sentimentalism. The fact remains that although the Classicists attempted to use an unsophisticated approach to the concept in estimating the economic power of nations, calculating wealth, accounting for productivity increases and suchlike, no attempt was made by more recent economists to follow up and hybridize the concept, to evaluate it in money terms or to employ the concept for any specific purpose. The modern relevance of the subject is based upon an analogy between technological improvement in material capital and educational improvement in human capital. The study of human resource development (and the notion of human capital and investment) has become so prevalent that it has led, in many ways, to a transformation of orthodox economics, which is acting as an inducement mechanism to further development of the concept.

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[35] This claim is very subjective as to date there is no really accurate measurement of human capital or its growth rate.

PART TWO

THE ECONOMIC ASPECTS OF EDUCATION

"Education has become a major source of skills and trained talent. Indeed, from one point of view, this is education's critical economic role."

John Vaizey

CHAPTER 3 :- EDUCATION AND HUMAN CAPITAL[36]

"Now art thou what thou art by Art
as well as by Nature."

- William Shakespeare

The recent emphasis in economic literature has been on developing and quantifying human capital and then analysing how such factors as investment in education and health facilities enhance human resource development.[37] The modern concept of human capital is basically a more sophisticated version of the Classical concept and is essentially manifest in the inherited and acquired abilities of producers and consumers.[38] Inherited abilities are those "given by nature" and can, for all intensive purposes, be regarded as constant. Any genetic drift affecting these abilities occurs so slowly as to be irrelevant in economic analysis. Also the distribution of such abilities can be assumed given and does not depend upon the state of development of an economy or country.

Acquired abilities, however, are different and it is through these that education is linked directly to human capital and human resource development. The formation and maintenance of such abilities are analogous to the formation and maintenance of reproducible material capital in most regards. The distribution and level of acquired abilities can be importantly altered over a time span relevant to economic analysis and historically they have altered in harmony with the

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36 Thus far in the paper the terms human capital, economics of education and human resource development have been used in a similar lexical sense, but it is of relevant importance to know exactly how they are interlocked, which is the aim of this chapter.

37 Human Resource Development is the resultant of the elements of education economics and health economics, which comprise it.

38 This statement of the concept takes no cognisance of the relatively minor, but nevertheless contributory, aspects of migration and population growth.

economic development of an economy or country.[39] Such abilities are acquired in numerous ways, varying from the most informal to the most organised activities.

The principal form in which such abilities are usually attained is through direct investment in education. The analytical scaffolding upon which this postulate rests is that people enhance their capabilities as producers and consumers by investing in themselves. Acquired abilities that have an economic value usually entail identifiable costs and consequently each process that enhances the income-earning prospects of any person has the attributes of an investment. Modern theory supports the belief that education, in conjunction with health and other such resource developing factors, fulfils this investment function.

That education is the road to greater human capital formation is the contemporary creed, but it is as yet not unequivocally proven. There is no adequate means at present of measuring the consequences of education and this often results in the imposition of educational systems which are not suited for optimum benefit under modern conditions. Thus although there is a battle being fought for the accumulation of human capital via an education process, too often this battle is being fought with the tactics of previous decades. At present the evaluation of education is a mere numbers game, with the quantities of money and children given, but with no apparatus to link the two together and evaluate the result. This is because it is easier to count children and money than such aspects as motivation, morale and knowledge.[40]

Although no highly accurate statistical verification exists to prove the importance of education, there is a common tendency to give

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[39] This renders acquired abilities more important than inherited abilities in the economic analysis of the development process, for they can differ greatly between rich and poor nations (often dependent solely upon educational facilities), whereas inherited abilities show no such tendency.

[40] This all-important question of measurement of the benefits of education, upon which the ultimate objective verification of modern human resource development depends, has stimulated many empirical attempts, especially in the U.S.A., at deriving an analytical formula which can be applied to the problem. Such aspects of measurement are included in a later chapter.

the highest priorities to formal education systems and public health units in the accumulation and development of human resources. This has been further enhanced by the recognition of human resources as a substitute for natural resources on the margin, even though the principles for developing and consuming this resource have not yet been precisely formulated. It is generally conceded that "Educated persons, working collectively, can extract a better living from a given environment than uneducated persons can."[41] The result has been that human capital has been sought to be accumulated by expanding the number of persons acquiring an education and by ensuring that the education received is relevant to the needs of society.

This emphasis of a need for education, however, represents a fundamental schism between the economic and social provision of education. The economist sees education as a means of resource development towards the accumulation of greater human capital. The sociologist (and associated disciplines) advocates education on moral grounds. The basis of the conflict thus stems from whether education should be viewed as an investment in human beings or for its own sake.[42] The economists arguments centre around the basic tenet that education, as an investment in human capital, must be orientated towards optimal productivity and material benefits which accrue both to the state and the individual.

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[41] R.L. Meier, "Human Resources", Encyclopedia of Social Science Vol.12, p.141.

[42] The obvious solution would be that, if it is the people themselves that count, their talents must be conserved and enhanced via education. This would in effect reconcile the two approaches. This is not so simple, however, because although their ultimate aims may be reconciled by a common means (education), there tends to be further conflict over the form the education should take. In general, most economists support the view that a slender, tall, narrow-based education column is desirable as an educational system, as it is from secondary education that the greatest benefits are derived (though Vaizey has a contradictory opinion). The moralists, however, demand a broad-based, universal, education pyramid and this leads to a further dichotomy. The greatest relevance of this conflict is obviously to underdeveloped economics, where resources are generally such that they are inadequate to allow for investment in both universal and higher education facilities, and one choice is at the expense of the other.

The moralists, however, believe this is the wrong reason and that human beings should be viewed as ends, not means. This conflict has resulted in the manipulation of Article 26 of the Universal Declaration of Human Rights (1948), which is a plea for more education, better facilities and greater finance,[43] to suit opposite objectives.

Education is commonly claimed to be the largest source of human capital in the form of acquired abilities, though there are other contributory sources.[44] In the broadest sense of the definition education can be taken to consist of the formal, informal and self-educating facets. The first aspect includes primary and secondary school and institutions of higher learning. Informal education incorporates on-the-job training, adult education programmes, and political, social, religious and cultural groups. Self-education is essentially an informal process which overlaps to some extent with the latter aspect.[45] Thus it can be generalised that almost every education consists of a general stage followed by a more specific stage.

The education process can be analysed as a system of flows, beginning as a very broad flow (at the general and lower level) and resulting with an increasing number of smaller flows at the specialised level. Also it can be classified into qualitative and quantitative aspects; the former being the methods of education and the latter being the totals (or aggregates) of factors engaged in the concept, (for example, funds invested or students). As mentioned in the introduction, this paper attempts to analyse only the latter aspects, though not deprecating importance of the former, for it is a well-established fact that

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[43] L. Francois, The Right to Education (U.N.E.S.C.O., 1968), Art.26.

[44] In order not to detract from the main line of thought on education, these subsidiary sources are discussed in relevant detail in Appendix A.

[45] Classification adapted from: F. Harbison and C. Myers, Education, Manpower and Economic Growth (New York, 1964), p.2. Though this classification was the most comprehensive encountered, it made no specific reference to retraining and refresher programmes and it is doubtful, in the author's opinion, whether such can be merely assumed as part of on-the-job training.

"empirical results lend support to the hypothesis that education can be considered as a factor of production and that differences in school systems can affect the productivity of schooling."[46]

Education, as an economic activity affects both the distribution of knowledge and the stock of knowledge, and in this way affects human capital. The main element in any education system is the physical unit known as a "school". In economic analyses this is defined "as an institution specialising in the production of training, as distinct from a firm that offers training in conjunction with the production of goods."[47] This formal education and training imparted by the school creates human capital by adding to the economic value of a human being and the cost may be considered an investment in human resources.

It is necessary, perhaps, to elucidate the specific functions of on-the-job training, for there is a prominent tendency amongst contemporary writers to treat it separately from formal education. It is considered the most important aspect of informal training. As one economist has stated, "In the context of the economists concern with education as a process of investment in manpower, it is important to be reminded that formal education is neither an exclusive nor a sufficient method of training the labour force."[48] In fact, this writer considers all forms of formal education as a preparatory stage for informal training, which itself can be sub-divided into formal (organised programmes) and informal aspects (what is called "learning from experience").

Altogether it can be seen that there is a close and direct connection between education, human resource development and human capital. Education, in its many facets, is a means whereby human resources are developed and improved, and the economics of education is a study of this

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46 F. Welsh, "Measurement of the Quality of Schooling", American Economic Review, Vol.56, (1966). p.391.

47 G. Becker, "Investment in Human Capital", Journal of Political Economy, Vol. 70, (Supplement, 1962, No. 5), p.25.

48 J. Mincer, "On-the-Job Training : Costs, Returns and some Implications", Journal of Political Economy, Vol. 70, (Supplement, 1962, No. 5), p.50.

development. An improvement in human resources results, ceteris paribus, in a direct increase in the stock of human capital. There thus exists a constellation comprised of these forces, with a direct causal-effect relationship between them. Any variation in one concept will, via the circulatory process, affect the others. In this way education, being the factor most susceptible to the whims of man, is taken as the key to human capital, for through it human abilities can be directly influenced.

CHAPTER 4 :- CONSUMPTION OR INVESTMENT ?

> "Once one leaves the terra firma of material capital and branches out into the upper aether of human capital there is endless difficulty in finding a resting place."
>
> - Bauer and Yamey

The whole economic analysis of education and its role in human capital formation is based upon the seemingly controversial division of education into investment and consumption components. The modern belief is that education entails the attributes of an investment, but that it is difficult to delineate which parts of it are in fact investment and which are consumption; for education, like health and other contributory elements to human capital, has the faculty of providing both sumptuary satisfaction and a produced means of production.

In the era of material-orientated capital, education was considered a consumption good - a social service which was provided without being subjected to any analysis under criteria relevant to investments. Contemporary economic thought, however, has singled out social "investment" for special consideration, as it is considered crucial expenditure, and education is perhaps the most vital social investment of all.

Previously communities only spent on social services that which they could afford and educational expenditure was in some sense a residual left over from other expenditures. This approach was the result of an inherent belief that one can "invest" in physical capital, but only "spend" on education. When, however, education was seen as an investment, it sanctioned much larger outlays for an investment has a return and education, like most other investments, was considered to pay for itself in the long run. This new outlook necessitated a reformation of entrenched ideas on education expenditure, and as Galbraith states "The system was adequate, even admirable, so long as education was a socially provided service designed to insure ... rough equality of opportunity.

It has ceased to be efficient as education has become a form of investment."[49] This change in attitude has rendered physical capital investment no longer the prime measure of progress, it has, in fact, become an obsolescent one due to the shift in recent years in the comparative importance of man and machine.

The less-modern tendency was therefore, to regard education as an end in itself and no importance was attached to its relevance to the human capital concept.[50] Only recently have economists become aware of the economic effects of social expenditure on productivity and human capital. The result has been that no longer is education treated as a pure welfare expenditure, for which funds are grudgingly spared : it has become fashionable to compute measures of the "rate of return" on "investment" in education.[51] The emphasis of importance attributed to education as an investment varies, with some economists regarding it mainly as an investment, and others holding the directly opposite view that "most education is clearly an aspect of consumption ... yet education can also be regarded, by analogy, as investment."[52]

As a consumption expenditure education relates to both the private and public sectors. Private individuals value it in itself and spend on it for immediate satisfaction and benefit. Similarly the state spends income on it in the form of public welfare facilities. Such expenditures have a long-standing bias in that they are treated wholly as consumption, because they in no way enhance the abilities of people as producers and consumers. This is indicated by the fact that "most of notions of attaining an optimum rate of economic growth in poor countries are seriously biassed due to strong emphasis on investment in steel mills ...

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49 J.K. Galbraith, The Liberal Hour (London, 1963) p.44.

50 As already mentioned this could be accounted for to some extent by the fact that human resources was regarded as a cant phrase with unpleasant overtones, which were contrary to democratic political philosophy.

51 These measures, however, are generally based on inadequate theories, due to the unmeasurable aspects of many facets.

52 J. Vaizey, The Control of Education (London, 1963), p.37.

with no comparable emphasis on provision for the complementary investment in human agents ..."[53]

Education as an investment has been seriously handicapped by its long time horizon and the fact that returns are both direct and indirect.[54] However, it can be theoretically adjudged an investment in that not all economic capabilities are inherent and many are developed via activities that have the attributes of an investment. Thus education, like health and other human resource factors, is an investment by analogy to investment of material capital. All these require costs, and people invest in themselves or their children, or the state does it for them, quite consciously and deliberately.

It can be concluded that social outlays, on such factors as education, contribute to both consumption and investment, resulting in direct personal satisfaction and in future increases of reproducible output respectively. Education cannot be classified as one or the other, and although intellectually it makes little difference which it is, economically it is of vital importance, for its future promulgation depends on the determination of its relative importance to the economy. In practice no comprehensive study of the expenditure on education has revealed a simple way of determining what constitutes investment and what constitutes consumption, apart from the fact that both are inherently incorporated.

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[53] T.W. Schultz, "Human Capital", Encyclopedia of Social Science, Vol. 2, p.282.

[54] This has resulted in a reluctance to invest because of the length of time which elapses before returns are received, and additionally, returns do not accrue solely to the person or body making the investment.

CHAPTER 5 :- EDUCATION AS AN INDUSTRY

"When in doubt, educate",

- Benjamin Higgins

The educational process is a form of investment in human capital, producing a more economically valuable human being. Along such lines the activities of education can be regarded very much akin to an industry, for it absorbs inputs, both material and human, and creates a final product in the form of trained and educated people. It is questionable whether such traditional apparatus as the theory of the firm is applicable to education, but the general similarity between education and more conventional industry renders it useful and feasible to evaluate education in such terms. The economy of any country requires a spectrum of skills, all of which are developed by education either in its formal or informal state. The links between education and the supply of skills are very close, though it is questionable if this can be uniquely determined by technical considerations.

As an industry, education competes with all other activities for resources. The most noticeable field of competition is for skilled manpower, for "the scarcest resource used in the greatest quantity in education is ability."[55] Besides competing for such resources, where education is publicly financed it has to compete directly with other social services for expenditure, especially defence. In external fields it would appear as if education is in a very similar position to other industries and that it is justifiable in referring to it as such.

As concerns the internal operations of the education industry, it also has some common features, though it has some which are peculiar to itself. In general, like other industries, it is planned to operate at optimum efficiency with the binary objective of attaining a higher level

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[55] J. Vaizey, The Economics of Education (London, 1962), p.108.

of education and producing the educative means to further goals.[56] The operations to attain such objectives can be best expounded as follows.[57]

In diagram 1 output is measured in terms of numbers of students reaching the required academic level and is indicated on the ordinate; inputs of the variable factor of production (the intake of students) are measured in the abscissa. The amount of factors such as classrooms, teachers and so on is taken to be fixed, (though it is necessary to realise that this fixed factor could become a bottleneck in practice). From the above framework a total productivity curve for the education industry can be constructed (Q_1) and this may be expected to assume the shape of a normal growth curve, as indicated in the diagram. This means the number of students "turned out" can be expected to increase at an increasing rate, as the intake of pupils rises, up to point M, after which diminishing returns set in. These returns decrease and become zero at point T, after which they fall further. The point of maximum returns per pupil taken into the system is at point A, the point of diminishing average returns. The assumption of efficient operation of the education system requires that with a given stock of educational capital, the number of students admitted be between A and T, as up to A marginal returns to the fixed factor are actually negative and beyond T the marginal returns to additional intake of students are negative.

Changes in the stock of educational capital (or different levels of education, such as primary, secondary and higher) can be accounted for by curves Q, Q_2 and Q_3. With the stock limited to Q, only S_1 students can be expediently admitted to the industry, and assuming the total number of students is S_2, there will be $S_2 - S_1$ students left uneducated. However, if the stock of teachers is increased (either by introducing external teachers or by inducing more incumbents to become such), the

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56 The following analysis of education as an industry is largely adapted from : B. Higgins, Economic Development. Principles, Problems and Policies (London, 1968), pp.437 ff.

57 Such an explanation in analytical terms overlooks any objections which may arise out of moral views, which maintain human beings should not be subjected to the indignity of mathematical analysis.

EDUCATION AS AN INDUSTRY.

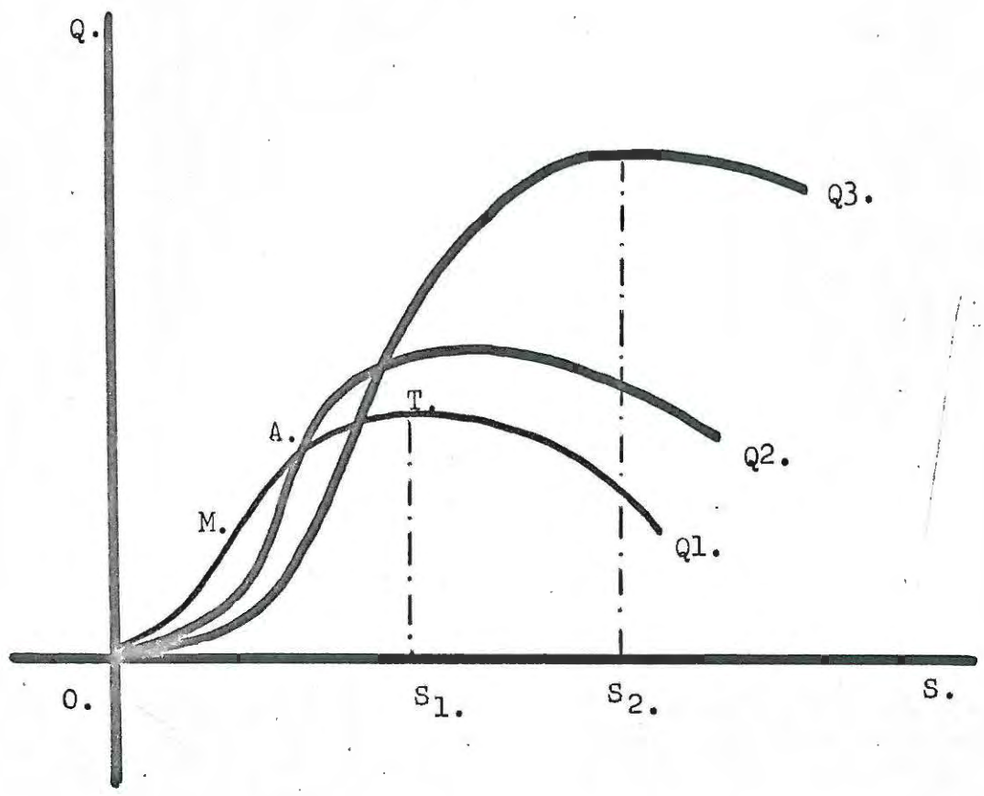

FIGURE ONE.

S. = intake of students.
Q. = output of students.
Q1..3. = total product curve.

SOURCE: B.Higgins, page 437.

curve can be shifted to Q_2 and then Q_3. The number of pupils absorbed will increase, and ideally it should increase quicker than the population growth to have a universal intake and to reduce any existing backlog.

From this analysis it can be seen that education as an industry is a feasible concept. The peculiarities attached to it are that the outputs are not sold, though the inputs are obtained at a cost; the production cycle is relatively long; and in some instances it would be questionable whether profit maximisation should be strictly adhered to, that is, whether social forces can be totally abstracted from.[58] As an industry it is difficult to quantify just how efficient education is and how efficiently it promotes resource allocation, but one important conclusion from such an analysis is that it helps destroy the classical concept of homogenuity of labour, in that those students who do not enter the industry are considered uneducated and less valuable, in terms of human capital, than those who are processed by education as an industry.

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[58] This is a common problem in any economic analysis, and in general the "naivety" of economics as a social science is assumed, in that it is convenient to abstract from inter-disciplinary conflicts, in order to reach more profound conclusions.

CHAPTER 6 :- INVESTMENT, EDUCATION AND EARNINGS

> "As technical developments have altered techniques ... society has begun to recognise that economic progress involves not only changes in machines, but also in men - not only expenditures on equipment, but also on people".
>
> - B.A. Weisbrod

It has been shown that education has both an investment and a consumption component, and that it can be taken to function as an industry in many respects. It is, however, a matter of some importance to also know the connection between investment, education and earnings.[59]

Any society has to face the choice between investing in more education or in other sectors of the economy.[60] On the face of it such a choice would appear relatively easy in economic analysis, but it is made more difficult in that education has both a consumption and an investment component. The problem can be concentrated on the determination of an optimal time path of investment in education, taking into account both its "capital good" and "consumption good" component.

In diagram two,[61] investment in education in the current year is measured on the abscissa; and on the ordinate, related gross national product (G.N.P.). It is a well-known fact that the impact of education on production in any one year is limited. A point is reached where the devotion of more resources to education gives a net reduction, that is, negative marginal returns (as opposed to diminishing marginal returns). This results in a fall in the G.N.P. curve as investment is increased. (See diagram 2). The full impact of an investment in education is, however, only felt after a relatively extensive time lag.[62] This can be shown analytically on the diagram. An investment increase in education

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59 This chapter is an attempt to indicate the general connections between the three concepts, prior to a detailed analysis of costs and benefits in the next chapter.

60 Such a choice is the essence of economics and is the resultant between scarce means and alternative ends.

61 Adapted from B. Higgins, op.cit., p.443.

62 A direct consequence of the long time horizon and productivity cycle inherent in the education industry. (See Chapter 5).

in period t. will raise the G.N.P. more in four years than in one, and again, more in eight years than in four. The point of diminishing returns will be reached at higher and higher figures as future time is taken into account. Yet, theoretically, diminishing returns must eventually be reached, but the inclusion of this phenomenon renders a quantitative analysis of investment in education a relatively complex affair.

As regards earnings (and their distribution), education has been attributed an effective role. Earnings have been analytically represented in many different forms.[63] They all, however, by definition contain common essential elements and a representative typification is as follows.[64]

It is assumed total earnings after an education is complete equal the returns of the investment plus earnings derived from original human capital (inherited abilities). If it is assumed they are constant for an indefinitely long period, then

$$Ei = Xi + \sum_{j=1}^{m} rij\ Cij \qquad -(1)\ ^{65}$$

where Cij = amount spent by i^{th} person on j^{th} investment

rij = rate of return on that investment

Xi = effects of original capital

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63 See also : G.S. Becker, "Investment in Human Capital", Journal of Political Economy, Vol. 70, (Supplement, 1962, No. 5), p.26. Here he analyses net earings as;

$$W = MPo - (MPo - MP + K) \qquad -(1)$$
$$= MP - C \qquad -(2)$$

where MP = marginal product (assumed equal to earnings)
MPO = that MP that could be earned,
K = direct costs and
C = sum of direct and forgone costs and where net earnings are difference between potential earnings and total costs.

64 Adapted from : G.S. Becker and B.R. Chiswick, "The Economics of Education : Education and the Distribution of Earnings", American Economic Review (Vol. 56, 1966) pp. 1-12.

65 This applies only to earnings, which form a dominant part of total income. It could be extended to include non-monetary earnings, but this would render it almost invalid due to the immeasurability of such earnings.

EDUCATION AND INCOME.

Source: B.Higgins, p.443

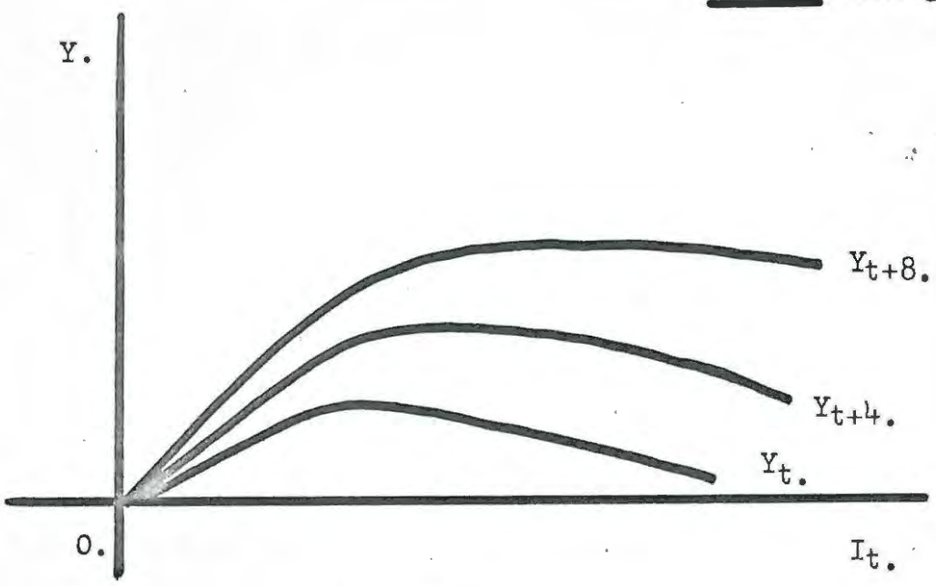

FIGURE TWO.

It.= current investment in education.
Y. = related national income.

INVESTMENT, EDUCATION AND INCOME.

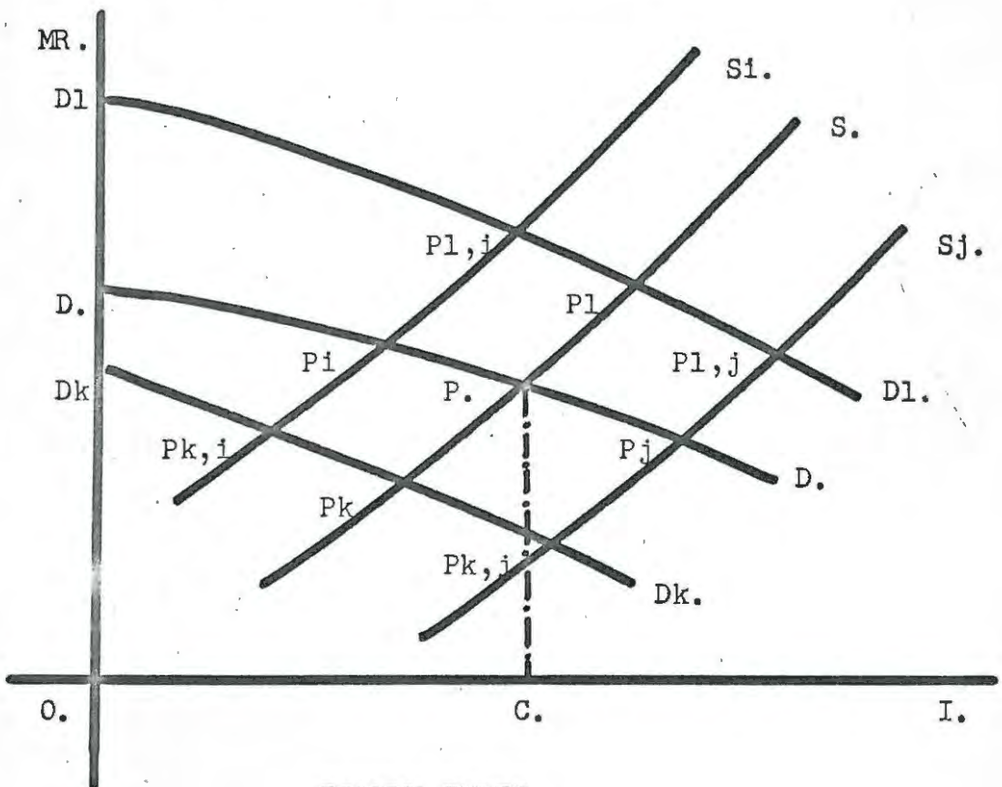

FIGURE THREE.

MR.= marg. rate of return.
I. = amount invested.
S. = supply of funds.
D. = demand for funds.

Source: G.S.Becker and B.R.Chiswick, page.359.

Using the two concepts described above, an amalgam of investment and earnings can be indicated, assuming investment decisions result from the rational behaviour of welfare maximisation.[66]

In figure three the curve demarcated D is an individuals marginal rate of return, and S is the marginal "interest" cost. Equilibrium will be at point P, where the total amount invested will be OC, giving a gross income of O.D.P.C.[67] Then considering the distribution of curves and earnings it is seen that curve S depends upon the factors of income and wealth of parents; willingness tc forego consumption; and availability of scholarships and loans. Such factors can obviously vary from person to person, thus the supply of funds can vary between S, Si and Sj in the diagram.

The demand curve, D, if it was the same for all, would give equilibrium points at P, Pi and Pj. Then the distribution of earnings would be dependent on the distribution of the supply curves, their shape, and the shape of D itself. More usually, however, the demand for funds would also vary, due to differences in ability, attitudes towards risk and other personal characteristics, giving curves Dk, D and Dl. The result would be numerous equilibrium positions at the various intersections of the relevant curves, thus affecting the income distribution according to each individual's (or country's) particular curves.

This analysis indicates inequalities of opportunity. These can be overcome by offsetting low parental wealth and income by other factors so as to attain a common S-curve for all (for example, by making education a free good). This, however, would not imply equality of investment, but merely equal opportunity to invest as the actual amount depends upon personal characteristics, which are inherently different.

The contribution of human capital and education to the distribution of earnings could be empirically calculated if the rates of

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66 Adapted from : G.S. Becker and B.R. Chiswick, ibid.

67 This analysis is as applicable to individual investment and income as it is to national aggregates.

investment in equation (1) were known. Such information is, however, lacking in quantity and quality, and this has reduced the scope of such analysis to a theoretical level only.

CHAPTER 7 :- A COST-BENEFIT ANALYSIS OF EDUCATION

"We may then conclude that the wisdom of expending public and private funds on education is not to be measured by its direct fruits alone."

- Alfred Marshall

Analyses have indicated that investment in education is as beneficial, return wise, as investment in physical assets. This is the fundamental motivation behind an economic analysis of, and interest in, education, but measurement is still inaccurate and is only in its earliest formative years. The general belief, ho ever, is that the formulation of a systematic study to establish the return from investment in education would verify that education is economically viable in all countries, and would offer a unified explanation to many phenomena which have been given ad hoc solutions. This desire has been fostered by the re-discovery of human capital, which has led to subsequent efforts to incorporate educational investment into the mainstream of economic analysis.

"Costs" and "benefits" are necessary concepts in investment decisions, especially when taken by non-trading bodies such as education authorities, because "the enumeration and (if possible) valuation of social costs and benefits is the only means of assessing value for money in quantitative terms."[68] Costs are any expenditure, or abstention from expenditure in an alternative project, which is motivated by the project under consideration. Benefits from education include anything which pushes outward the utility possibility function for the society. Both can be internal and external in part or total.

Recent studies in the measurement of the many facets of investment in education have gone a long way to clarify certain cost components. In general, costs can be classified as direct or indirect, monetary or non-monetary. Direct, money costs usually prove fairly easy to ascertain and correlate, but indirect, non-monetary costs are at the opposite end

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[68] J.L. Carr, Investment Economics (London, 1969) p.75.

of the spectrum of difficulty. In such costs, opportunity costs are a large component and they provide both practical and conceptual problems in their measurement. Problems that arise in determining the extent of such costs are disagreements between economists as to the effects of unemployment, the nature of census data and suchlike. The concept of opportunity cost in this instance, includes all earnings forgone by mature students, which have been found to be substantial, especially in more recent years. As Schultz claims for America, "For all levels of education taken together, earnings forgone were 26% of total (social) costs in 1900 and 43% in 1956."[69]

The inclusion of earnings forgone clarifies the distinction between private costs and total costs to the community and economy. This division between private and social costs helps explain differences in incentives to invest in schooling, shifts in favour of formal education relative to on-the-job training and in ascertaining rates of return, important in optimum investment decisions. "As a general rule, private costs of education are obviously below social costs because of contributions by governments, ... In more subtle ways may schooling impose costs upon society."[70]

The benefits of education can be derived both at the present time of investment and in the future, accruing to the student as well as to society. As yet there is little empirical verification of the assumed amounts of benefits which accrue to others. Direct benefits to the student are in the form of current consumption, ability to enjoy psychic satisfaction and abilities to increase productivity and earning power.[71] On the matter of indirect benefits Marshall claims that "whatever differences the modern methods of business may have, they have at least this

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69 T.W. Schultz, "Capital Formation by Education", Journal of Political Economy, Vol. 68 (Dec. 1960), p.577.

70 W.L. Miller, "Education as a Source of Economic Growth", Journal of Economic Issues, Vol. 1 (Dec. 1957, No. 4), p.287.

71 Another benefit conferred to investment in human capital is that of "the value of the option" to obtain still further education and the reward accompanying it. The value of an option is real for many students who are discovering their talents via education; See B.A. Weisbrod, op.cit., p.109 ff.

virtue, that he who bears the expense of production of material goods, receives the price paid for them."[72]

The estimation of the return to education has become a fashionable trend in economic studies, and is an important aspect of the human capital concept. Various approaches have been propounded, including those of the residual, the rate of return and the stock of capital. All of these approaches are based on the conviction that if education is an investment it must have a return, which accrues to someone and can thus be measured.

The residual approach is based on a survey conducted by Odd Aukrust in 1959[73] in which he questioned the hypothesis that the national product of a country will increase at about the same rate as the real capital. He believed that "the human factor" was at least as important as physical capital in generating growth. To reach this hypothesis he had to measure the contributions of the various factors of labour, physical capital and human capital to total capital.

The inputs of physical capital and labour could be measured, though with some difficulty due to their dynamic nature , but that of the third factor could not, by definition. By using a standardised equation it was found that Aukrust's "third factor" could be given a residual value. The equation used was,

$$Rt = akt^{\alpha} Nt^{\beta} (e^{ht})^{\eta}$$

where Rt = national product

kt = real capital (at depreciated replacement cost)

Nt = employment (in man hours)

e^{ht} = index of organisation (assumed to increase by constant rate h).

a, α, β, η are constants.

This equation was found to give a residual trend in the growth of national output which could not be explained by the accretion of physical

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[72] A. Marshall, op.cit., 7th Ed., Bk. 6, Ch. 4, p.644.

[73] Quoted in; J. Vaizey, Economics of Education (London, 1962).

capital and manpower, and was by elimination attributed to the human factor.

The rate of return approach measures the contribution of education in both indirect and direct benefits. This assumes they are measurable to some extent. The general belief is that man is able to earn more if he becomes more skilled through education. The results of empirical studies are striking and the earnings of people with different educational backgrounds have proved to be very different, especially in America, where most research has been conducted.

These returns are then related to the costs incurred to acquire them and the general trend is that the productivity of education has been found to be very high, even with the most cautious and conservative methods of calculation. The only fault in this approach is that there is no definite causal relationship between higher incomes and higher education levels. There is no necessary validity in the concept that income distribution is a system of returns to education.

The stock of capital approach is in essence an analogy between returns to investment and additions to the stock of capital by measuring the amount of education available in the population at large. Such a study was carried out by T.W. Schultz, in the United States,[74] who by adding up the educational capital of mankind (in dollars to overcome heterogenuity) and the costs to society of its production, computed a return on the investment. The biggest failing of this approach, however, is that it includes cultural values of education and knowledge given to non-producers, so that it is not a true measure of the economic contribution of education.[75]

Each of the above-mentioned approaches attempts to classify as accurately as possible, and then to quantify, the categories of "costs" and "benefits" in order to use these concepts to evaluate the role of

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[74] T.W. Schultz, op.cit.

[75] In all fairness to Schultz it must be pointed out that he was aware of this factor and attempted to overcome it by stating he seeked to measure the "stock" of education, whether utilised or not.

investment in education. (See Appendix B on the "Measurement of Returns"). Although they all have failings in that they are often conceptually naive and the practical problems can render them unfeasible, the general conclusion from their application is that education has a high rate of return as an investment and is viable on economic grounds.

The concept of a cost-benefit approach to education obviously has its inherent difficulties and drawbacks, but is receiving an increasing amount of support amongst modern theorists on the subject. Their basic belief is that education can be analysed as effectively as any other investment, but certain writers strongly criticise this view. H.G. Shaffer, in his critique of the concept of human capital, claims "any attempt to show that rational individuals tend to undertake expenditure on education up to a point where the marginal productivity of human capital produced by the process of education equals the rate of interest ... would be a mockery of economic theory."[76] He thus renders invalid any investment decisions which could be based upon a cost-benefit analysis and believes therefore, that such analysis has no real purpose. Likewise Schumpeter[77] believed that even if such an analysis were carried out, it would have little weight. He maintained that education increases the supply of skilled manpower beyond the point determined by cost-benefit considerations and justifies this by the occurrence of fractional unemployment.[78]

Although the simple truth is that there is, at present, no way of avoiding a cost-benefit approach to education, it appears that a neat classification of costs and returns is almost impossible, though much work has been done by a number of scholars in advancing solutions for

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[76] H.G. Shaffer, "A Critique of the Concept of Human Capital", in Blaug, M., (ed.), Economics of Education (Penguin, 1968) p.48.

[77] J.A. Schumpeter, Capitalism, Socialism and Democracy (London, 1944).

[78] This is questionable as there are few historical examples of economies top heavy in skilled personnel, due mainly to the fact that higher education is a function of the lower levels and that the existence of the latter is a precondition for that of the former.

several procedural matters. It is thus feasible to assert that the "superiority" in investment decisions and resource allocation still often remains in a value judgement, though this is being increasingly challenged.

PART THREE

EDUCATION AND ECONOMIC DEVELOPMENT

"In the last resort the problem of international poverty is only superficially an economic one : in a deeper sense it is an educational one."

A.K. Cairncross

CHAPTER 8 :- HUMAN AND MATERIAL CAPITAL IN ECONOMIC DEVELOPMENT

> "The supply of capital has so often been stressed as the key to development and prosperity for underdeveloped lands, but the supply of unlimited capital will not itself create development : skill and willing hands are needed to turn the key to open the door."
>
> - A.B. Mountjoy

There are fashions in economic theory and material capital was once seen as the crucial element in the development of underdeveloped economies, but the modern trend has run contrary to this view. A growing scepticism about the primacy of material capital accumulation has been engendered by the increasing importance placed on the concept of human capital and by the widening of knowledge on the economics of education. The result has been that while material capital is seen to be a necessary condition for development, it is by no means a sufficient condition.[79]

Despite the relegation of physical capital to a lower level of importance, it is widely agreed that large amounts of it are necessary in the development process of underdeveloped countries. It is but one of a number of forces, though it is an important one in that it has a catalytic effect upon other factors. Those economists who regard it as the key factor base their beliefs upon the fact that "the accumulation of capital (physical) is the most effective way to create the other conditions required for economic growth; these requisites are created concurrently with and primarily by a high rate of capital formation."[80] This contention is thus based upon the high regard attributed to the external effects of physical investment, and it stands or falls on the importance of these external effects. Such effects, however, which are

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79 Although this is the "majority opinion", there are noticeable abstentions from such a stand. Such economists as S.P.Schatz and H.G. Shaffer are amongst those who believe that material capital is the key to economic development, being both a sufficient and necessary condition.

80 S.P. Schatz,"The Role of Capital Accumulation in Economic Development", Journal of Development Studies, Vol. 5, (Oct., 1968), No. 1, p.40.

attributed the qualities of creating scarce factors of production and capital stock, and upgrading both labour and entrepreneurship, are difficult to measure.[81] This places the question to some extent in the realms of a mere value judgement, and "the pivotal difference between the capital-emphasisers and the capital-deprociators on the "sufficiency of capital issues lies in their judgement of this slippery empirical question."[82] In such a predicament it is obvious that neither side can unequivocally be declared the victor.

Other arguments which support the case of the "capital-emphasisers" and the importance they attach to externalities, are that it is wrong to consider education as a direct investment in human capital, for it is the result of the effects of other investment, and that the application of the capital concept to man would more often than not, "confuse more than elucidate, it would create more problems than it would solve, and ... it would be of questionable value."[83]

In contemporary times there has been a shift away from regarding physical capital as the general, though not universal, pre-condition for accelerated growth. In general it appears at present that the more radical economists are identified with the primacy of capital doctrine while the emphasis on human capital accumulation has become the mainstream trend.

The importance of the concept of human capital in economic development has been tacitly proven by recent empirical studies. It has been shown to provide an acceptable explanation to many problems which were hitherto regarded as unexplainable economic phenomena in the realms of physical capital theory. Such verification of the part played by human capital in the development process revolves around both the misinterpretation of the decline in capital-income ratios and the seeming rise in factor productivity.

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81 This difficulty is in exactly the same mould as those difficulties arising on the measurability of the external costs and benefits of education.

82 S.P. Schatz, loc.cit.

83 H.G. Shaffer, op.cit., p.56.

As regards the former it was apprehensively viewed by developing economies that the more advanced nations experienced declining capital-income ratios. This was however, the direct result of considering capital to consist only of physical captal. The bias away from this restrictive view has led to the inclusion of human capital to give a Fisherian concept of overall capital, which renders the apparent substantial decline in capital relative to income an illusion and not indicative of the real situation imposed by development.[84]

The belief that the productivity of both capital and labour has risen substantially over time, especially as economies develop, is also explained by the human capital concept, which helps one arrive at the conclusion that "there is no strong theoretical or empirical basis for believing that the production of all factors of production treated as an aggregate, where the economy grows at an even pace, should either rise or fall. A much more plausible hypothesis is that it remains approximately constant over time."[85]

The basis behind the explanation to this is that many factors of production (especially human capital components), which are added to the resources of an economy over time, are not included among the inputs, but are merely swept aside under the carpet of "technological change." This productivity illusion, which arises out of development, is in a large part due to the neglect of human capital and its contribution to production.

The general conclusion from the above discussion is that human capital has played an important part in the development process of economics and that its importance has only of late been recognised. Empirical studies have been conducted to evaluate the part played by such human capital and although these evaluations have been hindered by

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[84] The bias towards the omission of human capital is rendered even more serious by the fact that empirical results have shown such capital to increase at an even higher rate than that of material reproducible capital.

[85] T.W. Shultz, "Human Capital", op.cit., p.281.

conceptual problems and the immeasurability of many factors, they have all rendered that favourable economic results flow from education and the accumulation of human capital (see Appendix B). Human resource development not only contributes directly to economic growth, but indirectly as well, for it provides a method for the necessary transformation of political and social institutions which are a part of economic development.[86]

It is obvious that both human and physical capital play an important part in the development of underdeveloped countries and to consider either as the singular factor, to the exclusion of the other, would be bad economics. It is, however, feasible to attribute to each a greater or lesser role, though this could, of course, be reversed in any particular instance. In general it can be assumed that human capital is of more importance, though by itself it is not a sufficient condition for, "Development may be impossible without building the physical apparatus of advanced countries; but it is still more impossible if it does not take place in the minds of the men who build."[87]

When determining the part of growth associated to one particular source, it would be a simple calculation of the income values of the products of such sources were known. But this is not the case, especially with human agents. This inability to allocate growth to sources does not, however, mean that such attribution should not be attempted, it just renders exact allocation impossible, and necessitates to some extent the existence of a value judgement. The modern, popular view is to

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[86] In this light human resource development is an integral part of both economic growth and economic development. The former is manifest in an increase in national aggregates while the latter entails structural changes, technical advance, the closing of sectoral and regional gaps and so on. The relationship between the two is that growth is a function of development. Such a distinction is of vital importance in establishing the role played by education as will later become apparent.

[87] A.K. Cairncross, Factors in Economic Development (London, 1965), p.31.

"play up" the role of human capital in development and deprecate that of material capital. In some ways this exaggeration is the result of the tendency prone in all innovations, for the concept of human capital is undoubtedly undergoing an innovational process. While admitting that human capital is probably the key to economic development and growth, care must be exercised so as not to lose sight of the relevance of physical capital.

CHAPTER 9 :- HUMAN CAPITAL - THE "PRIMUM MOBILE"[88]

> It is human resources, not physical capital, which are primarily responsible for economic growth."
>
> - Colin Clark

For a long time the situation of the primacy of physical capital in economic development went unchallenged. Yet this belief of the strategic importance of material capital has recently been superceded by the pre-eminence of human capital. "The search for the 'primum mobile' of economic development has thus widened from physical to human capital."[89] The modern approach merely replaces physical with human capital in the belief that with its collection an underdeveloped nation could finish the job. There has been a growing awareness "of the paramount place man himself holds in the process of economic development. In the long run success or failure must depend upon the capacity and adaptability of the people in adopting new techniques and new ways of life..."[90]

Many economists have attempted to indicate analytically just how human capital can affect economic development. One such formulation, referred to by both Schultz and Blaug, is that known as the "Horvat Formulation",[91] which attempts to portray the critical role of human capital. In this formulation two of the factors used are pertinent to human capital, namely health standards and knowledge. The former leads to an increase in the productivity of labour if standards are improved (see Appendix A) and it can be generalised that a "Westernisation" of

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88 This chapter is an attempt to show how and why human capital has come to be regarded as the most important factor in economic development by certain economists. It is heavily based in certain aspects upon the work of Horvat, as quoted in the text.

89 A.O. Hirschman, The Strategy of Economic Development (New Haven, 1964), p.2.

90 A.B. Mountjoy, Industrialisation and Under-developed Countries (London, 1966), pp.117-8.

91 B. Horvat, "The Optimum Rate of Investment", Economic Journal, Vol. 68, (1968).

the age composition and state of health of the people in underdeveloped countries would increase potential productivity by twenty to thirty per cent.[92]

The factor of knowledge comprises all degrees of skill, including research, and Horvat states that "The experience of planning seems to suggest that knowledge (and certainly not investment resources) is the most important scarce factor in underdeveloped countries with an otherwise favourable social climate. Thus growth of 'know-how' is likely to pose the limits to the general economic development."[93] This means that the absorption of investment into the economy depends upon the human factor. To show this Horvat derives the following formulation:-

$$IP = f\left(I, \frac{dI}{dt} \; ; \; A, \frac{dA}{dt}\right). \qquad - (1).$$

where IP = investment production function

I = quantity of investment

A = absorptive capacity of the economy.

Thus the investment production function depends upon the quantity of investment, the absorptive capacity of the economy and the speed of their expansion. The factor A in the above equation (1.) is complex and depends upon the four variables of personal consumption, health, knowledge, and economic and political organisation. All other relevant factors are lumped together as a single exogenous factor (E).

Thus equation 1. can be re-written incorporating the following for factor A;

$$- (2). \quad A, \frac{dA}{dt} = g\left(C, \frac{dC}{dt} \; ; \; H, \frac{dH}{dt} \; ; \; Kn, \frac{dKn}{dt} \; ; \; O, \frac{dO}{dt} \; ; \; E, \frac{dE}{dt}\right)$$

Horvat then believes from this a maximisation of production can be obtained, which results in economic growth for underdeveloped countries, where an underdeveloped country is one in which the share of factor I is less than optimal, or where factor A is at a low level.

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92 Taken from Spengler, "The Population Obstacle to Economic Betterment", American Economic Review, (Proceedings, May, 1951), p.344.

93 B. Horvat, op.cit., p.752.

As the economy expands, the level of factors incorporated in A will rise, and this will change their productive functions. Hervat maintains[94] once poverty economics are left behind and people are well fed, have reasonable leisure time and enjoy a healthy life, factors G and H lose their place in the investment production function (that is, they are no longer productive agents, but ends in themselves). Further, when a stage of relative stability is reached, political and economic organisation is also reached, thus factor O can be eliminated. "In this way A will be reduced to Kn., which remains the only limitational factor on growth. The 'intellectual capacity' of a community will provide unsurpassable limits for the productive application of investment and as for the speed of expansion of its economy."[95] Thus Hervat believes, while knowledge and skill are always increasing, there are limits and lags on the speed of change, which will directly affect the speed of investment, via application of his formulation, and thus economic growth.

This attempt by Hervat to show the relevant role of human capital has both merit and failings. As a "premium mobile" this obviously falls under the attack upon which Hirschman based his whole strategy,[96] in that development depends not so much upon finding the single factor, but upon finding the optimum combination with the greatest linkage to induce further growth. He believes one must not think in terms of a "missing agent", whose injection will solve the problem, but must instead concentrate on the need for a "binding agent."[97] As analysed by Hervat, human capital is seen as the missing agent, but it could also

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94 ibid., pp.760 ff.

95 ibid., p.761.
It is interesting to note here that Hervat pays no further heed to his exogenous factor E. It can only be presumed he considered it to be a constant, which is a highly unrealistic assumption in this case.

96 See A.O. Hirschman, op.cit.

97 ibid., p.7.

be viewed, quite feasibly, as a binding agent by a slight modification to the formulation to concentrate not on the lack of one, or several, "needed factors or elements that must be combined with other elements to produce economic development, but with the deficiency in the combining process itself."[98]

Altogether the role of human capital in economic development is crucial, but by itself, education is not sufficient, as "Economic development is the result of a combination of social, cultural, political and economic changes which in turn brings about further changes."[99] It thus seems impossible to isolate any one of these variables as the inevitable prime mover, though education can be seen as "the greatest single pace-setter of development ..."[100] In all, any attempt to indicate education as the only key to economic development would be erroneous, but it is apparent that its role has become acclaimed as more important, in the large majority of cases, than that of material capital as an inducement mechanism for economic growth.

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98 ibid., p.25.

99 P.T. Bauer and B.S. Yamey, The Economics of Underdeveloped Countries, (Cambridge, 1960), p.128.

100 E.G. Malherbe, Bantu; Manpower and Education, (Johannesburg, 1969), p.32.

CHAPTER 10 :- PLANNING EDUCATION FOR PROGRESS

"Although all governments profess a great concern over increasing education, ... economic development plans of backward countries usually place much greater stress on physical investment than upon human investment."

- Stephen Enke

Prior to this era, economists openly dealt in analysis with homogeneity of labour and capital, restricting any educational reference to pure financial aspects. With the realisation that improvements in the quality of the labour force could greatly affect economic growth and development, a transformation of such orthodox economics has occurred and the modern tendency is to plan education to achieve specific economic targets and objectives.[101]

In the planning of education common difficulties experienced are those in combining the economic with the social and political objectives for education. Such difficulties are rife in both developed and underdeveloped economies. Most developing countries have programmes for education but often they aim at universal primary education, which can be more a limiting than a conducive factor in economic growth.[102] Another complicating factor in education planning in developing nations is that the demonstration effect often encourages prestige expenditure and conspicuous consumption in education. This "lopsidedness" of expenditure is as equally a waste of resources and as disastrous to economic development as having too broad a base to the education pyramid, for merely being described as an investment,

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101 The rapid transformation can be indicated, to some extent, by the fact that Jan Tinbergen in his book Design of Development (Baltimore, 1959), written in 1958, states on page 5, that, "Finally a very important condition for development is the provision of training and education ... Since these activities are not as a rule considered part of economic policy, they will not be considered..." Today they are an integral part of economic policy as will become apparent.

102 Universal primary education is usually a social and political target, though in some cases e.g. Japan, it has proved to be a useful vehicle for economic change.

does not render such expenditure productive.

Education, like other social services and investments, does not operate in a vacuum and cannot justifiably cripple other programmes in its demand for resources. A resource can be described as "an opportunity in the environment that has been identified and appraised by a population of potential users,"[103] and as such human resources are perhaps the greatest potential asset of any underdeveloped country. Resource planning attempts to lay out better programmes for the development of natural resources than would otherwise occur and to this end education planning serves a vital role. The planning of education necessarily occurs simultaneously with the planning of industrial sectors.[104]

The most essential task of education planning is to aim at providing the various kinds of qualified, skilled or trained labour available at the right time in the right numbers to ensure the smooth development of society by avoiding both surpluses and shortages. In general, short term planning is conducted at a micro-economic level as it deals with individual specialisation flows, and long term planning is on a macro-economic level as it is basically concerned with aggregate volumes. (See Appendix C).

It has often been asserted in many different ways that "Development flows from applying skills to natural resources"[105] and a policy of improving skills is therefore fundamental to planning. This includes all levels of training and education, and since a poor country cannot afford all the education which it desires, allocation of the limited resources available to education and other services has to be made.

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103 R.L.Meier, op.cit., p.137.

104 The method of complementarity assumes that the activity of a number of social services is bound to expand in proportion to the expansion of production in general. (See Appendix C). Education planning is usually dealt with as a separate sector (as apart from general social planning) due to its characteristics.

105 W.A. Lewis, op.cit. p.120. This implies that the qualities and abilities in human resources are present in latent form and that the planners have the knowledge of how best to evoke them.

The allocation of these resources by public authorities is a difficult problem for it has to reconcile the demands for infrastructural services required to support a growing economy with the public's demands for some services which are desired for their own sake, irrespective of productivity. In all, it can be maintained that public expenditure planning on social services, such as education, is as much a political as it is an economic decision and this renders education planning a more complex activity than it would at first appear.

Illiteracy is a serious drawback to economic advancement and the planning of the raising of the quality of labour is a necessary pre-condition for development, where quality is taken to include both the physical and mental conditions of a people : "In this sense the poor quality of the population is probably the greatest handicap to the economic advance of the underdeveloped lands."[106] By effective planning for education the negative drag of the great populations of underdeveloped countries can be transferred to have a positive value in capital formation, for the labour of such countries is undoubtedly their greatest resource, provided it can be adequately trained. It is the role of planning to ensure that the optimum benefit is derived from this potential source. The planning for educational advancement is rendered even more crucial in economic development when it is observed that "Deficiencies in material capital can be more readily supplied from external sources, but knowledge and experience can be lent only in more limited quantities and indigenous supplies ... take years to develop."[107]

The planning of education can contribute greatly to economic development in that it directly affects the labour component of any economy, and it has been empirically found that this component earns between 70% and 80% of the national incomes of the economics studied.[108]

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106 A.B. Mountjoy, op.cit., p.58.

107 ibid., p.121.

108 E.F. Denison, Why Growth Rates Differ (Washington, 1967), p.45. It is important to know, however, that all economies studied were relatively advanced ones in America and Europe. But the fact still remains that labour is potentially the greatest asset of an underdeveloped country.

The educational background affects the quality of labour in that it determines the type of work a person is able to perform and his efficiency. This means that both the orientation and standard of education requires careful planning.

It is generally believed that education and economic growth have a close correlation, as earlier chapters in this dissertation have indicated, but some economists maintain that the connection is not clear and the only positive knowledge is that "education is connected - we cannot say more - with economic growth."[109] Such a view would cast doubts on the effects and applicability of education planning in both developed and underdeveloped nations. It is, however, evident that a greater insight is possessed into the connection between education and economic growth than such economists would admit, and this gives a practical value to planning education for future economic growth. The purpose of an education plan in any economy is to provide a full and balanced educational project with the view to enabling every individual to make the maximum contribution to society, which his mental endowment and physical condition will permit. It is along these lines that such planning has become an integral part of both economic and social policy of many developing nations, for it is a direct channel to facilitate economic growth and development in that it adds to the stock of knowledge and to the quality of labour inputs, both of which are incorporated in the concept of human capital.

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[109] J. Vaizey, ibid., p.36.

CHAPTER 11 :- EDUCATION AND ECONOMIC METAMORPHOSIS

> "Economic growth has become a race without a finishing line ... The laggards have good reason to be concerned; the race is getting faster all the time, and the rich get richer while the poor have children."
>
> - J.A. Henry

A growing body of economic theory tends to support the view that economic development is not an automatic or an inevitable process and that it has to be actively created and advanced. This stems from the belief that underdevelopment is the normal condition and development the abnormal. The role of education in initiating and sustaining development to enable an economy, or even a laggard sector of an economy, to transform itself from a traditional to a modern stage has been attributed various amounts of importance by different economists. In the history of economic thought, education has been incorporated as a factor in both general and partial theories, but as yet no precise role can be universally applied to it in the development process.

In order to try to evaluate this role it is necessary first to ascertain exactly what is meant by a traditional or underdeveloped economy. Hla Myint[110] formulated a valuable distinction between "underdeveloped" and "backward" which is relevant to the question of the role of education. He believed that the terms underdeveloped and developed could be applied only in relation to the natural resources of a country, whereas those of backward and economically advanced were descriptive of the human resources in the country. It is thus quite often a misconception when poor nations are variously described as backward, underdeveloped and developing in the same sense. With education it is, ironically, the most emotive word "backward" which gets closest to the essence of the problem.

Underdevelopment is therefore often a direct result of backwardness and in this context the role of education can be seen as both vital and

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110 H. Myint, The Economics of Developing Countries, (London, 1965).

necessary in the metamorphosis of an economy. The task of education is made even more difficult where both backwardness and underdevelopment exist together, for under such circumstances its initiating role is heavily swamped. A common feature of underdeveloped and backward countries is the existence of "a vicious circle of poverty". In the words of Ragnar Nurske this "implies a circular constellation of forces tending to act and react upon one another in such a way as to keep a poor country in a state of poverty."[111] This concept explicitly entails the concept of human capital, for ill health and lack of training can reduce a workers productivity, which in turn induces poverty, which leads to under-nourishment and little human resource development, which perpetuates ill-health and lack of education.

Education is thus directly included in the poverty of poor nations and many economists see it as the key to breaking the vicious circle, as described above; for the only way to break the circularity process is to promote human resource development by education (and by health). In this way education, by raising labour productivity can be both a necessary and sufficient condition for development.[112] In such an instance education can be seen to be "not only a process for transmitting the values of a particular society, but also ... as an aid to rapid economic development."[113]

Education's most important facet as an inducement mechanism for economic growth is that it has the ability to increase the productivity of labour. The way in which education achieves such a rise in productivity is both by inducing the use of better techniques and methods and by inducing a re-orientation of economic and social outlooks. A common

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111 R. Nurske, Problems of the Capital Formation in Underdeveloped Countries (Oxford, 1958), p.4.

112 In terms of a Rostowian analysis of development, education would become the key pre-condition to "take-off" from the traditional society with its production ceiling into the stage of self-sustained economic growth. See W.W. Rostow, The Stages of Economic Growth (Cambridge, 1965)

113 Phoenix Group, Planning for Progress (Salisbury, 1963), p.49.

feature of many underdeveloped nations (especially in Africa) is that there is no "dynamism" blatantly present. Economically the outstanding feature is a lack of the strategic factor of production - modern industrial entrepreneurship. This is directly bound up with the totality of factors which make up a way of life in underdeveloped economies. Education, by re-orientation, attempts to overcome this, but it cannot produce an adequate supply within a reasonably short time. This is perhaps the greatest failing of education; that it has a relatively long time horizon, though shortcut methods can be attempted, according to psychologists, to develop the necessary "eta-achievement" in selected individuals.[114] Also it is feasible to import outside help to overcome the problem in the short run. In the long run, however, the economics of importing skills does not solve the problem,[115] for unlike physical capital, human capital cannot be lent in unlimited quantities.

Another aspect, in which education has a crucial role in overcoming, is that of "dualism", which is the by-product of the uneven impact of modern culture and technology on backward and underdeveloped nations. Hirschman describes it as "the prolonged co-existence and co-habitation of modern industry and of pre-industrial, sometimes neolithic techniques."[116] This results in a striking contrast between islands of modern economy in a sea of subsistence, creating two separate economics employing different techniques and different values.

The critical role of education and human resource development in this instance is to narrow the gap between these two almost-opposite economies both socially and economically. Such a change cannot merely be grafted on, but must be induced via re-orientation of the subsistence sector, "To make a modern economy, you must make a modern man."[117]

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[114] On this point see D. McClelland, "The Achievement Motive in Economic Growth, in Novack and Lekachman, (eds.), Development and Society, p.180.

[115] See T.W.Schultz, Transforming Traditional Agriculture (New Haven, 1964), pp.190 ff.

[116] A.O. Hirschman, op.cit., p.125.

[117] D.H. Houghton, "Aspects of Economic Development in Africa" in J.F.Holleman, Problems of Transition (Natal,1964)p.161. This statement has been criticised in that motives which characterise a fully-developed modern man differ from those necessary in a transition period.

The concept of dualism originated from a study by J.H. Boeke on the Indonesian economy, which he claimed had general applicability.[118] He envisaged social dualism as "the clashing of an imported social system with the indigenous social system of another style",[119] and used this to validify his rejection of "Western" economic theory and its applicability to dual economics.[120] He suggested that the acceptance of dualism is an irretrevable fact, but Higgins refutes such ideas in the light that dualism is not natural to society per se; it is more readily explained in economic and technical terms. This means that it is not a pure sociological phenomenon, otherwise development would never occur.

This belief as postulated above renders it possible for education to overcome dualism, for whilst it is not possible to merely graft on modern economic and technological methods, it is feasible to educate the inhabitants of the subsistence economy to incorporate them, for it is obvious that no single race has the monopoly to social development or any kind of labour skill. In this way, by educational re-orientation, a modern society can be built up to incorporate modern economic sectors. The type of education instituted, however, poses a problem, for as W.A. Lewis found in an empirical study of West Africa, the limited absorptive capacities of the economies, especially owing to the backwardness of agriculture, made "frustration and dislocation inevitable if more than 50% of children enter school."[121] There thus exists a tolerance level which destroys certain aspects of the plea for universal education. However, the opposite extreme is just as disastrous for "the negative amount of human investment in underdeveloped countries has done

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118 J.N. Boeke, Economics and Economic Policy of Dual Societies (New York, 1953).

119 ibid., p.4.

120 In this vein he propounds the same ideas as Gunnar Myrdal in his work Economic Theory and Underdeveloped Regions (London, 1957), who believed the application of the policies of advanced economies did not fulfil the needs of underdeveloped lands, and that accepted theory was by no means universal in its applicability.

121 W.A. Lewis, "Education and Economic Development", International Social Science Journal, Vol.14 (1962, No. 4), pp.685-99.

little to extend the capacity of the people to meet the challenge of accelerated development."[122] The result has been that the rich have been getting richer and the poor remaining poor.

There is a definite and close connection between culture and education, and it is obvious that education can change social and economic values by a re-orientation of outlook and custom. It is firmly believed by many economists that "the attitudes and social values of a people, their willingness to abandon traditional ways and values and to adopt a new way of life are essential, if not indeed the most important, ingredients of economic progress."[123]

Such a role has often been attributed to the impact of education and other forces in creating "key groups". Such groups have differed under analysis by technicians, politicians and economists, but as concerns the last, the emphasis on the key importance of a group has fallen on entrepreneurs and innovators. In the terms of Hershman's analysis this group helps to overcome the scarce resource of decision-making ability in his absorptive capacity thesis. The economic key-group outlined above represent Schumpeter's "New Men", who are provided by the process of education and whose task consists of breaking up old and creating new tradition.[124]

Schumpeter's "New Men" may fulfil the role of entrepreneurs in the sense that they lead the means of production into different channels and draw people into these branches of production. This does not imply that economic leadership necessitates "invention", but innovation, which is more difficult to impart into primitive society. The only alternative is to build up a pool of such leaders by education, for such people are the key to stimulating growth and development. Such

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122 G.M. Meier, Leading Issues in Development Economics (New York, 1964), p.268.

123 S. Van der Horst, 'The Effects of Industrialisation on Race Relations in South Africa", in G. Hunter Industry and Race Relations (London, 1965).

124 J.A. Schumpeter, The Theory of Economic Development (Massachussetts, 1949).

development as initiated by these New Men tends to occur in leaps and bounds (Schumpeterian "Tidal Waves" or "Clustered Innovation") giving an ungradual and unharmonious process. In essence then, Schumpeter advocates unstable growth and maintains that "Economic growth occurs when the social climate is conducive to the appearance of a sufficient flow of New Men."[125]

Other writers who attribute a high degree of economic development as the resultant of cultural determinism are Hagen and McClelland. Like Schumpeter, Hagen[126] deals with the "creative" or "achieving" personality type, who is the result of the disruptive forces on a traditional peasant-based society. McClelland[127] attempts to establish a chain of causation to show that high levels of "n-achievement" are associated with entrepreneurial endeavour, and concludes that this factor (n-achievement) is a variable which actively promotes economic development and that it originates from education, in the broadest sense of the word. Education is a prime mover in attaining n-achievement, but it is not the only relevant factor.

The general conclusion of the studies of these writers, who can be regarded as "non-economists", is that where cultured stability is incompatible with rapid economic growth, education must accompany any economic big push for the optimum adaption. In other words, a socio-cultural big push thesis is necessary as well as an economic one.

From the above comments it is feasible to foresee the day when the distinction between economic and social development will disappear, and the role of education will not be considered in the light of each discipline, abstracting from inter-disciplinary connection.

In the above analysis the role of education has been indicated as the underlying factor in the metamorphosis of an economy from a primitive

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125 B. Higgins, op.cit.,p.104.

126 E.E. Hagen, On the Theory of Social Change (Illinois, 1962).

127 D.C. McClelland, The Achieving Society (New Jersey, 1962).

to an advanced stage. It has been indicated how education affects both man and society to produce economic development. It is necessary to motivate and change both, because development is essentially a process of continual change and would not occur if either of the above aspects was neglected. The importance of education and social development is real, for as one economist states, "The real problem is not the adaptability of man, which is almost infinitely greater than we once supposed, but the suitability of institutions and their policies ..."[128] And education is the fundamental means to this end. It is, however, not the final cure to all ails, for the existence of "intellectual unemployment" is a phenomenon which shows that education can often be abortive and irrelevant to economic growth.

Altogether education helps facilitate the "abnormal" process of economic development. It helps to condition primitive societies for their "take-off" and to keep them from lapsing back to the original stationary state once this is achieved. It therefore fulfils a vital role in the economic metamorphosis of an underdeveloped nation, or of the laggard sector in a dual economy.

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[128] C. Kerr, "Changing Social Structures", in W.E. Moore and A.S. Feldman, (eds.), Labour Commitment and Social Change in Developing Areas (New York, 1960), p.350.

C O N C L U S I O N

It has become recognised t at the economics of education is no longer a study of secondary importance, tagged on to the general field of economic study. Although no all-embracing or correct version of its many facets exists, it has become an integral part of the overall study of economics and is one of the fastest growing arenas of contemporary economic study. The concept of human capital is no longer cast aside amongst a meaningless plethora of theories and sub-theories, but is emerging from obscurity to be tested and applied in everyday situations in order to provide an insight to economic problems hitherto insoluble. To disregard this concept now, as was done in the not so distant past, would be as if "we had a map of resources which did not include a mighty river and its tributaries."[129]

The presently accepted all-inclusive concept of capital has the advantages of preventing an over-emphasis of material resources and enabling an analysis of the activities which augment human abilities. In this way an objective analysis of education and its role in the development process is facilitated. It has been shown that physical capital is not of paramount importance, though the initiative to accommodate such capital is - the will, as well as the ability, to succeed must be present.

Material capital, to some extent, can induce growth, but in the long run this enforced growth has to be augmented by the role of human capital for self-sustained economic development and growth. History cites many examples of rapid economic development where social capital has been relatively more productive than the average. Human capital is a factor of production by definition, for it is property, vested in a person, from which income is derived. It is an investment, not a liability, in that besides being a creation of human wealth, it has the capability to create wealth.

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[129] T.W. Schultz, "Reflections on Investment in Man", op.cit., p.2.

The role of education in the development process has been elucidated as well as the economic aspects of education. This provides the background necessary for an understanding of how and why education promotes economic growth and development, indicating that it is more of an investment in the future than a liability of the present. In this dissertation a genuine attempt has been made to remain in the sphere of statistical questions, but value judgements have been expounded where necessary, especially regarding the immeasurable aspects of human capital and the policy implications of the economics of education.

The world in which we live is a picture of appalling contrasts in economic standards of material well-being. Such facts cannot be ignored and have come to dominate intellectual thought and action. To the economist education is a means in the armoury available to overcome the situation, for above all, perhaps, the major influence of education is its general effect on both the moral and economic standards of a society. Yet all too often is education prescribed as a cure for the ills of the poor, for although it has a very definite part in initiating and coercing economic development, one must not be unaware of the multiplicities of the problems of underdevelopment and education is not the universal panacea.

A P P E N D I C E S

A N D

B I B L I O G R A P H Y

APPENDIX A

SUBSIDIARY HUMAN RESOURCE COMPONENTS

"People in poor health will lack even the mental vigour to improve their lot."

- Stephen Enke

Although education is considered the most influential activity on human capital, it is by no means the sole force which improves human resources. Other generally recognised forces are health, migration and knowledge of the labour market. Each of these in its own way enhances the value of human capital. The basic question of changes in the quality of people and its cause has aroused more than a pure academic curiosity and in the modern world it reflects certain desires in that action to improve quality is based on humanitarian motives as well as on its economic growth contribution.

The importance of health was not as prevalent in the writings of the Classical economists as was education, and it is often claimed that it has only been brought to the forefront by the prestige enjoyed by education, to which it is associated. The basic postulation behind this association is that if it is economically viable for a country to invest in education, then surely one would expect the same for health.[1] Like education, health has not only an investment component, but also provides sumptuary satisfaction.

Health patently includes more than health services and related commodities in their provision,[2] and the general result is to improve the physical conditions under which a person lives. The effect of such improvements not only increases the real population, but also renders

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[1] This argument could easily be reversed and as convincingly expounded. The only conclusion that would then be derived is that 'people behave as they behave', and this argument therefore lays itself open to a charge of circularity of logic.

[2] It is generally taken to include food, housing, recreation and clothing.

the actual population more effective.[3]

In this way health acts similarly to education in human resource development. Human capital formation can be seen to rest on the twin notions that people improve as productive agents by investment both in education and health, and that outlays may yield a continuing return in the future. On the complementarity of these forces, it can be said that "Health and Education are joint investments made in the same individual ... and often the return on the investment in health is attributed to education."[4] This could account for the fact that education is considered more important than health in human resource development. The confusion arises from the difficulty in delineating between the two. Education increases productivity and this renders more valuable the return on a lifesaving investment in health; and health has the effect of lengthening life expectancy, which reduces the rate of depreciation on educational investments and increases their return. Thus a complete separation is difficult, as the same returns accrue partly to both.

The similarities between health and investment are many, for example, a common division in costs (public and private) and in returns (individual and social). There are, however, important differences, which include the fact that health increases the numbers in the labour force as well as their quality, whereas education only affects quality. Also, though both have conceptual and practical problems in measurement, the fundamental approaches to quantifying their results are diverse.

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[3] Adapted from : S. Enke, Economics for Development (London, 1964), p.405. The effect of health improvements has a double result which Enke shows analytically as follows:-

(1) $P^1 = H \frac{dp^1}{dL}$

where $\frac{dp^1}{dL}$ = extra effective population occasioned by health improvement.

P^1 = extra effective, but not necessarily real, population.

(2) $P = H \frac{dp}{dL}$ where P = real population.

[4] S. Mushkin, "Health as an Investment", Journal of Political Economy, Vol. 70, (Supplement, 1962, No. 5), p.130.

As regards migration as an activity creating human capital, the basic hypothesis is that migration is an equilibriating force in a changing economy, if it is assumed that it occurs in an appropriate direction.[5] This is regarded as an investment in human beings by analogy, as it entails both costs and returns, though the common difficulty of estimation is prevalent.

In general, migration is considered a method of resource reallocation.[6] It is a response to spatial earnings differentials and a search for opportunities in higher-paying occupations. The costs involve both direct money costs and non-monetary costs, in the form of opportunity costs (these being a function of distance and time). Returns are in similar form, both monetary and non-monetary. It is along these lines that migration is considered an investment in human capital; and information of the labour market is treated as such in a very similar vein.

Complete knowledge by either buyers or sellers is generally a myth and is only very infrequently the case. However, there are costs attached to the efforts of a worker searching for information about any specific factor, such as wage offers. As with investment in education it is assumed that such costs will be borne until they are equated with the expected marginal return. On the other side of the coin, gains are purely the reward for successful search.

Altogether, both market information and migration are relatively insignificant aspects of investment in human capital, but have been included with health to give the necessary, comprehensive picture of the concept, and to provide some form of measuring rod against which the importance of education can be gauged. They are regarded as investments merely by analogy to the material capital investment process in that

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[5] T.W. Schultz bases his inclusion of migration in human capital because analytically a misplaced resource is equivalent to a less productive resource properly located.

[6] See L.A. Sjaastad, "Costs and Returns of Human Migration", Journal of Political Economy, Vol. 70, (Supplement, 1962, No. 5).

"The information a man possesses on the labour market is capital; it was produced at the cost of search and it yields a higher wage rate than on average would be received in its absence."[7]

In conclusion, it is apparent that a group of activities work in conjunction to effect an improvement in overall human capacilities. All are regarded as investments in human capital and as such contribute towards the total stock of human capital. It is also apparent, however, that education can be singled out as the key force amongst them and that the economics of education is the most applicable apparatus whereby human resource development can be motivated.

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[7] G. Stigler, "Information in the Labour Market", Journal of Political Economy, Vol. 70, (Supplement, No. 5, 1962), p.103.

APPENDIX B

MEASUREMENT OF RETURNS

1. Expenditure and Income Approach:-

As expounded by T.W. Schultz and F. Machlup this process attempts to determine the relationship between expenditures on education and the contribution to growth in income or physical capital formation it engenders. For the U.S.A. Schultz found that during the years 1900-1956;

"resources allocated to education rose about three and a half times (a) relative to consumer income in dollars.

(b) relative to gross formation of physical capital in dollars."[1]

This means that the income-elasticity of demand for education was 3.5 over the period or that education as an investment was considered 3.5 times more attractive than investment in physical capital.

In measuring the stock of educational capital by costs and expenditures, Schultz found that the total stock rose from 63 to 1957 billion dollars over the period at constant 1956 prices,[2] giving a high rate of return on education relative to other investments.

2. The Residual Approach:-

The main exponents of this approach have been R. Solow and E.F. Denison, and their conclusions are that the proportion of the increase in G.N.P. of the U.S.A. over a period of time can be attributed to the measurable inputs of capital and labour, leaving a residual, which is a consequence of other things. This residual can then be broken down into its components of which "the advance of knowledge" and "economics of scale" are considered the most

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[1] T.W. Schultz, "Education and Economic Growth", op.cit., p.73, Table 14.

[2] ibid.

APPENDIX C

RELATION BETWEEN MANPOWER STOCK AND ECONOMIC LEVEL

The concept of complementarity states that the activity of social sectors is bound to expand in proportion to the level of general economic activity. The relationship in reality is not as simple as this method would imply, and in general education activities do not occur in proportion to general economic activity, but vary with the rate of growth. To indicate this relationship a model was constructed and the essentialities are given below.[1]

The volume of production tends to be proportionate to the level of man-power required for that desired product, if viewed in isolation. Such an assumption is erroneous in the long run, for as long as there are unused reserves of people (a common phenomenon in underdeveloped countries) production can be expanded by increasing the number of people employed. This proportional relationship can also be destroyed by an increase in the productivity of labour and by changes in the production emphasis as per capita income rises.

The Economic Institute of the Netherlands attempted to empirically attain the influences of such factors,[2] and by multiple correlation analysis found the following:-

$$N2 = C_2 N \left(\frac{Y}{N}\right)^{0.67}$$

$$N3 = C_3 N \left(\frac{Y}{N}\right)^{1.05}$$

where Y = national income

N = population

$\frac{Y}{N}$ = per capita income

$N3$ = number of persons with third level education

$N2$ = number of persons with second level education

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[1] Adapted from J. Tinbergen, Development Planning (1967), pp.132ff.

[2] Quoted in J. Tinbergen, ibid.

The conclusion derived was that with increasing prosperity (Y/N) the number of persons with secondary education increased very slowly, whereas the number with a higher level increased rapidly, and that the absolute income resulted in greater demand for more qualified persons. Thus the education system requires careful planning in order to meet the requirements of a growing and developing economy and it cannot merely be assumed that the proportions existing at one stage of development will suffice for the next.

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important. Though this has obvious limitations arising from the overlapping of components inherent in the residual, it has the advantage of generally indicating the magnitude of the evident contribution to national output made by education and its components.

3. Rate of Return Approach:-

This approach has been favoured by G.S. Becker and W.A.Bowen and is based on the income flows of an individual's earnings assumed to result from education. They are measured taking into account future earnings, which are discounted to a present value.

Inherent difficulties in this measurement of return are that differentiation between levels and types of education is difficult, and the compilation of social returns is more a "guesstimate" than an objective analysis.

In conclusion, measurement of the economic contribution of education is virtually impossible because of the difficulty in deciding how much pertains to consumption and how much to investment. Also any bias to consider human resource development only in economic terms is misleading for it is incorrect to assume that education has the singular purpose of maximisation of material welfare. Yet it is equally as fallacious to abandon all economic criteria and consider education solely as a "human right", for this distorts the true meaning of the aspirations of both modern man and modern society.

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