

HUMAN CAPITAL: A CRITIQUE

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Abstract

Human Capital Theory argues that a person's formal education determines his or her earning power. This article seeks to highlight the discrepancies surrounding the notion that education should be construed as a direct form of investment in one's financial future. An analysis of the use of quantitative techniques in measuring human capital, particularly the full / elaborate and the regression methods is presented. The ways in which returns are measured by using the full / elaborate method and regression method are explained and a critical assessment of their applications is discussed. There are several reasons to dispute the notion that one's education influences earnings. The first is that non-educational factors also influence earnings. Secondly, there are weaknesses in the way 'benefits' and 'costs' of education in Human Capital research are defined. Thirdly, there is skepticism of the indicators of social benefits claimed to have resulted from investment in education. Fourthly, limitations of data sources generally used in Human Capital research tend to distort reality. And finally, weaknesses are inherent in the way that Human Capital research is conducted due to its nature as an economic research.

Introduction

According to Human Capital theory, education is considered an investment because it is believed that it could potentially bestow private and social benefits. From an economic perspective, private returns of human capital are viewed in terms of earnings, while social benefits are viewed in terms of higher income tax collections (from better educated people with correspondingly higher salaries), increased health awareness (with increased education) with resultant lower smoking rates, increased levels of trust within communities (as better educated people were deemed more trustworthy), etc. Human capital theorists believe that education and earning power are correlated, which means, theoretically, that the more education one has, the more one can earn, and that the skills, knowledge and abilities that education provides can be transferred into the work place in terms of productivity.

Measuring the Returns

The earliest approach to measuring the returns of investment on education is using cost-benefit analysis, and the most common techniques are the full / elaborate method and the regression method. Results using either of the methods are believed to be quite similar. As to which is normally adopted depends on the available data. The full / elaborate method, which was developed by economists such as Schultz and Becker, requires data on age-earnings profiles by level of education. It is sometimes difficult to obtain such data, therefore, approximations are used where workers with the same educational level are grouped together and their age-earnings profiles by levels of education, recorded.

Using this method, private returns on investment are calculated by deducting costs of education from benefits of education. The benefits are derived by comparing the difference in earnings of an individual of a specific education level with the earnings of another working individual with similar characteristics (like age, gender, ability, etc.) but without such education. The costs accounted for by this method are the direct costs of seeking the education (for example school fees, books, etc.) plus the indirect costs (termed opportunity costs), which are forgone earnings that individuals could have potentially earned had they not attended school. According to Becker (1993), the potential earnings of a first-year college student should be compared to that of a person who started working straight after finishing high school, while a second-year student that of one who left college one year after, and so on (depending on the length of education (in years) in college).

The forgone earnings for the last half-year in college are compared to that of a college dropout. Due to its scarcity and hence difficulty in obtaining such data, the forgone earnings of a college student are thus compared with the actual earnings of a high school graduate of similar age. Measuring human capital returns using this technique does show that individuals with college education earn more than those without. Therefore, the higher the education one has, the higher is the salary. This method also shows that individuals' earnings increase the older they get, but decrease upon reaching a certain age (say, 60 / 65 years and above). According to this method, private benefits are the individual earnings after tax, while social benefits are the incomes that a country generates from the extra tax from its citizens who earn more as a result of their higher education.

Due to the difficulty in obtaining sufficient data as required by the full / elaborate method, the regression method is often employed as a substitute. Developed by Mincer (1974), the regression method was similar to the full / elaborate method in the sense that returns of investment on education are calculated by cost-benefit analysis. In this method, earnings are logged into categories of schooling and work experience. Unlike the full / elaborate method which requires age-earnings profiles by level of education to calculate benefits of education, the regression method does not need such data to determine potential earnings. It only requires data of individuals' earnings for the first working year. Subsequent years of potential earnings will then be extrapolated. Although this method is simpler and requires less data, researchers find it problematic in some regards. First, it assumes that earnings of individuals with specific educational qualifications will remain constant throughout their life, regardless of age, thus the opposite of what is assumed by the full / elaborate method. Second, it automatically allocates forgone earnings to primary education, thus devaluing the returns of primary education.

Based on the above elaborations, both techniques in measuring returns of investment on education tend to show that there is a causal link between education and earnings. More schooling theoretically brings more earnings, and the benefits of education theoretically outweighs its costs. However, both formulae use a lot of approximations and imperfect data to calculate forgone earnings to come up with age-earnings profiles by level of education in determining costs versus benefits involved in education. Such drawbacks in methodology and data raise the issue on the validity of the claim that higher education does indeed bring higher earnings.

Correlation is Not Causation

Using educational qualifications as earning determinants is not always right. In practical terms education is not the sole earning determinant. Other determinants such as gender, networking power, demographical factors like race, ethnicity, reputation of school attended, parental background, part-time versus full time jobs and economic climate may also be the contribute factor in determining earnings. There are cases where for similar levels of productivity some women are paid lower despite having the same qualifications and other relevant characteristics similar to men. In the United Kingdom, for example, non-whites and non-union workers earn less compared to others (Chevalier & Walker, 2001). Both measurement techniques fail to take into account these other factors that greatly contribute to determining earnings.

In addition to the above point, in some cases, the use of education as an earnings determinant does not apply at all. For instance, in certain companies, the amount of salary paid to employees is subject to negotiation with trade unions. In another instance, in some countries salaries are determined by the minimum wage legislation. Some critics argue that education only serves as a screening device whereby educational qualification is used as a 'passport' to get a desired job and it has nothing to do with the holder's potential productivity.

Benefits and Costs

Educational attainment as a determinant of earnings as used in both methods is only applied to formal education. This means that benefits resulting from lifelong learning initiatives, informal education, trainings undertaken out of personal initiatives, knowledge and skills gained from personal experience, and tacit knowledge are not being considered. It is true that formal education equips students with knowledge and skills to prepare them for the job market. These will depreciate if not practiced or updated. However this is not taken into account when measuring human capital benefits (OECD, 1998).

There may be a few explanations as to why certain benefits are measured while others are not. First, many informal types of investment in knowledge and skill enhancement are not reported, thus their potential benefits go unmeasured. The second reason can be attributed to the heterogeneity of such benefits. Even if it is possible to determine all related benefits of education, it will nevertheless be almost impossible to measure all of them in terms of monetary value. Third, as human capital is an economic study, the knowledge or skills possessed by individuals are only valuable if there are willing buyers. The fourth factor is associated with the nature of human capital research as a type of quantitative research. One of the characteristics of quantitative research is that it only takes into account observable and tangible variables. Therefore, benefits like self-satisfaction resulting from education, for example, are not included. This is contrary to qualitative research, which often treats a researched subject as related to its surroundings and context, thus, it does not only consider observable but also intangible evidence as well. In a work setting, the mixture of pecuniary and non-pecuniary benefits resulting from all types of investments in self-development (both formal and informal) equally contribute in helping individuals to perform their jobs effectively.

Another complication resulting from the use of educational qualification as an earning determinant arises when trying to measure people with more than one formal or informal type of education. For example, if a person holds a diploma and a degree, it might be difficult to

accurately measure which education bestows which benefits. If he undertakes some informal learning on his own or attends informal group discussions with friends and later receives a salary increment, he may not be able to clearly credit his undergraduate degree for the benefit. It will likely be a combination of all the factors. It may even have been significantly down to luck, another factor believed to influence earnings. Identifying the source of benefits is clearly not a direct procedure and it is hardly possible to measure earning accurately. To give all credits to education alone is therefore insufficient, as knowledge is obtained not in a linear fashion, but rather from a multiple complexity of sources.

Calculating the Social Returns

Both the full / elaborate and regression methods measure the social benefits of education in terms of money, i.e. calculating the extra income tax paid by individuals who earn more as a result of higher levels of education. This approach too, is problematic. Social benefits are diverse and some are difficult to measure. A quite recent approach to calculating social benefits is derived by analyzing people's level of trust in one another, the levels of engagement of the public and society, and social dysfunction (OECD, 2001). Higher levels of trust and social involvement, and lower levels of social diseases (like crime) are considered evidence of social returns.

However, it is inaccurate to link these changes, if any, with higher levels of education of a country's population for the following reasons. Each of these aspects was the result of many factors that might not have been known to the researchers. These factors would have been interrelated, and education, as previously argued, is not a single determinant. To say that level of trust is higher among educated people would infer that uneducated or lowly educated people are less trustworthy. This is completely superficial as illustrated in cases of educated people committing white-collar crimes. Using crime rates as social capital evidence is also questionable, as marked by criticisms of the way crime cases are reported (May, 1997).

Using educational levels to measure human capital when making comparisons across a spectrum of countries is also not accurate due to the differences on the systems adopted by the different countries. Length of compulsory schooling, quality of schools, educational content at each level, level of education most profitable to invest in, values taught, economic systems, culture, education systems, literacy levels, and tax systems used to measure social capital are some of the many differences. Thus, comparing a country's human capital based on the population's educational level and length of schooling will prove insufficient. It would also be unfair and incompatible to compare developed countries with developing countries using the same indicators as the latter would be starting out and may well place different priorities / emphasis on the importance of education.

Sources of Data

Another reason for why results of measurements of human capital are unconvincing is the sources of data used in the research. Two common types of data used in human capital research are official statistics (secondary data) and questionnaires (primary data), both of which have flaws. A country's government normally compiles official statistics for a specific purpose. A census, for example, is undertaken to determine a country's population based on age, gender, occupation, education, earnings, etc. When a researcher directly uses census data to measure individual earnings by level of education, dissimilarity of objectives between that of the researcher and of the census taker might affect the accuracy of the findings (May,

1997). Trustworthiness of statistical data is questionable because there is the possibility of distortion by the ruling government to protect self-interests (for example, to defend its educational system by showing that all races / ethnicities in the country are given fair educational and development opportunities).

Human Capital Research From an Economic Perspective

The weaknesses of human capital research might be inherent in the way economic research is generally studied. Kuznets (1972), an economist, outlines four characteristics of quantitative economics research, which he feels are also root causes of problems. Firstly, no economics research is neutral in that its foundations are based on economic theories such as the rule of supply-demand, profit-maximization, etc. Because of this, results of economic research are only meaningful if they are measured in terms of cost-benefits in order to comply with the main aim of all economic activities. Each activity is interrelated and operates under the same purposes, rules and methods. Secondly, assumptions used in economic research are not random. They are based on economic theories established on the observation of reality. Third, as the same economic foundations guide researchers, findings would not differ greatly. And fourthly, assumptions and measurements in economics in the attainment of economic goals remain constant regardless of time and situation.

Being an economic theory, human capital research exhibits similar characteristics, and potentially similar problems. The main characteristic of economic research is profit maximization - the optimal use of resources to yield the greatest benefits. From an economist's perspective, people make choices based on which would yield the highest returns. To begin with, for example, it is found that people with higher levels of education earn more than those with lower education, and for reasons of simplicity in establishing the relationship between these two variables, other variables are assumed to be constant (*ceteris paribus*). Now, this deliberate exclusion is a common method in economic study, but is arguably a poor reflection of reality. The consequence of this is that certain groups of people are discriminated against in terms of pay, of which some may be of similar levels of qualification. Such causal links are made based on statistics or observable phenomena. People invest in education because they believe it will pay in terms of higher earnings. Employers prefer to take individuals with higher education because they think that education and productivity are correlated. Since it is heavily influenced by economic theories such as profit maximization, cost-benefit and supply-demand, they are more concerned to act in line with these.

In trying to determine why people choose education to invest from other alternatives, economists fall back on the economic perspective, i.e. cost and benefit. According to Kuznets' third characteristic, as long as economists work under the same foundation, their findings would tend to agree with each other. Economists conduct most of the human capital research, which predominantly refers to the same theories and foundations of which the subsequent findings then become references for future research. Consequently, the more similarities and correlations researchers find between education and earnings, the more likely it is to be accepted as 'law'. The fourth characteristic reveals a possible weakness of human capital theory in that it does not produce the same results in different countries. For instance, the level of education most profitable to invest in differs between countries, which could in part be attributed to the fact that each country's educational system and contents at different levels varies between countries. Through exclusion of these and other variables, comparisons

of human capital across countries negate these differences, using common educational qualifications as the human capital indicator.

Conclusion

It seems logical that people with higher education should earn more than the less educated, and that a premium should rightly be placed on education. Nevertheless, it would be inaccurate to link education directly with earning prowess alone, as implied by the full / elaborate and regression methods. Other factors such as pay discrimination against certain groups of people possessing similar characteristics and education, trade union bargaining power, and countries' minimum wage legislation all form valid and extensive sources of earnings determinants as well. Technical aspects such as measurement methods are similarly non-encompassing in that only monetary benefits and costs are measured with other benefits being excluded or overlooked. In addition, comparing human capital investments internationally through the use of level of educational qualification as an indicator is imprecise due to differences between countries. A further technicality may involve bringing on board flaws inherent in data sources, such as willful misrepresentations by the data gatherer out of vested interests.

Human capital research is mostly conducted quantitatively, and is by association, a positivistic research. Nevertheless, the weaknesses found in human capital research do not stem from its epistemology. Instead, they are often caused by "technical faults" resulting from mistakes researchers sometimes make in erroneously correlating certain variables when analyzing data from questionnaires (Marsh, 1984). Researchers fail to recognize that each variable has its own theory, for which their knowledge of that theory is often inadequate. In human capital research, researchers cannot simply take correlations found between earnings and education as a causal relationship without adequate knowledge of the full implications, nor without examination of all other alternatives. These technical mistakes are often further aggravated by methods of measuring returns on human capital that concentrate only on certain costs / benefits, on the singular use of educational qualification to compare countries, and / or are based on data sources whose integrity is questionable.

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