# Human Capital: State of the Field and Ways to Extend the Concept

Trofimov, Ivan D. and Baawi, Nurulhana A.

Kolej Yayasan Saad (KYS) Business School, Malaysia

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# Human capital: state of the field and ways to extend the concept

**Nurulhana A. Baawi;[+] Ivan D. Trofimov[*]**

**Abstract**

The paper critically examines the human capital concept that was developed in the realm of labour economics and economic growth and development, and that recently became an important way of thinking in education policy. The definition and the historical origins of the concept are provided, and the specific issues pertaining to human capital are discussed – measurement of human capital, human capital externalities, macroeconomic effects of human capital, rates of returns to education, institutional prerequisites and enablers of human capital accumulation. The critical analysis of the concept's shortcomings and possible extensions then follows. We consider alternative conceptualizations of the human capital that are present in economics and other social sciences noting that these alternative views may have different (and frequently opposing) implications for policy. We indicate multiple rationales and logics of education and human capital investment, uncertain outcomes of the accumulation process, multiple dimensions and components of the human capital, the importance of the broader socio-economic context that shapes education investment and policy and sets prerequisites for policy, the complexities of the human capital formation process at policy level (competing political interests, but also values, philosophies and interpretations of policy problems), as well as at individual level (objective constraints to learning, varying learning outcomes and paths of human capital formation). It is also stressed that analysis of human capital would necessarily consider the costs and negative effects of particular forms of human capital, as well as capital depreciation issues. The paper forms basis for the formulation of alternative frameworks of human capital accumulation and education policy.

Keywords: Human capital, education policy, political economy, values

JEL Code: I20, I25, I26, I28, J24

## 1. Introduction

The fact that individuals' skills, abilities and educational attainment matter for economic development and progress has been well known to economists and policymakers. However, it was only in recent decades that social science and economics witnessed the well-articulated concepts of human capital, manpower and human resources. The human capital concept was pioneered by T. Schultz, J. Mincer and G. Becker and quickly became recognized as being a seminal contribution to economic theory. The concept also penetrated in a number of fields: management, demography, as well as manpower and educational policy. In the latter field, the debates as to the direction, basis and instruments of education policy have been progressively framed in terms of human capital accumulation and the importance of human capital in achieving economic objectives.

[+] E-mail: nhabkysic0019@gmail.com
[*] Corresponding author. Kolej Yayasan Saad (KYS) Business School, Melaka, Malaysia. E-mail: ivan.trofimov1@gmail.com

The state of affairs is not surprising, given the rise of the "knowledge economy" and the shift from industrial to post-industrial economic order (Rifkin, 2000; Foray, 2006; Boutang, 2011; Westeren, 2012; Vercellone, Lucarelli, 2013). The latter requires improvements in the quality of labour, as opposed to mere accumulation of physical capital or basic labour in the industrial and agrarian economies (Lloyd, Payne 2003: 85). In this connection, the following features of the human capital are accentuated: the pivotal role of human capital and knowledge in general in fostering economic growth, in sustaining the standard of living of the populace, in ensuring the sound competitive position of the national economy, in assisting structural transformation of the economy towards production of higher value added goods and services, in reducing inefficiencies and better management of the scarce resources in the education sector, in helping better transition of the college and university graduates to the workforce and thereby in the reduction of youth unemployment, in better adaptation of the education sector to the needs of the industry and the business (Briggs, 1987; Mace, 1987; Leadbetter, 1999; Elmore, 1988; Saitis, 1999; Killeen et al. 1999; among others). The education policy thus becomes a complement to or subservient to human capital policy (the new roles of education policy and its redefinition are well examined in a number of works, including Bell, Stevenson, 2006).

The ongoing accumulation of the human capital over the past decades in both developed and developing economies (as exemplified by rising enrollments at primary, secondary and tertiary level, the expansion of provision of university education) has been taking place parallel to a number of adverse developments, such as persistently high levels of youth unemployment (ILO, 2010), slow-down of productivity that education and growth of human capital are supposed to foster, expansion of educational attainment without improvement in economic conditions (Easterly, 2001; Pritchett, 2006), growing dissatisfaction with the education quality, with the reorientation of education towards narrow and utilitarian targets away from its humanistic foundations, and in general with human capital attenuating the concept of the human and the concept of education.

The purpose of this paper is to provide a comprehensive review of the human capital model, its theoretical assumptions and empirical applications (Section 2), to consider the model's shortcomings as identified in economics and other social sciences, as well as to outline the avenues for future research, specifically the ways to expand or reformulate the human capital concept (in general and in relation to education policy), by adopting the theoretical apparatus from sociology, political science, public policy and normative economic theory (Section 3).[i]

## 2. Human capital approach

### 2.1 Theoretical aspects

As indicated by Sandona (2010), the early mentions of the human capital concept are discovered in the works of Italian scholars of the 18$^{th}$ century (A. Genovesi, P. Verri), and English classical economists (A. Smith, T. Malthus and D. Ricardo). Likewise the first attempts to estimate the value of national human capital stock were made in 17$^{th}$ century by William Petty (see Machlup, 1982), and the first discussion of the advantages of formal university education versus on-job training was initiated by Adam Smith in 18$^{th}$ century (Smith, 1776/1937). Subsequently, the notion of (albeit not necessarily a fully developed

concept of) human capital appeared in almost all schools of thought in economics and in most paradigms, including French Physiocrat school (Cantillon, 1959: 35), German historical school (List, 1928: 108-118), neoclassical theories of L. Walras, A. Marshall and I. Fisher (Walras, 1954: 40; Marshall, 1959: 469-70; Fisher, 1965: 12-3), Austrian school (Hayek, 1948, 1960, 1973), Catholic social thought (Sandona, 2010, Ch. 2-5), as well as capability theories (Nussbaum, Sen, 1993; Sen, 1997). It is important to note that in the vernacular, as well as in the mainstream of economic science and in some heterodox schools (e.g. in Marxism) the concept of human capital was not easily embraced: in the vernacular due to the view that, in the absence of slavery, the human beings cannot be owned or transacted in; in the mainstream economics, following the early critique by Marshall, 1959: 469-70 (who viewed the concept as unrealistic due to the absence of market for human capital); in Marxism, due to its emphasis on antagonism between classes and the contention that such antagonism could not be resolved by the skills improvements and higher earnings of the working class (Schultz, 1972:6).

Kiker (1966) and Sandona (2010) provide a useful review of the origin of the human capital concept and of the alternative meanings and definitions of human capital. The analysis of these definitions is not solely of historical interest, but as will be shown later is likely useful, when redefinition of human capital and extension of the concept come to fore.

The model of human capital, as it is conventionally used in economics literature, originates from the works of T. Schultz (1960, 1972), G. Becker (1975, 1992), and J. Mincer (1958). Institutionally, the concept was associated with the research conducted in the University of Chicago, and later Columbia University (Teixeira, 2007).

In the 1960s the initial interest in the human capital concept was stimulated by the low explanatory power of the growth models. In Solow's growth model (Solow, 1957), 87.5% of per capita income growth was left unexplained, when physical capital and labour (in terms of the number of workers or work hours) were used (so-called "Solow's residual"). With the inclusion of human capital variable (e.g. education attainment) the power of growth model was improved substantially. Other analytical issues that brought human capital to prominence, were remarkable economic recovery of Germany and Japan in the 1950s, despite massive destruction of the physical capital, as well as such puzzles as the stagnation of labour earnings for much of the human history but rapid rise in the past two centuries, and the decrease of the ratio of capital to income over time (Schultz, 1961a).

As Schultz puts it, human capital consists of: 'skill, knowledge, and similar attributes that affect particular human capabilities to do productive work' (Schultz 1997: 317). Goldin (2016) defines human capital as the stock of skills that the labour force possesses, with the skills forthcoming when returns to education investment are higher than real and opportunity costs of such investment. Pritchett (1996) defines an individual's marketable human capital as the annualized value of the difference between the individual's wage and the wage for the rawest of raw labor'. Ehrlich (2007: 6) and Enrlich and Murphy (2007) define human capital as a stock of intangible assets (as opposed to physical capital that is tangible). It comprises embodied and disembodied knowledge (the former resting with workers, associated with their skills and playing role of increasing productivity of labour and capital; the latter

associated with creative knowledge produced by scientists, scholars and entrepreneurs, manifested in various scientific outputs, and, when used by firms, denoted as technology and innovation).

The following features of the human capital are prominent.

As put by Schultz (1972: 5), human capital was defined as strictly economic concept, and although it pertained to humans and their attributes, it was devoid of any psychological, social or cultural meaning, and instead was seen narrowly in terms of individuals' future earnings. The psychological, social and cultural attributes were instead seen as relating to human resources (Schultz, 1972: 10).

By adopting the concept of human capital, the distinction between the labour and the capital becomes blurred. As put by Mincer, the worker may become the capitalist by enhancing his human capital (and income) and converting it to other forms of capital. The class conflict thus may be moderated even in the absence of other moderation mechanisms, e.g. diffusion of share ownership (Schultz, 1972: 6).

As put by Johnson (2005), the human capital concept allows distinguishing two alternative ways of achieving productivity gains. These may be achieved through investment in physical capital to increase productivity of labour, or through investment in the education or training of the labor force as an alternative means of accomplishing the same general objective of higher productivity.

According to Ben-Porath (1967) and Mincer (1994), the investment in human capital is an intertemporal decision. The present labour time is traded off against the present value of the future labour time, and the decision whether to undertake additional education is based on the comparison of the today's foregone income and education costs with the present value of the future (and presumably higher) earnings due to better education. The investment in human capital takes place when the latter discounted value exceeds real and opportunity costs of education.

Human capital has multiple dimensions, including educational attainment, health, entrepreneurship and related skills, and various pieces of information that are relevant to production. Human capital is produced and accumulated as a result of prior investment by families, individuals and firms in schooling, on-job training, health, research and development projects, and it is also accumulated as a result of informal knowledge transfers. The sufficient rates or return play critical role in the process in that they provide rewards and thereby encourage and perpetuate the investment in human capital (similar to investment in physical capital).

The human capital is not accumulated (or rarely is) for its own sake. Kuehn (2015: 4) writes that it is typically reinvested in physical or financial capital rather than additional human capital: "college educated workers do not save so that they can engage in further human capital accumulation (e.g., go back to college). Instead they invest in the more traditional forms of capital".

The study of human capital is an extremely broad field, that, as noted by Schultz (1972: 3) overlaps with a number of domains, including but not limited to manpower studies, the analysis of workplace discrimination, international migration, changes in labour skills mix due to technological progress or

trade liberalization, the studies of poverty due to poor schooling, personal or factorial income distribution, interactions of human capital and demographic variables.

As put by Psacharopoulos (2004: 342) the focus in human capital research (in particular as far as theoretical aspects are concerned) shifted somewhat over the years. The early work by Schultz, Becker and Mincer conceptualized education as investment rather than consumption and hence preoccupied with the issue of returns on education investment. In the 1970s, Arrow (1973) and Stiglitz (1975) directed attention to the signaling role of education (i.e. education as mechanism of sorting students and allocating them to jobs, with no inherent social value; and university rankings as the key education output metrics).[ii] In the 1980s, the endogenous growth literature (Romer, 1986; Lucas, 1988) emphasized the role of education in stimulating economic growth. More recently, the externalities created by education investment in the broader economy and society were considered (Acemoglu, Angrist, 2001; Venniker, 2001).

2.2 Empirical research

As reviewed by Kiker (1966), the early empirical research on human capital, quality of the labour force and related concepts covered a number of topics, including the economic effects of education and health investment, the latter considered an important component of human capital (Sand, 1952); the effects of the changes in national human capital due to migration (Kapp, 1870; Mayo-Smith, 1901); the costs of war from human capital perspective (Giffen, 1880; Guyot, 1914); the valuation of human and physical capital and the national wealth, the former likely exceeding the value of physical capital by a great degree (Dublin, 1928; Senior, 1939: 134-135); the analysis of human capital for the purpose of estimating insurance compensations and to aid determinations by courts and compensation boards (Dawson, 1904)

In recent decades, the empirical research focused on the measurement of human capital, estimation of the returns from education, the relationship between human capital and macroeconomic performance, the identification and analysis of education externalities, and the analysis of policy that is based and guided by the human capital concept.

*Measurement of human capital*

The measurement of human capital was conducted using either cost-based (initiated by Dublin, Lotka, 1930, and Kendrick, 1976) or income-based approach (initiated by Weisbrod, 1961). In the former approach the real and opportunity costs of rearing a human being are considered, and such variables as probability of surviving, interest rates, costs of living, earnings at different years of life, employment rates, tangible and intangible investments are included in calculation. The methodological and theoretical challenges associated with cost-based approach include difficulties in separating total education costs from the costs of investment in human capital; the innate abilities that are difficult to operationalize but that nonetheless determine the effectiveness of education investment; the need to determine maintenance costs and to deal with depreciation. In general, the approach is less reliable given loose relationships between the costs and the value in economic theory.

In the income-based approach human capital is estimated as the present value of expected earnings net maintenance costs (e.g. personal living expenses), making relevant adjustments for the growth in earnings and overall economic growth, promotions, job performance and other factors. Methodologically, the income-based approach requires separating profits and labour income and dealing with mixed income, considering demand factors on the labour market, as well as examining the complex factors that influence wage-setting.

The estimation of the value of the human capital is rather imprecise, as attested by available estimates (Kuehn, 2015). However, in the available empirical estimates the overall value of human capital is large. According to Jones and Fender (2011), in the UK the value of the human capital stock exceeds the value of the physical capital stock by two and half times. The estimates by Liu (2011) for a sample of OECD economies are higher: the excess of the human capital over physical one is between three and seven times. The figures provided by Christain (2010) for the US are the highest, the value of human capital being bigger than physical capital values by factor sixteen.

*Rates of return on education investment*

The interest in this branch of empirical research was stimulated by the increased earnings and income inequality in the recent decades. The discussion below is based on the summary of the rates of return estimates and of the state of affairs in the field proposed by Psacharopoulos and Patrinos (2004).

Psacharopoulos (2004: 343) states that the empirical literature was unequivocal in that education investment delivered better returns than other types of investment. Psacharopoulos and Patrinos (2004: 112) also noted the diminishing returns to education by level of economic development and the level of education. The latter finding related to higher benefits from primary education as opposed to secondary and tertiary (implying the advantages of investing in primary schools, particularly in the developing economies). The education based on academic curriculum tended to bring high returns than vocational education (Psacharopoulos, 1987), and returns on education of women tended to be higher than those of education of men (Psacharopoulos, Tzannatos, 1992). More nuanced findings (Psacharopoulos, Patrinos, 2004) suggest, however, that returns to primary school education are the highest for men, while returns to secondary level education are the highest for women. Psacharopulos and Patrinos (2004: 115) note that the average return from the additional year of schooling across all economies stood at 10%. The highest returns to schooling were experienced in Latin America, the Carribean and Sub-Saharan Africa, and the lowest in Middle East and North Africa. In the 12-year period preceding 2004, the average returns to education declined by 0.6%, the fact attributed to increased supply of education across the globe and hence to lower returns to education.

Social returns to education were distinguished from private and, given that education is subsidized in a large number of economies, were seen to be lower than private returns (Psacharopoulos, Patrinos, 2004: 112). When social returns were conceptualized in a broader sense, as externality, the positive returns were likely to be substantial and well above private returns (Psacharopoulos, Patrinos, 2004: 117). Psacharopoulos (2004: 345) notes, however, that externalities tended to be hypothesized rather than directly measured. Indeed, the results are frequently ambiguous, with some studies that estimate

externalities in the form of individual's human capital enhancing the productivity of other factors of production giving negative figures, while other studies giving large positive numbers (Venniker, 2001).

The rates of return studies pointed to a number of substantive issues (which we name only few) and also suffered methodological problems.

Firstly, in the case of developing economies, the low rates of return on university education are likely underestimated due the brain drain from these economies. The positive externalities from publicly-subsidised tertiary education in the Third World were thus experienced in the developed world (Machlup, 1982: 11). The dual structure of the developing economies was creating distortions in terms of education returns: the highest rates of return were present (particularly among administrative and secretarial staff) in the export sector or foreign firms (Machlup, 1982: 11).

Secondly, the changes on the economies' production side and well as technological progress led to changes in the demand for labour, and hence in variation of earnings and rates of return.

Thirdly, a number of studies pointed to wide disparity in the rates of return on physical and educational investment (Harberger, 1965): for instance in India in the 1960 the latter returns were quite low, reflecting the mismatch of graduates' aptitudes and attitudes and job opportunities. While Psacharopoulos and Patrinos (2004: 118) write that returns of education and on physical capital behave in same manner and in industrial economies are equated at the margin, the issue necessitates further investigation, especially when developing economies are concerned.

Fourthly, on methodological front, the rates of return studies are not fully comparable, for instance due to the samples not being representative (the earnings data was frequently collected from large firms rather than individuals, and included earnings of civil servants that do not get market wages), and due to confusion between returns to education and wage effects.

Fifthly, as noted by Quiggin (1999), students with above-average intellectual ability tended to experience higher returns to education irrespective of quantity or quality of education ("selection bias"). To correct the bias the empirical literature used path analysis to account for interaction effects, or employed data from the twins with equal innate ability (Blau and Duncan 1967; Ashenfelter and Krueger 1994). Also, according to Quiggin (1999), the estimation of rate of return from education is possible only at the end of the lifetime or after a long period of work participation. The problem was countered by Card and Krueger (1992), who estimated returns using US Census data for selected population cohorts.

*Human capital externalities*

The analysis of social and consumption benefits of education follow the earlier work by Becker (1975). The useful summary of the state of research in the field is provided by McMahon (1982, 2017).

The possible externalities from education (including non-monetary effects) were better health and higher life expectancy (Grossman, 2008; Arendt, 2005; McMahon, 2017), more intelligent voting and political choices and higher level of political activism (Brennan, 1988; Wantchekon et al, 2015), reduced crime (Webb, 1977), improvement of children's school achievement and pre-school IQ due to mother's

education (Leibowitz, 1974, Benson, 1982), high returns on savings and selection of better inflation hedges for the savings (Solomon, 1975), increased efficiency of consumption choices (Michael, 1982), better selection of a desirable spouse (McMahon, 1987) and earnings increase of the spouse (Benham, 1974), better contraception and family planning (Hettich, 1972), better adaptation to changing life and career circumstances, such as divorce, unemployment and technological changes (Schultz, 1975).

On the other hand, the negative effects of education are identified too: women with higher levels of education are prone to divorce more frequently and exhibit disutility for the husband and children, principally due to lower relative advantages of marriage vis-à-vis career (Becker, 1981). For certain time-intensive household activities (e.g. dishwashing, ironing etc), higher level of education likewise has negative effects on the production levels (Gustafson, 1978; Levy-Garbona, Jarousse, 1978).

The later empirical research focused on monetary valuation of social and consumption benefits using income-equivalent, dynamic simulation, aggregate external benefits, or total social accounts methods (Haveman, Wolfe, 1984; McMahon, 2002; Ciccone, Peri, 2006; Eisner, 1989).

*Human capital and macroeconomic performance*

The empirical research that links human capital and macroeconomic performance was to large extend aimed at explaining differences in the growth rates across the economies (i.e. economic divergence phenomenon) and at remedying the problems of aggregate production functions that include solely physical capital and labour force variables. The education investment was either included in the production function directly as one of the variables (Schultz, 1961; Denison, 1967), or was first used to estimate education output, followed by inclusion of the latter in the production function so as to allow for increasing returns to scale (endogenous growth models of Lucas, 1988, and Romer, 1990). The estimates were conducted for a wide number of individual economies or for a cross-section of economies (Denison, 1967; Barro, 1991). The quantity of education investment was measured in a number of ways – as enrollment ratios at different levels (Levine, Renelt, 1992), as average years of schooling (Krueger, Lindahl, 2001), as adult literacy rate (Romer, 1990), among others.

The findings are inconclusive. Mankiw et al (1992), Gemmell (1996), Benhabib and Spiegel (1992), Jung (1992), De la Fuente (2004), Ehrlich (2007), Dougherty and Jorgenson (1996) identified positive contributions of human capital (stock of capital, or the level of education investment) to economic growth. In a similar vein, Baldacci et al (2003), Gupta et al (2002), Psacharopoulos and Patrinos (2004) pointed to positive and statistically significant effects of education expenditure on macroeconomic outcomes. On the other hand, Bils and Klenow (2000) and Pritchett (1996) found little relationship between the quantity of education and growth, while Bosworth and Collins (2003), Islam (1995), Caselli et al (1996) and Filmer and Pritchett (1997) found little effect of education on productivity. In a related stream of research, Mingat and Tan (1992), and Noss (1991) discovered little effects of educational spending on education outcomes.

Apart from methodological problems (sensitivity of results to particular equation specifications, endogeneity and omitted variables, the inconsistency of human capital estimates across economies, as indicated by Levine, Renelt, 1992; Bils, Klenow, 2000) the major reason of the results' inconsistency is

the quality of education problem. Indeed, if the quality of labour resources is accounted for, the explanatory power of growth regression is increased substantially (for instance, Carnevale, 1983, showed that in the US 75% of the productivity growth since 1929 was attributed to improvements in labour resources, such as on-job training, health, and education and formal training).

Regarding the quality of human capital, the empirical studies concluded that the amount and value of inputs and investment in education do not necessarily correlate with the quality of education output (Hanushek, 1981). The type of investments mattered more: it was found that physical infrastructure of education in the form of facilities, infrastructure and buildings had smaller effect on quality than more cost-effective inputs, such as software, reading and writing materials (Gundlach et al., 2001; Wößmann, West, 2006; Harbinson, Hanushek, 1992). The quality of education literature also paid considerable attention to the measurement of quality. Hanushek and Kimko (2000), Barro (2001), Wößmann (2003) measured quality as students' performance in standardized cognitive achievement tests, such as Program for International Student Assessment (PISA) or the US National Assessment of Educational Progress (NAEP). Card and Krueger (1992) attributed quality of education to length of the school year, teacher-student ratios and the wages of teachers relative to the average wages in the economy, while Barro and Lee (2001) additionally related education quality to class sizes.

The context of investment in education and the channels through which education has effects on the economy matter too. For instance, Schütz et al (2005) examined the influence of the family background on educational outcomes, and established better performance and higher human capital of the students from better-educated families, or families with a higher socio-economic status. Lake and Baum (2001, 2003) considered the interactions between democratic rule and human capital progress. It was found that democracy has no direct effect on economic growth, but indirect effects of democracy on growth through higher endowments of human capital (health, life expectancy, school enrollments and literacy) are statistically significant.

*Institutional prerequisites and human capital*

Regarding the role of institutional factors in human capital production, the empirical research considered the channels through which funding flows to the sector, the incentives to education providers, mechanisms for tracking students, sector decentralization and school autonomy, performance monitoring, competition between public and private providers, among other factors.

It was argued specifically that indirect funding by means of education vouchers tends to have positive effects on education achievement (Rouse, 1998). The monetary incentives to teachers based on the students' performance likewise tend to improve learning outcomes (Lavy, 2002; Atkinson et al, 2004). Positive effects on human capital accumulation were also experienced when students were tracked into different types of schools, although this was associated with growing inequality of the student achievement (Hanushek, Wößmann, 2006). Neal (1997), Hoxby (2003), Sandström and Bergström (2005), and Psacharopoulos and Tasoulas (2004) identified strong benefits arising from greater competition within the education sector and operation of the private providers. Some scholars (Friedman, 1997) argued that private education institutions better dominate the education system to achieve better

educational outcomes. Finally, greater school autonomy and decentralization, as well as centralized exams as a way to enhance students' performance, assessment impartiality, and accountability to schools to administrators and society as a whole were found to have positive impact on human capital production (Wößmann, 2006; Bishop, Wößmann, 2004; Fuchs, Wößmann, 2006; Costrell, 1994; Betts, 1998).

## 3. The critical analysis of human capital concept

The concept of human capital was subject to critical analysis from within the discipline of economics (including social economics as well as heterodox schools of thought) and other social sciences (education, sociology, political science), with the critique concerning both fundamental aspects of the concepts and the empirical applications of the concept.

### 3.1 Definitions and terminology

Firstly, it is argued that definition of human capital as a result of investment activity is ambiguous. Shaffer (1961) states that what part of human capital is considered consumption and what is investment depends on context and on how broadly we define the human capital (in certain situations, such expenditure as spending on personal care by models and actors, may be considered as investment in human capital, e.g. if it increases attractiveness and hence employability).

Secondly, an argument is raised that while education is not a consumption activity (except in certain cases), it is neither an investment activity, but rather is labour (Sidorkin, 2007). This is due to the fact that (aside from certain direct costs of education) the lion's share of the investment in human capital is students' own effort, and that any purposeful and effortful activity outside of leisure is labour (following G. Becker who defined using his/her own time as working). Inclusion of opportunity costs of schooling (foregone earnings) in the calculation of private costs of schooling without accounting for the labour costs would underestimate the total costs of education and would make investment in human capital look profitable. This view echoes Becker (1975: 128) who stated that when all costs are covered, almost all students would continue education through the age desired. An equally important aspect of this view is that inability to fully compensate students' labour in educational institution (which according to Becker, 1975: 37, is a firm specializing in the production of training) results in disincentives for further labour, lower students' productivity, and diminished education outcomes. According to Sidorkin (2007: 166), "student labor is different from other forms of productive labor. Its productivity cannot be significantly raised by the two usual means: use of machines and division of labor". The practical implications are: to improve education outcome and accumulate greater human capital, the improvement of education efficiency is needed (in the form of better management of students' time, and changes in curriculum construction methods in line with the labour market demands), improvements of the labour conditions "within the existing nonmarket economy of schooling", or outright transformation of the education sector into a quasi-market economy.

Another terminological argument is advanced stating that human capital is not capital at all, but rather an ideological construct proposed by Chicago school economists aiming to portray moderation of the tensions between the labour and the capital. As stated by Usher (2018), B. Milanovich and T. Piketty

argued that human capital concept brought little novelty to economics, merely highlighting the well-known maxim that more educated workers are more productive and earn more, while at the same time obviating the profound difference between the labour (that has to work and earn for living), and capital (that is associated with accrual of benefits from the ownership of assets). With the difference being concealed, the workers in the human capital theory are treated as capitalists (the owners of own human capital); the problem of lagging wages or living standards is treated as resulting from inadequate investment in human capital, rather than from other reasons; and, given that wages and profits appear as equivalents, the distributional conflict between capital and labour is treated as non-existent (this line of thinking was initiated by Bowles and Gintis, 1975).

N. Rowe, on the other hand, argues that labour in most cases is heterogeneous, and that qualified (non-basic) labour incorporates capital component, i.e. is more than just labour (see Usher, 2018). In the first place, the labour would not exist or would have very little value, if parents or society (through education system) had not invested in feeding and educating children and keeping them healthy. Secondly, the wages and salaries are returns on labour, if basic (unqualified) labour is concerned; alternatively, they are returns on capital invested (education and health investment into children), if qualified labour is considered. Thus, human capital is not a synonym of labour but is rather an investment to make basic labour more productive.

### 3.2 Rationale of human capital accumulation

The fact that education is undertaken for reasons other than earning higher wages and that only part of human capital is used in production process has been recognized for quite a while (Senior, 1939: 205-206; Eckhaus, 1962). Folbre (2012: 282) echoes this view, arguing that human capital is not a narrow operational concept that helps relate education on one hand and earnings and macroeconomic performance on the other, but rather a "a subset of human capabilities, which include functioning that may have intrinsic value, but do not necessarily offer a future return". Methodologically, as put by Machlup (1982: 4), this poses a dilemma: to restrict human capital concept to "investments in improvements of the human resource as a productive factor", or to regard total human resources as "capital no matter whether any special outlay has been made to increase its productivity".

Folbre (2012: 282) associates human capital with "skills that improve productivity and are likely to yield a future rate of return, whether in the labor market (in the form of higher wages), other markets (such as a payoff to entrepreneurship), or in other domains of life (including, for instance, improved health or more successful children)". This view of human capital having multiple outcomes and manifestations is to certain extend is reflected in externalities literature; however, the more fundamental issues are the multiple reasons why people take education,[iii] how competing logics of education are reflected in the content of education, in the levels of human capital accumulated and ultimately in broader economic performance, and how competing logics and rationales of education are reflected in education and human capital policy.

In economic literature this understanding of human capital as a multi-dimension and multi-logic concept is somewhat reduced to the analysis of externalities (Quiggin, 1999: 132, for instance notes that

"monetary returns are easier to measure, most empirical studies have focused on monetary returns rather than on broader definitions of the benefits of education"). However, in education policy literature this view is well recognized too. Gillies (2011: 234) states that human capital "is largely constructed in one particular sense – as instrumental to the economy – and so conceptualized quite differently from how it has been widely understood in the past and, perhaps, in the vernacular". The education policy discourse and its language thus becomes narrowed down to economic functionality, and the quality of the policy and the quality of human capital is assessed in terms of efficiency, effectiveness, value for money and choice (Kogan, 1975; Taylor et al, 1997).

When education policy is concerned, human capital theory tended in recent years to become a major basis of education policy, as evidenced by the use of rates of return studies as a guide in policy recommendations at international level (OECD, 1997), during higher education policy reforms in the UK, Australia and other economies (Psacharopoulos, 2004a), and as part of evaluation of education projects at local level (Duflo, 2001; Chin, 2001).

The application of the human capital theory in the field of education policy necessarily points to a specific ideas, objectives and tools (Psacharopoulos, 1996; 2004): the expansion of the basic education for low-income economies, the emphasis on general rather than vocational curricula, contention that educational planning based on social-demand model (that justifies expansion of the tertiary sector) and manpower requirements model (that projects demand for manpower in various sectors of the economy) is fundamentally flawed (due to imprecise estimates, or waste of scarce resources), reservation of a less grandiose role of the state in educational affairs (provision of incentives rather than deliberate planning and coordination or ensuring full employment to the graduates), consideration of importance of competitive forces in education sector, and of specific instruments to achieve greater quality (private schools, students loans as financing mechanisms, reduction of central control of the curricula), emphasis on quality instead of "education for all" proposals that reduce quality.

Coombs (1970) argues that in many regards the criticism of alternative education policy models (such as social-demand or manpower requirements models) is justified and that such problems as maladjustment between education systems and economic demands, waste of scarce economic resources, misallocation of funds, inability to contain costs due to high demand for education, growth of education bureaucracy are real. On the other hand, it is undeniable that centrally planned economies or economies with active coordination of the education sector by the state, notwithstanding ideological aspects of education, had excellent educational outcomes in a number of areas (primary education, science and technology education) and that poor overall economic outcomes of these economies were not attributed to education system factors *per se*, i.e. effects of education of growth and development are indirect (Blaug, 1987: 135). In general, as put by Blaug, while the human capital and specifically rates-of-return literature aims to guide education policy by showing the direct effects of education or its specific types, the more relevant policy question is consideration of the interplay of factors (political, social, cultural, and others) in human capital formation, of the feedback relationships between the factors, and relevant synergistic effects. In other words, holistic, systemic approach is preferable to narrow economic one. Also, as put by Blaug (1987: 231), the question is not that education does not deliver returns or does not stimulate growth, but whether "more education would contribute more to

growth at the margin than more health, more housing, more roads". Coombs (1970: 45) likewise states: "rate-of-return approach tells the planners and decision-makers only half what they need to know. It tells them in what direction to put more resources to get the best yield, but it does not tell them how far to go in this direction". Finally, the analysis of the role of state in education sector is inseparable from the analysis of the role of state in society and economy in general, and the analysis of the old question of the ability of the state to plan. The debate as to firms can plan better that the state, and whether firms make mistakes (similarly to the state planner) or correct them sufficiently fast at little cost remain inconclusive (Kafouros, 2009).

Overall, the concept of human capital, while frequently intended to be a foundation of education policy is not the whole education policy. This relates both to foundations of education policy, but also to its particular instruments.

### 3.3 Alternative views of human capital

The above discussion of multiple logics and rationales of education and human capital suggests a brief review of concepts of human capital that are alternative to Chicago school concept.

Firstly, a number of schools of thought (specifically, Austrian school, conservative political economy and Ordoliberal school) emphasize the social and cultural dimension of human capital. Accumulation of human capital takes place to large extend in intermediate groups, such as families, associations and local communities (i.e. human capital is not strictly speaking a microeconomic phenomenon and a product of individual decision, nor is it a macroeconomic aggregation of individual capitals). The quality of social fabric determines the quality of individual human capital; indeed the substantial component of the latter is a product of acquisition of useful social practices, development of good social attitudes, civic virtues, the learning of culture of compromise and dialogue, overall learning how to live together (Hayek, 1973; Zanotti, 1998; Colombo, Merzoni, 2008). In a related vein, conservative political economy and German Ordoliberal school (Roepke, 1950, 1960; Campbell, 1992; Kirk, 1993; McCloskey, 2006, 2010) stressed the importance of particular types of human capital for the social order. The socio-economic order that is based on small vibrant communities and strong social bonds ("aerated society"), that serves a broader cause of moral order and moral growth, that rejects any mechanistic solutions to social problems (social engineering or planning) and likewise rejects "the cult of the colossal" (e.g. centralization), and that above all values normality and the sense of proportion and hence rejects the extremes of socialism and capitalism, requires a particular type of human capital. In conservatism and Ordoliberalism, the accumulation of human capital would be associated with learning the values and beneficial practices rather than specific skills. The values and practices that align with the above vision of the society are (on the side of individuals and households, but also entrepreneurs and public administrators): socially responsible entrepreneurship, dignity of professional life, social status of work, prudence, decent frugality, responsibility, independence and hard work, moral checks on wealth accumulation and material aggrandizement, rigorous integrity and impartiality when it comes to public service, value of traditional family as foundation of durable social order and humane society.

Secondly, a subjective side of human capital is indicated. The literature on entrepreneurship (which arguably constitutes an important component of human capital) points to alertness as ability to detect and exploit profit opportunities (Kirzner, 1973), ability to see through the fog of uncertainty and to solve wicked business problems (Schumpeter, 1934), aspiration to social ascent, aspiration to conquer and dominate (Fagerberg, 2003), the joy of "getting things done" (Frank, 1998), ability and willingness to take risk (Knight, 1921) and other subjective factors. Hayek (1948) goes as far as arguing that human capital rests on individual's experiences, emotions, sentiments and irrationalities of various sorts and hence is inarticulate (at least in mathematical or quantitative terms). The subjective foundations of human capital likely raise questions as to the possibility of augmenting it through policy action or formal learning (e.g. teaching to be entrepreneur, when in fact entrepreneurship may only be learned through experience or is innate ability).

Thirdly, human capital is associated with knowledge in a broad sense. Hayek (1948, 1960), discussing the role of knowledge in the economy, wrote that knowledge is widely disseminated in the society and the economy, frequently is not presented in a ready-made form (i.e. is tacit), and is local (i.e. pertaining to specific individuals and contexts). The implications are that no single person has all the necessary knowledge for economic decisions (meaning inter alia that the only socio-economic order conducive for accumulation of knowledge is spontaneous order based on free exchange and interactions among individuals); that knowledge and human capital are pervasive and have multiple sources; that meta-knowledge (i.e. knowledge of where and how to find the needed information, and of how to put together individual pieces of information or achieve synergies from individual skills and competencies) is as important as knowledge of fact or individual skills; and that, given individual's bounded rationality (Simon, 1957) and limited processing capacity of brain, ability to effectively use localized knowledge is far more important than acquiring all possible knowledge.[iv] Also, the human capital is conceptualized as part of (and result of) interactive process, rather than merely as a stock of capital. Ryle (1949) and Polanyi (1958, 1969) viewed human capital as a process of mastery and skillful coping, and as learning of know-how rather than know-what (i.e. human capital relates to learning how to get along with people, how to interpret events and facts, how to dwell in things, how to collectively solve the problem, i.e. to what contemporary management literature defines as "soft", "social" or "teamwork" skills).

The practical questions therefore are: 1). If knowledge has collective and pervasive nature, what is the socio-economic system that is more conducive for knowledge accumulation (i.e. does the rhetoric of "knowledge society" have any political and social implications); 2) Should there be a human capital production system akin to innovation system in industrial economics, and if so, would any systemic features affect human capital accumulation at individual level (e.g. "national culture of reading" and effects on individual learning outcomes); 3). For the same reason of knowledge pervasiveness, what is the role of informal learning and education, and the value of traditional forms of education; 4). If meta-aspect of knowledge is important, what should be the changes to education curricula (e.g. in terms of learning new types of skills); 5). If knowledge is localized, what should be the relationship and the proper mix between local and adopted (external) knowledge; 6). Is the logic of "good-enough", sufficient and local knowledge at odds with proposals of economic competitiveness improvement that are frequent in recent policy debates?

Thirdly, as an extension of social and cultural view of human capital, a moral side of human capital is attended. The discussion below does not attempt to examine all relevant arguments or to compare them in any systematic manner, but merely to provide a cursory look at alternative views.

The capabilities theory, developed by Sen and Nussbaum (Sen, 1985; Gasper, 1997; Nussbaum, 2000) as a response to certain problems in welfare economics and as framework to analyze poverty issues in the Third World, makes a distinction between human capital and human capabilities, noting that the latter concept is broader than the former (more generally, the analysis of well-being based on human capabilities is more accurate and robust than analysis based on welfare and utility metrics). Sen (1997) notes that while human capital concerns the ability to individual to contribute to production, human capability relates to "the ability of human beings to lead lives they have reason to value and to substantive enhance choices they have." Human capabilities are conceptualized as substantive freedoms that allow individuals to achieve valuable functionings, such as having good health, living to old age, participating in public life, having self-respect, being literate and knowledgeable, i.e. to allow individual to live worthwhile (and as part of it productive) life. In particular, the ability to make informed choices and freedom to make choices are seen as crucial for human capability. Sen (1997) and Comim (2008) note multiple non-material elements of human capability (emotional, affective, cultural, and religious), methodological individualism (human capability pertains to individuals, not to particular social structures) and subjectivism (absence of objective criteria of what life or choices are good and valuable) associated with human capability approach.

The adoption of human capabilities approach would thus require specific definition of the role of education (Wigley, Akkoyunlu-Wigley, 2006): education for life and life satisfaction versus education for work and earnings, expansion of education to everyone irrespective of their contribution to economic growth (the latter aspect is of utmost importance in the context of primary education in the developing economies), greater flexibility of education systems (in terms of education paths, curricula adaptation, acces to education etc), and better alignment of education with individual's valuations, priorities and choices. Arguably, the human capabilities framework would be applicable in the developed economies and in the higher education context, specifically in terms of the analysis of life and work satisfaction, and assessment of education and career choices.

The "old institutionalist" school of thought (Commons, 1931; Ayres, 1961; Parada, 2001) is not explicit about human capital, but rather discusses the role and function of knowledge in society. Based on the works of T. Veblen, the distinction is made (Junker, 1982; Gagnon, 2007) between instrumental and ceremonial aspects of knowledge, the former being a genuine (and typically scientific) knowledge that brings in genuine improvements in material wellbeing and social progress, the latter being a quasi- or pseudo-knowledge (in the form of belief and value systems) that is used to perpetuate power systems, preserve existing social roles, maintain social hierarchy, status and master-servant relationships, and in certain cases to corrupt instrumental knowledge (the process denoted as "ceremonial encapsulation"). Further on the theory of social value is formulated (Tool, 1977), as a normative construct, against which the economic and social phenomena are assessed, and which may guide human capital accumulation and improvement. The human capital is thus treated indirectly in dual way, firstly as part of knowledge concept, secondly in terms of education policy and accumulation process that is (or is not) guided by

normative social value theory. In the latter case, the conditions for human capital accumulation are viewed in pragmatic terms: the policies that cause minimal dislocation in society and the relevant field, that rely on and enhance instrumental knowledge, and that ensure continuity and betterment of life of individual and community, bring in higher levels of human capital.

Catholic social science views on human capital share many similarities to conservative political economy. It is based on certain anthropological foundations, affirming that human person is irreducible (i.e. is not a sum of biological, psychological and affective elements), non-repeatable (i.e. unique), inalienable (i.e. having at least some psychic elementary capacities at all times), entire (in the sense that person s never an instrument, but always a target for himself), and embedded in various human relationships (Catholic Church, 1891/1940, 1961; Lombo, Russo, 2005: 145-160; Sandona, 2010, 189-190; O'Boyle, 2002). It also adopts certain views and visions of society and social change: it praises the concept of organic society, rejects atomistic views of society and individualism, promotes the idea of solidarism and the need of working in cooperative manner towards the common good (inter-class cooperation) and points to heterogeneity of human capital, role of intermediate bodies and structures in capital accumulation. With regard to human capital it emphasizes the importance of civic virtues and 'natural human sociability' (i.e. ability to live and develop within society); considers the moral aspect of human capital (specifically in relation to the question of fair pay and social responsibility of the business); stresses the relevance of personality of every worker and the need to alleviate extreme poverty and pauperism; points to the importance of human capital growth through creative business activity, sound management, research and productive innovation; relates human capital to the underlying issue of human dignity; identifies political democracy as social arrangement most conducive for accumulation of human capital; views wealth as a temporary blessing and property as a responsibility; and conceptualizes human capital as means of fulfilment of every person through contribution to common good, in line with his/her predestination.

Islamic views of human capital likewise transcend the narrow economic logic (Hashi, Bashiir, 2009; Al-Faruqi, 1982, Al-Faruqi, Al-Banna, 1985; Faruk Abdullah, 2012). Human capital development is viewed as a continuous lifelong process that goes beyond financial goals, but principally including *taskhir* (stewardship) and *ta'mir* (development or civilization) elements (Al-Faruqi, 1982). The ultimate goal of human capital acquisition is teleological - winning the rewards of the Almighty Allah, and ascending to the state when human becomes a *khalifah* (vicegerent or trustee of the God).

A personal development and moral development component of human capital is seen as central and applicable to all professional fields and walks of life, with such concepts as integrity (*amanah*), transparency (*bayan*), good governance (*amal salih*), accountability (*mas'uliyah*), commitment and continuation of work (*quwah* and *itqan*), team spirit or collective oriented (*shu'ra*), reasonableness or fairness (*adalah*) and to avoid of conflict of interest (*Qist* and *qawwama*) being prominent (Hashi, Bashiir, 2009: 8). At the same time, specialization, professional skills are mentioned too: Al-Faruqi, Al-Banna (1985: 13-14) note the Quranic dictum that interest of the organization and the public at large is served better if every individual fulfills the function for which he is best fitted.

The value of human capital in terms of quality of work, rather than narrowly in terms of financial reward, is emphasized, specifically the dictum of *ahliyah*, signifying the human capacity and fitness to perform and hold certain social and religious obligations and diligent performance of duties (Hashi, Bashiir, 2009: 2), as well as perfection (*itqan*) and quality (*amal salih*) in all endeavors.

Human capital accumulation in Islamic thought is seen holistically, with managerial, educational and social aspects of human capital development being considered, specifically, individual learning paths and individual productivity; workplace relations; administration efficiency; fair remuneration etc.

Fourthly, human capital in the context of the capitalist system is examined. Bowles and Gintis (1975), working within Marxist paradigm, argued that human capital concept as it was originally formulated did not attend to class conflict that is pervasive in the capitalist system, and to a particular role of education in capitalist society (the role of education, as seen by Bowles and Gintis, is to maintain social status quo and existing social relations, to instill in education recipients the correct ideology and to "shape" and discipline students in such way that is not detrimental to the ruling classes and the society's elite). The education thus reflects class and power relations in the society (Bowles et al, 1999) and may thereby be a repressive force with little positive effects.

3.4 Process of human capital accumulation

Before a particular endowment of human capital is obtained, a tedious production process takes place. Failure to consider the processes and mechanisms through which education affects economic outcomes has been seen as a major shortcoming of the narrowly defined human capital model and growth literature (Blaug, 1987: 233).

Firstly, the innate ability of the student (in a particular field of study and overall) is a powerful constraint on further human capital accumulation. Whether it is an important factor or is the factor of minor importance is a subject of debate in education field. However, it will likely shape of education path, the content of curriculum, the ultimate shape of human capital, and will have policy implications (including considerations as to viability of particular form of education, the instruments of professional orientation and the like). In certain professions or education fields (Olympic-level sports, professional-level performing arts), the lack of ability would effectively preclude any human capital production.

Secondly, in contrast to original postulates of the human capital theory, the decision to take education may not be voluntary (and in extreme cases may not be decision at all)[v]: at both primary, secondary and tertiary level, the choice of the school, program or specialization and the decisions of the further studies are shaped to the large extend by parents and guardians. Other people's or society's views on particular profession or their valuation of one's human capital would likewise be a determinant (and frequently a constraint) on further accumulation of human capital. The well-known preferences towards science and technology subjects among parents in East Asia, or low valuation of sporting activities and in contrast high valuation of academic activities by Jewish parents, as well as anecdotal cases of high valuation by the society of personal investments into learning ice hockey in Canada or rugby in New Zealand, but little valuation of such activities in other countries likely support this hypothesis.

Thirdly, while it is convenient to represent human capital or investment in it as an aggregate figure (gross enrollment at particular level, the earnings of a particular occupation etc) the education process and human capital accumulation are highly individualized and the stocks of human capital are heterogeneous (Hicks, 1965: 35, writes about capital heterogeneity, albeit in the context of physical capital). Folbre (2012) mentions these person-specific dimensions of human capital production: the different abilities, attitudes, background, learning speed of the children in the same class, different success of teachers with some students (e.g. with girls but not with boys) but not with others, different parenting styles and attachment to teachers. These heterogeneities are clearly well pronounced at the primary and secondary school level, but as Folbre argues also persist at later stages of education. Indeed these at the post-university stage these differences become confounded with further differences due to variety of life and career events that students of the same class or cohort experience. The holistic valuation (i.e. valuation not solely in terms of economic benefits) of human capital and its components (see below) at the level of individual is thus a serious methodological challenge.

Fourthly, the accumulation of human capital likely varies at different stages of education. Heckman (2011), Heckman and Raut (2016), Schütz et al. (2005), and Cunha and Heckman (2010) stress the importance of early childhood and pre-school education and pre-natal contributions by parents to the development of human capital of a future child, and point that inability or unwillingness of parents to undertake such investments into human capital represent the most binding constraint on human capital accumulation and the inability of the children to select caring and loving parents as the extreme form of market failure. This interpretation (when investments into human capital are most productive at the early stage of life, and less productive at later stages, e.g. at university level) clearly necessitates redefinition of the role of university and tertiary education in general. It may be countered that such emphasis on early stage education (and respectively reorientation of education policy and investment) is somewhat deterministic in the sense that students who were denied (for various reasons) early childhood education would necessarily end up with low levels of human capital. The examples of bright students and high achievers from dysfunctional families and low socio-economic background attest to the contrary. Indeed it may be argued that unfortunate circumstances or hurdles that such students face may boost their motivation and attitudes that can be considered as critical components of human capital. The view of salience of early childhood education may likewise be at odds with certain contributions in education literature (Pajares, Urdan, 2002, 2005) that highlighted the importance of education (particularly in terms of students' future career goals, civic education, and preparation for further academic studies) during formative teenage years. Also, it may be argued that for the sake of human capital development, the personal education (i.e. learning from one's experiences and mistakes) may be more durable and superior to family education or education in formal settings. Policy-wise, the emphasis on early stage education at the expense of university education could mean reduced education opportunities for the above-mentioned students, as well as lack of investment into human capital.

Finally, it should be noted that human capital production and accumulation is likely to be non-linear and non-deterministic process, clouded with uncertainty, particularly when the whole lifespan of the person is concerned.

The contingent factors that would affect human capital accumulation would include (but are not limited to) various disturbances to earnings due to business cycle, poor work ethics and inadequate performance (that could compromise earnings even for employees with high levels of educational attainment), voluntary career change and re-training and so on. Due to accelerating speed of change in modern society and the economy, these factors would likely be more salient for human capital product than previously.

As a result, overall link between spending on education and the capitalization of earnings would be unstable, and as heterodox economists of various strands stated, the earnings would not necessarily be commensurate with marginal productivity, and productivity would not necessarily be a reflection of education).

This line of thinking, if taken to extreme (e.g. along Austrian school of thought lines), could mean genuine indeterminacy of human capital. What appeared to be a good education investment could turn out to be a bad investment, and the recognition of the mistakes made may not be obtained sufficiently fast, but possibly years after the investment was made. Due to inherently subjective assessment of own investments or decisions (good investment in monetary terms may be considered bad in other terms; and what is good investment for one person may be bad one for another), and frequent inability of people to reflect on their lives the true value of human capital may not be obtained.

In a related vein, a philosophical question arises, namely what degree of control a person has over his/her life, what is the role of luck, God etc. The link between investment in education and the payoffs in the form of human capital is never guaranteed. Unfortunate events (e.g. sudden disability) or factors beyond control (e.g. a young male with solid investments in human capital joining the armed forces in 1939) give a blow to optimistic view of a person as owner of personal (human) capital and indicate that some of the personal investments would never be paid back, despite good innate ability, favourable socio-economic status and the like.

### 3.5 Components of human capital

The fact that human capital is multi-dimensional was noted in the early research. Debeauvais (1964) stressed the importance of qualitative aspects of human capital, such as creativity, initiative, and motivation. Fitz-Enz (2000), considering human resource management, argued that human capital in original form is a narrow concept, and that person's traits, intelligence, work energy, positive attitude, reliability and commitment, ability to learn, imagination, and creativity should necessarily be incorporated in the concept. Social psychology literature (Brehm et al, 1999) likewise argued that human capital is an unique blend of intellectual and moral capabilities and expertise of individuals. The fact that employers, when demanding and preferring higher levels of human capital from their employees, care not so much about the level of educational attainment, but about the ability to work in the team, positive attitudes, perseverance and the like is well known and was indicated in the early literature on the problems and deficiencies of education and manpower policies (Paris, 1994).

Thus, human capital appears to include multiple components. The multi-dimensional and multi-component view of human capital is based on and is supported by advances in psychology and cognitive

research, specifically the work on multiple intelligences and mindsets (Gardner, 1983; Gollwitzer, 2012). Some attempts to dissect human capital into operational concepts have been made in the management and organizational science literature. Davenport (1999), for instance, argued that the level of human capital is the function and product of ability, behavior, effort and time, with interactive and synergistic effects between the four components. However, more work is likely to be needed in this direction, specifically when incorporation and operationalization of intangible components is concerned. In terms of education and human capital policy, certain reorientation and return to humanistic foundations of education may be needed – e.g. shift from education as instrument to obtain skills towards moral education or education as upbringing.

The identification of human capital components and forms is conducted not solely for classification purposes, but also for identifying complementarities between various components of human capital and between human and physical capital. The heterogeneity of capital is an issue re-iterated in heterodox economics but also in management science (Penrose, 1959; Foss et al, 2007). In the age of extreme specialization, the generalist talents and the “Jack-of-all-trades” workers become increasingly rare, and hence the proper match of capitals becomes a necessity. Machlup (1982: 13), in line with Austrian school premises, states explicitly that the matching process is extremely complex and hence is a decentralized one: “The free-market system, anonymously coordinating the decentralized self -matchers and professional small-scale matchmakers, operates with many errors and mistakes but still far more efficiently than a central "human-resources-planning commission." The opposite view is expressed on the left, among Marxist economists, pointing to the pertinent anarchy of capitalism and persistent imbalances in the markets, including labour market (Edvinsson, 2005: 23). The management literature likewise points to the fact that the management of human and physical resources in the firms is far from decentralized process, but rather a process based on directives and central planning. The coordination problems and the (de-)centralized production and allocation of human capital components thus becomes a crucial issue in human capital debate.

### 3.6 Context of human capital accumulation

Schultz (1963) noted (albeit without detailed elaboration) that ethical and cultural context, environmental circumstances, individual characteristics affect human capital. Social science and politics also viewed capital accumulation (and economic activity in general) embedded in social relations (Granovetter, 1985). In line with Coleman (1990), the earnings and the level of human capital would be function of individual decisions and efforts, but also of social capital in the form of social relations and networks. Also, as stated by Piketty (2014: 47), capital is not an immutable concept, but “reflects the state of development and prevailing social relations of each society”.

Whether particular person has high or low level of human capital, or whether particular activity embodies a lot or little of human capital, likely depends on the context. Human capital model in its original formulation considers that better educated workers and more productive and have more human capital. However, as argued by Sen (1982), equating valuation of capital (e.g. human capital) with earnings may be erroneous: “an Indian barber or circus performer may not be producing any less than a British barber or circus performer - just the opposite if I am any judge - but will certainly earn a great

deal less…". Also, the quality of work and work performance (which may or may not be reflected in higher earnings) is an indicator of the level of human capital, and how society determines the quality and the performance in the contest-dependent production setting is an issue to consider on its own.

When education policy is concerned, the context would likewise have strong effects. The education system, while having its own objectives formulated within the system is also subordinate to broader objectives imposed by society and the economy. The level and the quality of human capital, the successes and failures of the education system would be assessed from the prism of the requirements imposed from outside education system and in terms of external criteria. These criteria would not necessarily coincide with economic prescriptions (e.g. efficiency) or be normative-free or value free, but would be based on society's values (Tool, 1993).

The importance of context and the specificity of the setting have important implications for learning from other countries' experience (in terms of human capital accumulation and education policy). The literature on education policy borrowing and transfer (Phillips, Ochs, 2003; Forestier, Crossley, 2015) indicates a complex process whereby countries borrow policy and education ideas to compensate for failures or shortcomings of their domestic education systems. It is likely that no single country would have the "best education system" that "does everything right" and that the attempt to merely transplant such system in the different country will likely be futile.

It is thus clear that consideration of the broader context, specifically consideration of the national development priorities, would precede the analysis of human capital and education. The objectives of national development (development to bring growth and material prosperity, development to foster social harmony, or human capability, or development to strengthen and preserve liberty or religious or other values, or to promote happiness) and the normative criteria as to what is proper/good development, what is good education policy etc. would define (in a complex political economic process) the education policy objectives and would be contextual to human capital production.

In terms of importance of broader context and factors for human capital accumulation, Ehrlich (2007) indicated propitious circumstances to human capital accumulation in the USA, which enables forging ahead of other developed economies. Policy initiative early in history to expand secondary education, policy acts to expand tertiary education (Morrill Acts of 1862 and 1890; GI Bill of 1944), immigration from Europe, size of the market that enabled general training, transferability of skills and mobility of labour, the growth of manufacturing that spurred investments in science and technology education, high standards of living (having an important effect of making educational investments and expenditure manageable), as well as the features of the economic and social system (the former based on efficient markets and free market economy; the latter allowing for such features as gender neutrality, secularism, low institutional or social restrictions to education, accessibility of education, democratic features of education). The high level of human capital resulted from coalescence of these factors. Whether such combination is unique only to the USA and cannot be encountered elsewhere is a debatable issue. Likewise it is instructing to examine other countries in terms of a combination of factors that allow or hamper human capital accumulation. The discussion of conditions for human capital production thus

relates to or is turned into the discussion about the better or best socio-economic systems or institutions.

The socio-economic context also affects human capital through the demand for human capital. It has been a cliché that the demand for human capital would increase in the knowledge-based economy, and hence the society and education institutions should foster investment in human capital. However, as argued by Piketty (2014: 234), "the evolution of technology has certainly increased the need for human skills and competence. But it has also increased the need for buildings, homes, offices, equipment of all kinds, patents and so on, so that in the end the total value of all these forms of nonhuman capital (real estate, business capital, industrial capital, financial capital) has increased almost as rapidly as total income from labor". While post-industrial knowledge economy rests on using human capital and values human capital more than other types of capital, it does not obviate competition for human-capital-intensive jobs in the labour market and continues to create winners and losers in the high-skilled labour pool.

3.7 Political economy of human capital production

As argued by Folbre (2012), collective identity and collective action are part and parcel of human capital production, and hence political economic approach is indispensable in analyzing the intricacies of the process. As implied by Folbre (2012: 283) the complexity of the process comes from the fact that human capital is co-produced by multiple stakeholders (educational institutions, family members, the person taking education, community and society at large), while the content and instruments of the human capital (education) policy are shaped by the government, educational institutions, the business and other actors. Folbre (2011) states that some of the education policy conflicts will relate directly to class dynamics, but the majority would likely concern redistribution of the costs of developing and maintaining human capital, and (re-)definition of the role of the state "as progenitor of socialized provision for education".

McLendon et al (2014), in the discussion of US education policy, state several questions that may be asked if political economy of education and human capital is considered in a holistic and dynamic way: 1). What factors drive educational policy reforms, and what is the role of values, ideas and philosophies versus organized interests? 2). What is the education policy change path in terms of emergence of the problems, proposal of solutions, and agenda formation, as well as in terms of incrementalism versus radical change? 3). What is the influence of the "high-level political factors", such as elections, political leadership in education policy? 4). How does policy learning happen and what education policies (if any) are adopted from other policy settings, e.g. other countries? How do organized interests and coalitions in the education policy field form and what is the role of advocacy and influence? 5). What is the role of policy entrepreneurship?

In addition to economic theories of policymaking (e.g. models of bureaucracy by Niskanen, 1968), as well as certain streams of institutional theory in organizational science and sociology literature that explicitly consider formation of institutions (models of institutional bricolage, Cleaver, 2012; cultural and collective meaning processes in institutions, DiMaggio, Powell, 1983), the relevant analytical

frameworks and theories in the public policy literature would likely be useful: multiple-streams framework (Kingdon, 1995), punctuated-equilibrium framework (Baumgartner, Jones, 1993), advocacy coalition framework (Sabatier, Jenkins-Smith, 1988), policy innovation and diffusion framework (Berry, Berry, 1999), policy learning models (May, 1992), policy entrepreneurship theories (Mintrom, Vergari, 1996), policy network models (Marsh, 1998), among others. We note that the research of education policymaking that adopts models from multiple disciplines or the research, that looks at policymaking relating specifically to accumulation of human capital (in extended form), or that looks at multiple dimensions of policy change has been scant. The notable applications of the above frameworks and models include Lugg, Robinson (2009), Betancur (2016), Mazonni (1991), Fowler (1994), Mawhinney (1993), Caravella (2011) to name a few.

### 3.8 Costs of human capital production, depreciation of human capital, and negative outcomes of human capital investment

It was noted by Folbre (2008, 2009) that there has been a tendency to portray human capital in terms of value added in the form of higher earnings due to education and experience, whilst paying less attention to (and respectively underestimating) the costs of human capital production, such as the cost of bearing and rearing children, and the costs of running and operating education institutions, thus causing bias in the rates of return on educational investment.

A related and far more important problem, noted by Machlup (1982: 7-8), but not considered in a detailed way, is depreciation of human capital (e.g. in the form of deterioration, depletion and obsolescence). While it is convenient to apply an annual depreciation rate to the human capital stock, a more thorough analysis would distinguish the components of human capital (in the same way as components of physical capital stock are identified) and would consider issues related to forms and paths of depreciation, e.g. speed of skills' obsolescence, problems of successful re-training of the workforce, flat learning curves, physical and mental ageing of the workers etc.

The Schumpeterian "creative destruction" may likewise have effects on human capital. Given that technological progress and structural change lead to demise of the existing industries and firms and reduce the value of the physical capital accumulated therein, the similar processes may be experienced in the case of human capital. The production of the new bits of human capital is not occurring in the vacuum, but against the backdrop of the existing human capital, hence it is not unreasonable to expect that "new" human capital may displace the "old" one (e.g. skills, values and competencies that were valued high in the industrial economy are no longer valued in a post-industrial type economy, that requires a new set of skills, values and competencies). This raises a question regarding the reference point against which the "old" and the "new" human capital are valued, and objective and subjective features of such valuation.

Machlup (1982: 8-9) likewise talks about the outcomes of schooling and human capital production, not all of which are equally desirable and worthwhile, while some of which are harmful. The types of education are identified that are not productive or have limited production benefits (e.g. education in fine arts and poetry), education that has tangential production benefits (e.g. MBA courses that

strengthen connections and bring networking benefits, or religious courses that strengthen values and indirectly the work ethics), or education that is a waste (e.g. courses of political indoctrination akin to those that existed in the old Soviet Union or exist in North Korea, pseudoscientific courses of eugenics and racial selection, low quality education that makes graduate unfit for work or unemployable, or produces skills that are unwanted in a given setting). In a similar fashion, Baumol (1990) when distinguishing types of entrepreneurship (one possible form of human capital), mentioned destructive and unproductive entrepreneurship, associated with rent seeking as opposed to rent creation (another example would be white collar crime, as a byproduct of investment in IT education). These problems may be a case of education externality (that needs to be internalized); however, an underlying issue is whether particular education types are truly unproductive or play certain positive role in the society, and how society defines what human capital is productive and desirable, versus the one that is not.

**4. Conclusion**

The paper had two related objectives: firstly, to examine the concept of human capital and to consider the empirical applications of the concept; secondly, to identify the relevant shortcomings of human capital model (when looking from the perspective of social and political sciences) and to propose the ways to extend it. Substantial headway has been made in measuring human capital, in estimating private and social returns from education, in conceptualizing human capital broadly and identifying relevant externalities from education. Much work has also been done on relating education investment and human capital accumulation and macroeconomic performance. Likewise, institutional and policy means to reach better educational outcomes and higher level of human capital have been discussed.

There has been a tendency to view human capital narrowly (education as an instrument to achieve economic outcomes), statically (without due consideration of the human capital production process), and without placing human capital production within the appropriate social and economic context. The following features appear to be central to the discussion of human capital.

Human capital is multi-dimensional concept and is heterogeneous, including the components that are less amenable for quantification, but which nonetheless are critical in terms of social and economic effects of human capital. This concerns not only the qualities of the individual, but also the rationales of human capital acquisition and relevant education policies, and the realms where human capital is accumulated (human capital within firms and business enterprise).

Accumulation of human capital is a political problem, with a number of issues warranting consideration – definition of policy issues, policy learning, policy entrepreneurship, negotiation and so on. It is also a social and development problem, as accumulation of human capital takes places against the backdrop of existing social relations and structures, and given that particular forms and production paths of human capital are influences by the systemic considerations (national development priorities, objective economic requirements etc).

While it is convenient to adopt a macro view of human capital or to link education and economic outcomes in a deterministic way, the accumulation of human capital is highly individualized and uncertain undertaking at the level of particular individual. It rests on and is shaped by ethical

considerations, subjective valuations and views of the human, and the positive outcomes of the investment in human capital are not necessarily guaranteed.

The future research on human capital will likely have interdisciplinary character (combining the concepts from and using methodologies of sociology, political science, management and organizational science, to name a few), and will likely be both qualitative and quantitative in nature.

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[i] On empirical front the paper is part of the larger project that examines the role of economics and business education at the university level in a complex socio-economic setting of Malaysia, and is a first of a series of papers that consider the relationships between higher education system in Malaysia and the economic and social challenges that country faces; the structure of institutions and the dynamics of political processes in Malaysian higher education; the alternative philosophies, visions and values that shape higher education in the business field; as well as normative assessment of the existing higher

education policies. Methodologically, the paper intends to contribute to the formulation of a holistic view of human capital accumulation and systemic framework for the analysis of human capital policy, along interdisciplinary lines, by cross-fertilizing the heterodox economics, sociology, political science and public policy literature.

[ii] The paper does not explicitly consider this aspect of human capital. Contrary to screening model assumptions Quiggin (1999) argues that students actually learn in educational institutions and obtain concrete knowledge (i.e. ranking is not the sole or most important education output). Likewise, it may be argued that while sorting of students based on university ranking does take place (particularly in the first jobs), the further performance of the graduate may override the earlier screening and sorting considerations. Also, educational achievement in a low-ranking institution would point to above average ability of the student, which for some employers would be an indication to hire such student. Blaug (1980) and Quiggin (1999) state that evidence in support of screening model is inconclusive (especially for extreme version of the model where earnings differentials are solely determined by screening).

[iii] E.g. for personal prestige (e.g. Ph.D. degree in some Asian economies), due to personal interests (e.g. in music), as part of search for the meaning of life (e.g. philosophy degree), for leisure (e.g. so-called "party colleges" in the US, as extension of volunteer work, as means to immigrate to other country, or to find spouse (McLean, Kuo, 2014: 16).

[iv] A similar view of human capital as ability to receive, process and interpret information and education as mechanism to enhance such ability is also expressed by Nelson and Phelps (1966: 69).

[v] In a similar line of thinking, the powerful social hurdles or circumstances (e.g. slavery, or abuse of totalitarian power) may preclude education for a particular person.