Education and Economic Development: A Review of Literature

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ABSTRACT

This is a review paper on the impact of education on economic development. From the literature review undertaken, it is clear that the contribution of education to economic development may be positive, negative or nothing. There are three distinctive ways of determining contribution of education to economic development: (a) rate of return analysis: education is an investment which enhances productivity and yield monetary and non-monetary returns; (b) human resource approach: through education future needs workers might be met to attain economic development; and (c) education and economic growth analyses: education has got a major multiplier role in economic analysis growth. There is lack of research on the impact / contribution of education on the economic development of the country. Whatever small amount of research projects are available on it in India; they are unable to convince our policymakers to invest in the education sector. Therefore, there is a need for research on the contribution of education to the economic development of India and convince our policymakers to increase the public spending on education – elementary, secondary and higher education and education research.

Keywords: Economic development; Education; Income distribution; Migration; Poverty

1.0 Introduction

Historical analysis helps in detecting the long lasting impact of a variable on other variables. For instance, here, it will help in detecting the long-lasting impact of education on economic growth. It was in the late 1950s that the field ‘economics of education’ came into existence. The relationship between education and economic growth has polarized opinions. The question of whether education favours or hinders growth has been questioned and examined in static and dynamic terms by different writers (Wolf, 2002).

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The purpose of this paper is to explain the important relationship between education and development, as has been observed by researchers over the centuries. To put it the other way why is education important for development (Weisbrod, 1962). In other words, how can someone change the socio-economic condition of a country through education? How can schools boost an individual’s ability to be economically more productive? Above what level of education does further education cease to add to the productivity of a worker? How can the economic returns be measured on an investment in education? With what precision is it possible to adjust the inputs (in terms of students, facilities, and so on) to obtain the needed outputs (in terms of knowledge or skills required to meet manpower needs)? Do training skilled technicians conflict with the goal of egalitarianism? Do investments in mass education sacrifice economic growth? To quote US President Barack Obama, (25 July 2009) “In an economy where knowledge is the most valuable commodity a person and a country have to offer, the best jobs will go to the best educated - whether they live in the United States (Goldin, 2001) or India or China.” It’s clear that a proper education system can help in building a strong nation. Okoh (1980) terms human capital as an essential ‘condition of national survival’. Having said that, it’s obvious that the importance of a strong education is irreplaceable in India which recently is being termed as a ‘knowledge economy’.

2.0 Education and Economic Development: Mythological Views

Every religion in their way has foretold the importance of education in the changing economic society. If a certain religion assigned a significant God or Goddess for wealth or education it is to promote them, then it can be said that they encouraged both-though it may not establish a causal relationship between the two.

In Hinduism power of wealth is bestowed to Goddess Laxmi while Lord Ganesh symbolizes ‘Budhi’ (wisdom/intelligence) and Goddess Saraswati is the epitome of knowledge. Assigning two divine entities for education doubles its role playing in the upgradation of human life. Human life is divided into four “ashrams”. shiksha (education) is considered as value based learning, to attain the skills essential for living/survival but vidya is for attaining wisdom. The close knit relationship between education and economic growth is clearly depicted through Saraswati, Laxmi and Ganesha being siblings. The economy of both Greece and Rome depended on agriculture. They worshiped Demeter, sister of Zeus, as Goddess of Agriculture. Athena, daughter Zeus is Goddess of wisdom, a goddess of arts and crafts (farming, map-reading, spinning, weaving, and needlework), shows gender unbiasedness towards gaining of knowledge. Thus, like Hinduism there is close family relation between Goddess of education and richness.
According to the teachings of Islam, importance of education can be understood from the fact that the first revealed word of the Quran is to "Read!" irrespective of gender. Prophet Muhammad emphasized different ways of seeking knowledge as:

a) Time: "Seek knowledge from your birth till death."
b) Place: "Seek knowledge even if it is far as possible."
c) Gender: "Seeking of knowledge is a duty of every Muslim"
d) Source: “person should gain knowledge even if finds it in the mouth of a mushrik” (non-muslim).

As per the five basic axioms of Jewish economic theory the role of Man is to labour, create, innovate, collect wealth, and raise the material world and to care for those in need. So far it can be deduced that even though education is not explicitly spoken of but gaining of knowledge. Bible states that “The fear of the lord is the beginning of knowledge, but fools despise wisdom and instruction” (Proverbs 1:7). “The heart of the discerning acquires knowledge, for the ears of the wise seek it out” (Proverbs 18:15). This implies that Christianity supports education and wants its followers to seek it. As for the method of obtaining wealth, Bible speaks “A slack hand causes poverty, but the hand of the diligent makes rich” (Proverbs 10:4). Economist Edward Semyonov and famous journalist Alexander Lebedev in their article “The Christian economy”, published on 27 June 2012 in No. 26 "Literaturnaya Gazeta (Literary newspaper)” made this concept debatable. It examines the control of Christianity on the economy, the role of Christian values for development of the economy and examines relationship of the economy to the other spheres of life.

Prajñā or paññā in Buddhism is wisdom. Etymologically speaking jñā can be translated as "consciousness", "knowledge", or "understanding. It is one of three divisions of the Noble Eightfold Path. The Mahayana section believes there are three types of Prajñā which are study, reflection and meditation. It speaks of gathering knowledge through various sources analyzing them logically and spreading them to the future generation. The life of a Jain believes in strictness and curbing of wants, so economics and Jainism seem to be opposite. The proscription seems to be only one of earning wealth by wrong means, and being attached to wealth. (Uttaradhyayan 4/2 and 4/5).

3.0 Education and Economic Development: Positive Relation

The major determinants of long-term growth are agricultural yield, trade, rule and regulations, political stability, income distribution, inflation and the terms of trade, and education. Study regarding the impact of education on economic development of a place is conducted every year in almost every part of the world (Elvin, 1962). Yet, the relationship
between education and development is complicated due to lack of exact definitions for both of these terms.

Economic development and educational growth are both cause and effect to one another (Bennett, 1967; Hu, 1976). Intellectuals believe that country should concentrate on development of economy through “social betterment” by reducing underutilization of human resources (Bolino, 1968). Nothing can be more appropriate than education in attaining the objective (McLean, 1936; Evans, 2000). But education should not be used for production of goods and service only (Lewis, 1961). Human resources have both quantitative (number of people, productive labourer, and labour hours) and qualitative (ability, understanding, and attributes to do productive work) dimensions provide double dividend (Bornschier, Herkenrath & König, 2005).

The aim of education should be to exploit the potential talent of the pupil towards all round development. Lewis (1965) ideas matches with Benham (Benham, 1959) when he says that the scope of “pay for itself” fails notably in case of education in under developed countries (UDCs). So investment in human capital has more influence on national income (NI) than land, labour hours, and actually reproducible capital (Schultz, 1961 and 1976). Schultz echoed the belief of J. S. Mill that human capital should not be turned into “property or marketable assets” contrary to Adam Smith, Marshall and Thunen belief. The impact of education can only be seen in the long run (Aftab, 1977).

The relationship between education and economic development is not as simple as it appears to be (Kalaitzidakis et el, 2001, Fields, 1980). Various researchers have pointed out the varying degree of the relation between the two in their own ways. There always exists a chicken or egg question in the sequencing of economic growth and educational development.

During the 1960s in several of the developing countries of Africa, Asia, Latin America, education begun to receive a larger share of the national budget for education (Adams, 1965; Carpentier. 2006) as it was considered as a means to development given the technological advancement. In theoretical and empirical studies based on inter country comparison, growth is determined by human capital (Gyimah-Brempong, 2011; Musila & Belassi, 2004).

Education leads to growth of a nation: by removing societal prohibition and ignorance, boosting capacity to take advantage of existing opportunities, obtain, assess, and use information, development of the control, dependability and competence, towards running a business. Education has the capacity to serve as complements for some resources and substitutes for others (Neira et el, 2009). For example increase in the number and quality of human capital provides better adaptation to changes, reduce diminishing returns, and open new markets. The increase of knowledge helps maintain
or increase the marginal efficiency of investment in material capital and support its accumulation, accumulation of nonhuman capital, and introduction of labour-saving techniques.

Okoh (1980) believes that “productivity even at the simplest level of skills is greatly improved when the labour force is literate and has been through the process of schooling and disciplined thought which formal education provides”. Statistical analysis proposes two-way causality between education and economic development in East Asia. The complementarities between education, productivity and efficiency are the major force of economic development (Permani, 2009). Swedish economic growth till 1975 shows a causal relationship with education but not during third industrial revolution (Ljungberg, 2009). Katircioglu (2009) too found long term unidirectional causalities from “international tourism to real income and from higher education to real income” in North Cyprus.

3.1 Education and thought process

Education helps an individual to think (Munn, 1994), query, and see ahead of the comprehensible limits. As per a report of Computer Information System Company (CISCO) (2010) upon OECD countries, education helps in the development of cognitive, behavioral and social knowledge of an individual. The CISCO research found evidence from the past that “economic growth has been accompanied by growth in both spending and participation in schooling or to put it other way investment in education does have a strong economic pay-off”. Education helps in raising productivity of individuals working (Goldin & Katz, 1999; Goldin & Katz, 2000; Temple, 2002) and generates spill over benefits of literacy; speed up the flow of general knowledge of individuals and thus reduce cost of transmitting information; stimulate the demand for vocational training and technical education; act as a device for selecting the more able ones; and, finally “strengthening economic incentives, meaning the tendency for people to respond positively to a rise in the rate of reward for their efforts” (Blaugh, 1966). Bennett (1967) collected data from 70 nations and it was found that “vocational occupations where a large part of the curriculum is devoted to learning specific skills, which the student is to use immediately upon graduation. On the other hand, general education prepares the student in basic skills and equips students for the future”. But vocational education was most highly correlated with the economic variables.

3.2 Education and economic disparity

Education reduces societal and economic disparity. The investment in human beings changes the saving, capital formation and income of the individuals. Schultz (1962,
1971) pointed out that if the ratio of all capital to income remains constant as assumed earlier, then the unexplained economic growth originates because of the rise in the stock of human capital. Human capital according to Schultz (1962) is “produced means of production”. Education is a means of “actualising more and more of the world's potential brain-capacity, of bringing this great semi-tapped resource to bear upon the world's problems” (Curle, 1964). Gundlach (1997) in one of the paper supported the positive role of education, and tried to answer Quah’s (1996) paper where question was raised regarding the role of human capital in “changing the speed of convergence” whereby many well-off, deprived, and middle-income countries faced “vanishing class difference”. In this competitive world economy, knowledge and skills of workforce are the key competitive weapons of nations for enhancement of the economic competitiveness (Thurow, 1969, 1970, 1974).

3.3 Education and income distribution

The long term goals of education are securing economic equality (Sianesi & Reenen, 2003) and social justice. Earnings typically increase with age (Eckaus, 1963) at a decreasing rate. Level of skill has positive relation with both the rate of increase and the rate of retardation. Younger persons change jobs more frequently and receive more schooling and on-the-job training than older persons do. Professional, skilled workers and able persons have positively skewed earning distribution (Becker, 1962). Gundlach (1994) pointed out that “international difference in the stock of human capital is positively related to the observed income differentials between the industrialized and the developing countries”. Mincer (1974) said that “over half of the inequality in earnings can be explained in terms of the inequality in educational attainments of workers” (including on-the-job training and experience as well as schooling). The economic returns to individuals from schooling increases with years (Hansen, 1963). The effect of inequality in schooling on income inequality is very low in economic sense in OECD nations. Even though a more equal distribution of education may not lead to higher income per capita (Foldvari & Leeuwen, 2011) but that does not mean that education should not be given importance.

3.4 Education and migration

Migration of human capital, i.e., ‘brain drain’ is harmful for a country. Migration is another problem of incorrect education provision (McLean, 1936). In developing economies, the return to human capital is low and hence reduces incentive to obtain education. The issue of migration is a problem because when a human capital is not optimally utilized it is similar to underutilization of the resource. “Brain effect” promotes investments in education and brings a higher expected return. The second impact, i.e., the
“drain effect”, is detrimental (Beine, Docquier & Rapoport, 2001). An appropriate pricing of human capital would allow it to be retained at home.

3.5 Education and poverty

In developing countries, education is viewed as a ladder to climb out of poverty, financial exclusion, lack of knowledge, tyranny, and warfare. Employment rates are positively related to skill (Becker, 1962). Schooling would introduce a negative relative between the permanent and current earnings of young persons, and allow for depreciation on human capital. Education is closely linked to markets, industries and corporate businesses. After the new economic policy of 1991 in India, the requirement of skills has changed. Gundlach (1994) stated that the scarcity of human capital is the cause of less use of physical assets. Quality human capital through education can exploit more physical assets and reduce poverty.

3.6 Education and technology

As per convergence theories every country needs to prepare itself to face advanced technological improvements (Levin, 1998). Education prepares the country to face it confidently (Karatzia-Stavlioti & Lambropoulos, 2009) in the fields of science and technology (Bloom et al., 2005). With growing pressure on natural resources and automation, man can produce more than he can consume because of education (Lang, 1965). Solow (1957) studied the US economy from 1909 to 1949 with respect to the shift in production function and its cause. He found that 87.5 percent of the change was due to technical change. He included “improvements in the education of the labour force” as one of the factors for technical change. During liberalization, a country experiences higher technology transfers. An increase in the relative demand for trained labour generates the advantage of trained over untrained labour (Pissarides, 1997). Jones & Hatcher (1994) based their theory on Marx’s Capitalist theory and said “to understand the nature of change in capitalist society, it is necessary not only to appreciate the nectar of technical progress, and the genuine advances that it offers to large groups of people, but also to calculate the costs of the modernising project”. Thus, an investment in the field of education can increase the receptive ability of the youth labour force.

3.7 Education and job opportunity

Because of under-employment and unemployment, supply of unskilled labour is more elastic in the short run. Curle (1964) suggested there was a “high correlation between per capita income and the percentage of national income invested in education”. Educated people considered education as a stepping stone for more jobs in competitive world (Anosike, 1977). Despite growth in the overall economy, during 1970’s the wage and
employment scenario of untrained labour suffered more compared to trained labour (Pissarides, 1997). The scarcity of skilled labour in turn fetches them better job opportunity. To exploit new opportunities, nation needs a flexible labour force (Aldcroft, 1998) with quality education.

4.0 Education and Economic Development: No Relation

Not all researchers accept the fact that education and economic growth have a positive relation (Benavot, 1992). But does higher level of investment in education influence the economic growth? Can education help to achieve ‘self-maintained’ growth rate? The answer to the question is predominantly “NO” (Monteils, 2004). Booth (1999) counters the findings of World Bank that “heavy investments in education have led to equitable growth in several fast-growing economies of Southeast Asia since the 1960s”. There are some academicians like Barro (1990, 2001, 2013) who were the first to show that, for a given level of wealth, the economic growth rate was positively related to the initial level of human capital of a country, whereas for a given level of human capital, the growth rate was negatively related to the initial level of GDP per capita. “India is one of the best educated underdeveloped countries, but not conspicuously the most successful in economic development” (Lewis, 1965). An over-supply of educated people creates great frustrations, excessive migrations, and results in political turbulence. Though the long-run effects of the disturbance on development may be positive, the short-term effects seem to be zero, or even negative. Azariadis and Drazen (1990) supported Barro by saying “literacy is correlated with the variations of growth in the least advanced countries,” except not so in developed countries’ growth. Pradhan (2009, 2011) conducted a similar research to detect the direction of cause and effect relation to which he concluded “there is uni-directional causality between education and economic growth in the Indian economy”. That is economic growth leads to rise in education but not vice versa.

The results of empirical research conducted in the developed countries (Jencks et al, 1972) have encouraged the view that education may in fact have little effect either on productivity or on income distribution. As quoted by Dasgupta and Tilak in one of their paper of 1983, Berg in 1970 and Arrow in 1973 had viewed education as a screening device (Layard & Psacharopoulos, 1974) - “convenient but expensive means of labelling people which makes no direct contribution to increased productivity as such”.

A similar thought has been of Marxist school which believes that in a ‘class society’ education may be a device for perpetuating economic inequality between classes and income group (Bourdieu and Passeron, 1990; Carnoy, 1971, 1977; Bowles, 1980). Strangely many researcher across the world (Fields, 1957; Jallade, 1974; Foxley, 1976;
Foxley et al. 1977; Selowsky, 1969 and 1979) suggest that taking into account both the distribution of enrolment at various levels across different income groups and its financing pattern, the distribution of primary education favours the poor but secondary and higher education tend to benefit the middle and higher income groups relatively more.

Bennell (1998) studied all the rate of return methods used by George Psacharopoulos and denied that there is no relationship between education and economic development in in Asian countries. Robinson (1998) along with Abbas and Mukhtar (2000) suggested that “human capital accumulation has no effect on the growth of gross domestic investment, when secondary schooling enrolment rates are used as proxy variable for human capital in India and Pakistan”. This might be because developing countries use very low technology for which primary education is enough or in rare cases, a more advanced technology is used for which higher education is required.

Gasparini et al. (2011) after studying “evolution of wage differentials and the trends in the supply of workers by educational level for 16 Latin American countries between 1990 and 2000 found that Gini coefficient for years of education has also been falling steadily for all countries and with constant rise in the relative supply of skilled and semi-skilled workers, returns to secondary education completion fell throughout the last two decades, while the increase in returns to tertiary education experienced in the 1990s was reversed during the decade of 2000. An equalizing increase in schooling may generate an unequalizing change in the distribution of labour income, which can be attributed to the presence of convexity in the returns to education, i.e., if the return to education increases at an increasing rate with the level of attainment”. Fuller, Edwards & Gorman (1986) studied Mexican economy between 1888 and 1940 and ‘abandoned earlier claims that education universally boosts economic growth or that schooling always reinforces the class structure’. The influence of education may be greater as a country commercializes agriculture, encourages urban-based industrialization, and moves away from exclusive reliance on feudal forms of agrarian production.

5.0 Education and Economic Development: Negative Relation

Speaking about the contribution of education to the economic progress of a nation its presence can surely be felt even though it’s negligible as is seen from the above discussion. The magnitude of the effect or contribution or presence may be low because of the existing inequality (Goldin & Katz, 2001; Waltenberg and Gambao, 2011, 2012) in attainment of education by various sections of the society. There exists multiple numbers of reasons for the discrepancy in provision of education even today. Since 1951 there has been speedy growth in enrolment, number of institutions and growth rate, yet there is wide
disparities across states and within states between rural and urban areas, between men and women, between the SCs/Trdies and non-SCs/Trdies, on the basis of ethnic, linguistic, religious, caste, gender, and other groups. Curle (1964) stressed on the homogeneity of the population and its effect on the magnitude of contribution of education to economic development. Starting from same economic level as India, per capita income of china has increased between 1950 and 1959 by 100 percent accompanied by an equally dramatic educational expansion: in India by only 12-15 percent. Compared to India, China treats education with great seriousness as an economic and political weapon. Specially higher education is treated with a step motherly attitude (Carnoy & Dossani (2013) and Carnoy et al (2012))

6.0 Education and Gender Inequality

Male and female sections of the society do not enjoy the same amount of liberty while accessing education (Goldin, 2001). This reduces economic growth (Klasen & Lamanna, 2009). There are two important reasons to stress the significance of female education to social and individual development. First, a developing society requires the optimum use of all of the talent at its disposal. Secondly, the role of the mother in the transmission of attitudes and even of health habits to the young may be critical (Adams, 1965). Higher schooling of girls raises their earning power (Klasen, 2002) and thus provides them with a strong incentive to seek employment and provides them with the necessary qualifications for employment (Benavot, 1989). Education of women increased the age of marriage, reduced the demand for children, and increased the familiarity and use of birth control methods.

The Indian researchers recognized the disadvantage of certain sections of the society even before independence. Chanana (1993) found in 1950-51 that there were only 14 women per 100 men, but it increased to 46 women in 1988-89 in higher education. “The undergraduate level enrolment increased from 10.8 percent to 31.6 percent; from 12.1 percent to 33 percent at the graduate level and from 14.1 percent to 34.6 percent in the doctoral programs” (Chanana, 1993). Yet the enrolment of women continues to be much lower than that of men in many countries like India and Pakistan (Chaudhry, 2007). According to Chaudhry (2007) the enrolment of scheduled caste (SC) women is proportionately closer to that of all scheduled tribe (ST) students. The proportions of SC and ST women have either remained steady or declined. The women belonging to the ST category are usually left behind.

UNESCO (2012) pointed that “Gender disparities in education become worse during the transitory period from primary to secondary education.... The nature of labour
markets and personal aspirations also play an important role.". In India higher education was precisely the best environment for reproducing such gender disparities in education, since this level was not considered a space characteristically feminine (Chanana, 2007). World Atlas of Gender Equality in Education published by UNESCO (2012) gives proof that trends towards change are on the rise. The UNESCO (2012) report notes that women have reached parity with men in earning Bachelor’s degrees. In Master’s degrees, they have an edge over men, accounting to 56 percent. However, at PhD level, they only account for 44 percent”. Friesen et al. (2012) collected data across 14 Asian countries from 1900 to 1960 and detected the factors that influence educational gender equality in Asia to be female voting rights, school enrolment rates, GDP per capita and the colonialists in South and Southeast Asia.

7.0 Education and Faculty Wise Discrepancy

Since the 1970s, global education policies have focus towards science and mathematics education (Drori, 2000) due to universalization of elementary education (UEE) in many countries reached a ‘ceiling effect’, and science and technology act as the foundations for an affluent economy. According to the structural-instrumental approach, “science education brings about direct effects on the structure of the national economy, and, thus, shapes the economic trajectory of the countries that embrace it” (Drori, 2000). Due to low fees structure in the public sector, students opt for it with the greatest payoff in terms of employment, thus, resulting in over-enrollment in some programs and under-enrollment in others.

Women and students from the deprived sections prefer general education, namely, humanities and social sciences - subjects which either lead to low end jobs or unemployment rather than professional courses such as engineering and technology, agriculture and veterinary science. In India “women’s enrollment in arts faculties ranges from 67.9 percent in 1950-51 to 54.9 percent in 1988-89” followed by medical and teacher training courses (Chanana, 1993). In “science the proportion of women decreased from 33.3 percent in 1950-51 to 28.8 per cent 1980-81” (Chanana. 2004) and the “proportion of men was around 80-90 percent till 1980-81, has come down to 59.8 percent in 2002-03”. She went on to state that “jobs involving public relations, personnel management, marketing, and advertising in the corporate sector, such as the banks, information technology (IT) firms, business process outsourcing (BPO) companies are becoming feminine jobs and specializations” in India. Medicine and education usually female-dominated subjects in India, show upward trends.
8.0 Education and Caste Inequality

Chanana (1993) found that about 10 percent SC students opted for professional courses of engineering and architecture in Orissa, Madhya Pradesh and Andhra Pradesh, while Karnataka enrolled only 4.3 percent. In Odisha 10.8 percent ST opted for professional courses compared to less than one percent in other states. The literacy rate among the Muslims is as low as 5.3 percent. After 2004, there is a trend of decline in the literacy growth of the Indian Muslims. Even the higher educational attainment is very less. The data from 1999-2000 make it relevant that the changes that took place in India post globalization, Muslims as homogeneous group could not participate or take benefits as their counter parts in India. Government should regulate the multi-cultural education “in such a way that social differences are smoothed out in a good way” (Kane, 1994; Gradstein et. el., 2002; Ahamed, 2014).

9.0 Education and Labour Market Condition

With changing technology, it is important to arrange and synchronize an educational system that will optimize resource utilization, reduce unemployment, and return investment in education in a short time period. Amartya Sen on 21 July 2013 ‘backed Bihar's growth strategy, arguing that growth was not independent of social transformation’ because "Educated labour force is the biggest guarantor education and healthy labour force is able to produce everything from IT to auto parts”. The same philosophy is followed by Japan, South Korea, Taiwan (Liu & Armer, 1993), Hong Kong and Singapore. The universal and compulsory schooling is essential for transition from agricultural to industrialisation and from rural to urban life because of four functions as pointed out by CISCO ()

a) “diffusing and inculcating the organizational attributes of industrial methods of production and consumption;

b) diffusing and inculcating the organizational attributes of anonymous urban life, mass-citizenship and the administrative state;

c) augmenting the size and fitness of the population available for increasing the division of labour in industrial work and life; and

d) improving the overall societal capacity to produce, accumulate, depreciate and diffuse knowledge".

10.0 Education and Economic Development: Spatial Views

The entire world can be divided into 7 continents. Out of the seven, only five have achieved economic supremacy. These five continents are Africa, Asia, Europe, North America, Oceania and South America. The total GDP of the world economy in the year 2012 turns out to be $71,707,302 as estimated by the IMF. World Bank calculated it nearly $71,666,350 and UN evaluated it as $70,201,920. When North and South America is merged US rank one by all the organization in terms of GDP. With highest GDP among the world economy and wide range of research undertaken, it has shown that by following its way of commitment any nation can reach its zenith.

As per Baldwin and others (2011) in USA “Per- capita savings deposits, college attainment, and initial GSP are the most consistent predictors of GSP growth over the 18- year period investigated. McMahon and others (2010) believed that “increased enrolment in short degree programmes (graduate level education) in the UK and in the US is an economically efficient investment”. However, all the independent variables in the model, except high school attainment; predict per- capita GSP growth from 1997 to 2005.” Vaillancourt (1995) researched on Canada and concluded age earnings profile are concave with peaks reached in most cases in the forty to fifty age range and rates of returns for graduates are higher for women than for men, and rates of returns tend to decline with the level of schooling. Arias and McMahon (2001) found it “interesting to note that both male and female workers with only elementary education experienced a higher growth in their real earnings than workers who did not complete college for US”.

Patrick and Kehrberg (1973 and 1974) studied economy of Brazil and saw the tendency for the returns to schooling to increase with the level of agricultural modernization. Similar results were also found by Lau et al. (1993) for Brazil. Baldwin & Borrelli (2008) noticed spending on higher education indirectly affecting income growth through college attainment rates on US during 1988 to 2005.

Africa is the second largest and populated continent. Africa remains one of the world's poorest and underdeveloped economies of the world, even though it has abundant natural resources. Africa's population has rapidly increased over the last 40 years, with the majority being youth. The total GDP of Africa in 2012 was 2,016.292 billion USD. Growth rate depends on utilisation of educated human capital rather than enrolment rates or expenditures on education. All levels of education have positive and significant effect on the growth rate of per capita income in African counties (Teal, 2011). Gyimah-Brempong et el. (2006) estimated the “growth elasticity of higher
education to be about 0.09, twice the growth impact of physical capital investment”. Mwabu and Schultz (1996) forecasted for South Africa that returns from higher education might be expected to decline as the fraction of African males with some higher education increased. Hertz (2003) detected “errors in the schooling variable are strongly correlated within the family, and that this reduces the degree of attenuation bias in the fixed-effects model”. Mattrawy and Semmler (2006) detected the residual in case of Solow method for Egypt to be a prominent reason of TFP change and the role of knowledge thus cannot be ignored. African government focussed on the quantity of education and ignored the quality (Kimenyi, 2011; Cloete, Batley, Pillay, Bunting & Maassen, 2011). Different democratic performances yield different effects of education on economic growth (Armellini, 2012). Africa needs large pool of labour force with higher education to transform the structure of production and reduce technological gap to achieve and sustain high rates of growth (Ajakaiyea & Kimenyi, 2011).

The distribution of Asia's population is decided by weather and geography. Different nations have undertaken various research works to verify the education and economic development. Idrus and Cameron (2000) studied Malaysian economy and conclude that “the returns to education declined for the university level, probably due to the fact of the higher cost of education at this level—which suggests that educational attainment, is the determinant of earnings function in the rural Malay areas”. Jann (2005) observed that “earnings returns to education are higher in the market sector than in the state sector of China's transition economy” because of the "more efficiently operating market mechanisms" with respect to human capital. Li, Brauw, Rozelle and Zhang (2005) said “China stands out as having one of the lowest rates of return in the world-far below Africa, Latin America and Asia”. Amornthum and Chalamwong (2001) noted that rates of return of most levels for male are on the wane (weaker), except the university level in Thailand. The rates of return of the upper secondary and diploma levels have decreased over the period. Dutta (2006) found the results that “there is an incentive to acquire high levels of education if the individual is in regular wage employment based on data from 1983–1999”.

Europe with a population of 733 million or about 11 percent of the world’s population is the second-smallest continent by surface area and third-most populous continent after Asia and Africa. Psacharopoulos (2009) did a European Survey and wrote “private returns exceed the social returns, by 2.3 percentage points. All returns (private or social) exceed any reasonable opportunity cost of capital. There was a negative inverse relationship between the returns to education and the country’s PCI”. Carliner (1976) researched on Spain and detected considerable differences among five ethnic groups in several of the coefficients, which were unpredictable. Varga (1995) observed that “private
return almost doubled in secondary education in Hungary, and there was a three and a half fold increase in higher education”. Chase (1998) concluded that “Czech men's return to education increased the most but Slovak women’s increased the least. While technical education continues to be valuable in 1993, it no longer provided markedly higher returns than academic education”. Wolter and Zbinden (2001) commented for Switzerland that students studying at the University of Berne have higher expected rate of returns (ROR) than students of the University of Zurich. Harmon and others (2003) conducted “multivariate regression analysis based on UK micro data and found return to a year of schooling in the UK of between seven percent to nine percent for men and between nine percent to 11 percent for women”.

11.0 Education and Economic Development: Methodology Review

By using Co-integration Test and VAR Model, Jaoul (2002) found that GDP had no relation with higher education in Germany but it had positive relation in France previous to World War II. Krueger & Lindahl (1999) and Ebbes et el (2005) stated that extreme positive relation between education and economic growth (as in case of Sweden) was due to “high rate of measurement error in first-differenced cross-country education data”. World Values Survey for 34 countries suggests that “measurement error is particularly prevalent for secondary and higher schooling”. “The measurement errors in schooling are positively correlated over time, but not as highly correlated as true years of schooling” (Krueger & Lindahl, 2001).

The hypothesis that the economic growth has a causal impact on education can neither be definitively proved nor disproved by the econometric analysis of single time series (Diebolt & Litago, 1997). “The search for the independent contribution of education to economic growth will be elusive if, in fact, its contribution is not independent of other factors of production” (Pencavel, 1991).

History puts 3 distinct ways of studying the impact of education on economic development: (a) human resource development, (b) education as a factor in technological change, and (c) human capital formation.

Bottomley (1966) pointed out the need for a model to predict the correct number of people to be trained, subject to be taught and the tenure of the training- taking into consideration the cost aspect. The technician must earn enough on net as a result of his training to amortise and pay interest on the cost of his education. The difficulty to express the concept of education, its cost and return is usually the greatest hazard. It is very difficult to distinguish between expenditures for consumption and for investment in case of education. Schultz (1961) segregated them into three classes, i.e., “pure
consumption which includes expenditures that satisfy consumer preferences and in no way enhance the capabilities under discussion, pure investment which means expenditures that enhance capabilities and do not satisfy any preferences underlying consumption and lastly expenditures that have both effects - partly consumption and partly investment”.

Generally correlation approach is used, whereby some educational index (frequently an enrolment or literacy ratio) is correlated with an economic index (usually GNP per capita) at a fixed point in time for several countries. Returns to the individual are another prominently applied technique which attempts to measure the additional earnings of the educated over those with less education.

Solow (1957) pointed out that if supply of educated youth is greater than the ‘absorption’ capacity then economic benefits cannot be optimized. “Thus the percentage of the age cohort who should receive primary, secondary or higher education should consider ratio of number of secondary-type jobs to adult population; ratio of number in age cohort to adult population; normal percentage wastage of nationals of the country; abnormal wastage due to replacement of expatriates and percentage rate of growth of the number of secondary type jobs” (Solow, 1957). Often students take part time job after school to meet their daily expenses. “The difference between what could have been and is earned is an important and indirect cost of schooling. Net earnings can be defined as the difference between actual earnings and direct school costs” (Becker, 1962).

Bottomley (1966) suggested three methods for measuring returns to education. Firstly, a strict statistical application of the model where a survey of the earnings of persons with a particular type of training is undertaken and classified according to the year of their working life; annual cost of training people in this particular line of endeavour would then be imposed upon the diagram and the relative sizes of the areas BXA and A'XB' would be computed. Secondly, a rough quantitative estimate of equilibrium levels of investment in education by calculating how far this number varies from an estimate of existing or future requirements. These requirements are calculated on the basis of some notion of ideal output/employment ratios in each specialized field. It has the merit of being more practical in terms of available data, particularly in underdeveloped countries. Thirdly, a qualitative application of the model which does not need time or the resource.

Bennet (1967) supports Schultz and Denison’s technique to estimate the effect of education by an ad hoc analysis of the proportion of the Gross National Product, not accountable in terms of measurable inputs of capital or labour. Denison (1962,1969,1978,1980) used gross national product per capita, calories per day per
capita, gross energy consumption per capita, and the percent of the population increase as variables.

Manpower model does not explicitly consider the interdependence of economic and educational policies nor attempt to design such policies simultaneously (Chirikos and Wheeler, 1968). Researchers have avoided the method because it ignores the costs of policy relative to the benefits from implementing it; so they promote the use of rate-of-return or cost-benefit analysis in educational planning. Adelman, Robinson & World Bank (1978) model composed of complicated set of exogenous and endogenous linear constraints which relate student flows and educational inputs to an aggregate macroeconomic model through an intermediate set of occupation-output coefficients.

According to Cox (1968), representing human resources development (education and manpower) with respect to economic development without politics and power is meaningless. Cox (1968) suggested using variables like “social stratification, political leadership, educational policy; and economic growth for the purpose”.

12.0 Conclusion and Way Forward

From the above review, it is clear that the contribution of education to economic development may be positive, negative or nothing. There are three distinctive ways of determining contribution of education to economic development: (a) rate of return analysis: education is an investment which enhances productivity and yield monetary and non-monetary returns; (b) human resource approach: through education future needs workers might be met to attain economic development; and (c) education and economic growth analyses: education has got a major multiplier role in economic analysis growth.

There is lack of research on the impact / contribution of education on the economic development of the country. Whatever small amount of research projects is available on it in India; they are unable to convince our policymakers to invest in the education sector. Therefore, there is a need for research on the contribution of education to the economic development of India and convince our policymakers to increase the public spending on education – elementary, secondary and higher education and education research.

Reference


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