CHAPTER - II

REVIEW OF LITERATURE

This chapter reviews studies related to human capital formation, economic development and human development. Although attempt has been made to review the research work done in the area of human capital formation and human development and their relation with economic development, but it may not include all studies. It highlights the type of work done in this direction. A brief review of important studies is presented in a chronological order.

According to Harbison and Myers (1964) an initial heavy investment in human resource development is necessary to get a country started on a road to self sustaining growth. The magnitude of required investment in human resource development for continued growth is itself a function of the level of a country's economic development. There is a high correlation and presumably some causal relation between enrollments in education and a country's level of economic development as expressed by GNP per capita. The balance in any programme of human resource development is as important as the amount of investment in education. The social and political pressures for education are powered by economic motivations and due to this an educational system which fails to prepare persons for available jobs is clearly out of balance and is by any definition inefficient. The proportion of national income devoted to human resource development is likely to rise in all countries that are growing with the increase in quantity of education and thus the need for improvement in the quality becomes imperative.

Harbison (1973) observed that human resources are the ultimate basis of the wealth of nations. According to the study the developing countries come across with two major problems: firstly underutilization of the capacities of human beings as indicated by rising unemployment and underemployment in both rural and urban areas, due to high rates of population growth; and secondly the under development of the capacities of human agents for productive use of their energies. Further, study found that there is no serious conflict between maximizing employment opportunities and maximizing national income.
Study concludes that the fullest possible development of the skills, knowledge and capacities of the labour forces involves a broad learning process. Formal schooling according to the study is a fundamental part of this process but working environments as well as large scale informal educational play a crucial role. Opportunities of universal learning plays greater role than education for the children at the primary level although both are necessary for the nation building. A cardinal principal is that great emphasis must be placed on life long, recurrent learning.

Ganguli and Gupta (1976) used three set of composite indices to measure levels of living in Indian states. The first covers the primary components of the levels of living namely nutrition, housing, medical care and education. The second one covered the secondary components viz leisure, security and environment. The third is an overall index of the level of living which was constructed by taking into accounts both the primary and the secondary components of the level of living. Study found that while the levels of per capita domestic product and the levels of living have a close relationship it was not so when the levels of per capita consumption expenditure were considered. It was found that the states with high levels of living did not show high rates of growth of the domestic product. Widening inter-state disparities in the levels of the domestic product were found to be associated with the fact that the states seemed to become closer states with high proportions of their population engaged in primary activities which usually showed low levels of living and hardly any significant relationship was observed between the tertiary sector and the conditions of living. Further the states with high literacy levels had shown better levels of living and also there is a positive correlation between levels of living and the average expectation of life. The study confirmed that public expenditure on social services has a positively favourable impact by way of levelling up the levels of living.

Yotopolulos and Nugent (1976) estimated the rates of return to different years of educational investment for whites and non whites separately in the United States, and found that the rate of return to education were higher for whites, especially in the south. The study presented a compendium of rates of return to secondary and university education, for different countries, revealed that the rate of return to education at these
levels is generally higher in less developed countries than in developed countries and higher for secondary than university education. The study suggests that since investments in human capital especially those in education and health require long gestation periods before they begin to bear fruit, policies in respect to human capital investments must be planned carefully on the basis of appropriate criteria.

Dhesi (1979) found that there is a definite relationship between technologies used by a society and the pattern of human development. A technically changing society creates new products, new centers of economic activity, requires new skills replacing the old ones. This demands a certain degree of mobility of human resources between regions, sectors as well as skills. Study further states that malfunctioning of an economic system can be judged from indicators such as high unemployment rate, structure of sectoral and regional distribution of unemployment, high degree of loss of time due to industrial strikes, high net out flow of human capital and chronic balance of payment deficit.

Rosenzweig (1987) explain three evident and important factors kept in view when the population policy is made with respect to relationship amongst growth of population, formation of human capital and economic development. These three points are:

(i) Both growth of population and human capital investment are indicators of changes in the economic environment.

(ii) Human capital formation is adversely affected by larger families.

(iii) Investment in human capital is greatly determined by inability of young couples to control fertility.

The study shows that correlation among population growth, human capital and economic variables as estimated from the studies conducted to quantify the causal mechanism based on these factors is far greater.

Wagstaff Port and Doorslaer (1991) used the range; the Gini coefficient; a pseudo Gini coefficient, the index of dissimilarity; the slope index of inequality and the concentration index for measuring inequality. The study found that use of the concentration index leads to quite different conclusions concerning the extent of inequalities in health. The use of range measure leads to the conclusion that there is less
class related inequality in chronic sickness in Sweden than in England and Wales, while use of the concentration index leads to precisely the opposite conclusion. Likewise use of the pseudo-Lorenz curve leads to the conclusion that there is less inequality in death amongst the 35-44 age groups in Finland than in England and Wales, while use of the concentration curve leads one to conclude the opposite. It is not always the case that different inequality measures lead to different conclusions. Irrespective of whether one uses the range measure of inequality or the concentration index, inequalities in mortality in England and Wales in 1981 were more pronounced if mortality is measured by years of potential life lost than if measured simply by deaths.

Kakwani, Makonnen and Gaag (1993) studied the evidence on socio economic trends in developing countries during the 1980's in comparison with that for the 1970s in order to assess whether the recent period was indeed "lost decade for development" and in particular developing countries as a group showed continued growth performance of many individual countries greatly deteriorated during the 1980s. Welfare as measured in PPP dollars of GDP per capita, averaged 30 percent higher in 1980-87 than in 1970-79 for developing countries as a group. Study found that average per capita real government expenditure on education and health, life expectancy and nutritional status and new enrollment ratio of children in primary school shows a steady improvement in developing countries throughout the period of 1970's and 1980's.

Foster and Rosenzweig (1996) used Panel and time-series data to explain the era of green revolution period in India in order to assess the effects of exogenous technical change on the returns to schooling. The study concluded that the policies resulting in greater technical change are complementary, with increasing investment in schooling. The returns to investment in technical change would in general be higher when primary schooling is accessible and the returns to investment in schooling will be higher when technical change is more rapid.

According to Gundlach (1996) Inspite of the availability of micro economic level proof, the contribution made by human capital has not been able to realize at the macro level as most of the empirical macro studies show conflicting results due to dearth of strong theoretical base. Besides most of the results stem from the problems faced in
measurement as they are based on narrow concept of formal education. There is a great scope of improvement in the statistical technique to judge and measure accurately the part played by the human capital at the macro level. When the formal education is used for the representing human capital formation there are quite alarming differences in different countries regarding the quality of schooling, health and nutrition status. The inferences drawn from many econometric studies which are not based on strong estimates fail to deliver any fruit and hence there is a great scope for the improvement in the empirical estimates.

Ravallion and Chen (1997) observed that human development report emphasizes on the country performance in improving human development indicators. The reports highlights that there is no guarantee that economic growth will benefit the large numbers of people in the world who lack the access to market and non market goods needed to lead enjoyable and fulfilling lives. The benefits of growth might be fully captured by those for whom that access is already assured. There are ways for poor countries to promote human development. According to the study these observations however should not deflect attention from the fact that economic growth typically does reduce absolute poverty and promote human development.

Tilak (1997) observed that India has during the post-independence period made substantial progress towards building up of a large educational edifice and network of scientific and technical institution in the country. Still half of the population in the country is illiterate. The goal of universalisation of elementary education still eludes and vocational and technical education at secondary level did not progress much so as to employ graduates. The study confirmed that investment in human capital in India has to be significantly increased in three essential purposes (a) to meet the challenge of poverty and to meet the aspiration of the people for better levels of living in the modern world, (b) to eliminate or at least reduce technological dependence on other countries and thus to free the country from colonial and neo colonial dominance and (c) to enter the international market in industry and trade on a competitive basis to reap the benefits of economic liberalization and globalization.
Tao and Stinson (1997) based their study on intergraded approach for calculating stock of human capital in the United States which overcomes difficulties faced by estimating stock of human capital by cost and income based methods. The past information on expenses incurred on education of individuals who complete high school graduation and join the work force immediately and the rate of wages received after joining the work force is used to calculate a rental value for human capital. The human stock for other persons or group of persons joining the work force is then estimated keeping in view the rental rate and the wages earned by each population sub group. The difficulties and problems faced in identifying the cost are negligible in this method. The study followed a scientific approach for estimating the increase and decrease in human capital. When used to estimate a Cobb-Douglas production function of the U.S. economy for the period 1963-1988, this measure provided more explanatory power than hours of labour.

By using individual data and a panel of aggregate birth cohorts from 1975-1995 Deaton and Paxson (1999) explained that the people with family income less than five thousand dollars could expect to live 25 lesser years than the people whose income was more than fifty thousand dollars. The only assumption made in this explanation is that social status determines the health status and is a measure of income with respect to average income of a particular group. When no reference is made to a particular group health becomes a function of income varying in the ratios as between ratio of income inequalities within the group and as between the groups. The relationship between health and income varies at different level of aggregation. The study has shown that income of an individual reduces risks of death that is, greater the income of a person higher would be the chances of his long life with the assumption that the income of individual on a death bed may reduce his earnings. This phenomenon is also applicable to a group of people where positive effect of income can be seen but there are evidences that cyclical income may increase the mortality rate. However, effects of income are positive in the long run. But there are no evidences that income inequality in recent times have ever increased the mortality rate than it could have been when there would be no income inequality.
Nauriyal and Sumanash Dutta (1999) estimated a farm household earnings functions to evaluate two major economic aspects of human capital in the aboriginal ethnic illiterate groups. (a) The direct or so called "worker effect" and (b) the decision making or the resource "allocative effect" of education of household head and their wives. Study concludes that the allocative effect of education in regard to the farm households appears to be greater than that of the direct effect, although such an impact is not of much consequences given the low value of the regression estimates. Economic returns to the educational attainments of the head of the farm households are greater than that of their wives. Investment in human capital tends to improve economic returns considerably in the non-farm sector as compared to the farm sector. The role and contribution of wife in terms of economic decision making and participation in the gainful economic activities tends to be greater in the non-farm households.

Shariff and Unni (1999) studied the human development and growth scenario of the South Asian economies to examine the rationale for mass education among the young. They observed that these economies were in the process of integrating with the world economy. Structural changes involving a shift towards the services industry and a decline in the agricultural sector was taking place. There was a lack of demand for education among the poor and in the rural people. Study found that the governments of these economies failed to provide a proper educational infrastructure. Study concluded that to ensure participation and involvement in the education sector, a direct financing and local fiscal contribution of the community at large and of parents in particular was essential. This strategy would not only improve community participation in decision-making but will also empower the community to make policy level changes and choose the type and quality of education it needs.

Barro and Lee (2000) presents a data set on attainment of education for the population over age 15 and over age 25 at five year intervals starting from 1960 up to 2000 for a large number of countries. The data provides information about the education attained by girls and boys at seven levels of schooling. The data prepared thus have served a major purpose for investigating attainment of education which can be measured by the number of years spent in school as well as form of education attainment at
different levels. The data set has also helped to study the links among different countries between education and economic variables. There has been a great work for the improvement of international measures of human capital. The information regarding the quality of education has been provided by the International test scores of students at the primary and secondary levels and thus it provides the necessary information regarding the quality of education. But these measures have restricted application due to sample consisting of OECD countries. The International Adult Literacy Survey is a very promising attempt to measure directly the skills of the workplace for international comparison. According to the study, for future use, international efforts to extend the coverage of the IALS to more developing countries will be important. This step will be responsible to assess the interactions between the quantity and quality of education for a large panel of countries. It would also be possible to study further the effects of human capital on economic performance and to see how these effects interact with the level of economic development.

Barro (2001) analyzes the growth effects of education in a panel of around 100 countries from 1965 to 1995. Study found that growth is positively related to the starting level of average years of school attainment of adult males at the secondary and higher levels. Since workers with this educational background would be complementary with new technologies, the results suggest an important role for the diffusion of technology. Growth is insignificantly related to years of school attainment of females at the secondary and high levels. Study suggests that highly educated women are not well utilized in the labour market of many countries. Growth is insignificantly related to male schooling at the primary level. However, this schooling is a prerequisite for secondary schooling and would therefore affect growth through this channel. Education of women at the primary level stimulates growth indirectly by inducing a lower fertility rate.

Study used the data on student's scores on internationally comparable examinations in science, mathematics and reading to measure the quality of schooling. The study found that scores on science tests have a particularly strong positive relation with growth. Given the quality of education as represented by the test scores, the quantity of schooling measured by average years of attainment of adult males at the
secondary and higher level is still positively related to subsequent growth though the effect of school quality is quantitatively much more important.

Gupta (2001) developed a two sector growth model of a small open developed economy in which physical capital and human capital accumulate over time and the human capital accumulation is constrained by the existence of the child labour market. Study analyzed the properties of the growth path and showed that the equilibrium size of the child labour market is reduced as the accumulation of physical capital takes place. There may be multiple long run equilibrium in the system and the growth path may converge to a low-level equilibrium trap characterized by the existence of child labour market when the initial levels of physical capital and skilled labour force are very low. Such an equilibrium is likely to occur when the adult labour using sector and the rate of depreciation of capital stock is very low. Trade sanctions imposed on the child labour using product, aggravates the problem lowering the steady state level of capital stock and raising the supply of child labour and unskilled adult labour. This also lowers the national income in the long run equilibrium.

Andrew (2001) provides an overview of how the issues of health and education can be incorporated into a frame work that tracks the sustainability of human capital. The study made key distinction between outcome and input indicators. Both types of indicators are in turn divided into summary and specific indicators. Sustainability is defined when the outcome indicators remain constant or improve over time with sustainability defined as a deterioration in outcome indicators. Weak sustainability requires constancy or improvement in all summary and specific outcome indicators.

Further the study proposed a framework for tracking the economic sustainability of the education and health components of human capital. It makes the case that the two most appropriate summary human capital indicators in the education area are average educational attainment and literacy levels based on international testing and in the health area, health-adjusted life expectancy and self reported health status. Average educational attainment can be expressed in monetary terms. The valuation of the other three indicators is much more difficult although theoretically plausible. The study found that the development of estimates of these four summary indicators of human capital to track
economic sustainability is feasible. The study noted that the sustainability of human capital represents considerably less of a challenge that the sustainability of certain ecosystem and that the more important challenge in human capital area relate more to Canada's ability to improve the quality of our human resources, relative to our competitors than to sustain them at the existing level.

Thomas, Wang and Fan (2001) used calculated education Gini directly and education Gini by framing Lorenz curve of education. It then generates a quinquennial data set on education Gini, for the population age over fifteen for 85 countries within time span from 1960 to 1990. Moreover the study also obtained the data on average schooling years and the standard deviations of schooling. The first stage empirical analysis finds that first inequality in educational attainment for the countries decreased over the period of 1960-1990 with a few exceptions. Second inequality in education is negatively associated with the average years of schooling meaning that countries with greater educational attainment levels are most likely to have better education equality than countries with lower attainment level. Data also shows that the education inequality in low income countries is likely to be worse than that of high income countries. Third an educational Kuznets curve exists if the standard deviation of education is used which is also shown in regression results. Fourth gender gaps are closely associated to the education inequality and over time, the association between gender gaps and inequality becomes stronger. Fifth per capita PPP GDP increments seem to be negatively associated with inequality in education and seem to be positively related to the labour force's average years of schooling. However the effects are not robust due to problems including multicolinearity.

Viaene and Zilcha (2001) studies the determinants of income distribution and growth in an over lapping generations economy with heterogeneous households. The framework of the study has two main features. Firstly heterogeneity of consumers with respect to wealth and parental human capital. Secondly intergenerational transfers, accomplished via investment in the education of the younger generation. The study explores the effects of technological change in human capital formation upon the distribution of income at each date along the equilibrium path. Secondly the impact of
such technological progress was studied on growth and these results were related to the income distribution inequality. Thirdly the study provided numerical simulations to quantify the effect of changes in the parameters of the model. Simulation results include exact Gini coefficients and tax rate on labour determined endogenously through majority voting.

Callaghan (2002) explained the impact of human capital on the economic growth of 10 Asian economies over the 1980-1997 period. Going beyond the many definitional limitations of most studies, the study defined human capital on the basis of a composite indicator encompassing literacy rates and enrolment ratios at secondary level. This definition encompasses both an input and an output indicator, thereby improving on previous studies. Using a panel regression methodology, the study found that human capital has a significant and positive impact on GDP, confirming the results of earlier studies. The study showed the superiority of the quality of human capital in explaining GDP growth, when compared with the quantity of labour. What seems to have mattered most for all 10 Asian countries since 1980 is the addition to knowledge as opposed to the simple increase of labour units in their economies. These results also translate the increasing importance of the intensity of intellectual capital to economies under review and in particular to the most advanced ones such as Japan, South Korea, and Singapore.

According to Bloom, et al. (2002) Economic growth can be decomposed into two components: increase in factor inputs and improvements in total factor productivity (TFP), the efficiency with which factors are used. The model accounts for economic growth by the growth of factor inputs, technological innovation and technological diffusion. No evidence was found that the macro-economic effects of capital accumulation and schooling are any greater to those found in micro studies. This suggests the absence of externalities at the aggregate level and that deliberation studies based on micro economic evidence on private returns provide reasonably pictures of the proximate sources of economic growth. The study found evidence of conditional convergence in the growth data, but the framework allowed to interpret this specifically as evidence of technological diffusion. The fact that no externalities was found puts the emphasis in explaining cross-country differences in income levels on how and why TFP
varies across countries. The results suggested that steady state TFP varies systematically across countries with their geography and institutions but that convergence to this steady state level, through technological diffusion is quite slow.

Cervellati and Sunde (2002) provided a unified theory of the transition in income, life expectancy, education and population experienced by the Western world when passing from an environment of economic stagnation to sustained growth. Wages which are determined by productivity and life expectancy are the crucial variables in the individual education decision. The advances in the technological progress, human capital formation and longevity potential reinforce each other. The study analytically examines the resulting development path, which exhibits a long period of economic stagnation and poor living conditions followed by a relatively short period of dramatic improvement in all these dimensions. The mechanism used in the study is able to reproduce the observed patterns of long term development without the need of relying on exogenous events and strict temporal causalities. By simulating the model for illustration purpose the study showed that the long run behaviour of key indicators of development like income, income growth, productivity, life expectancy and population size implied by the model is in line with empirical evidence and stylized facts.

Datt (2002) examined the improvement in human development index in India vis-a-vis other countries of the world. The study found that the population growth rate has begun to decline and it is estimated that it would be 1.3 percent per annum during 1999-2015. This will release quite a significant proportion of the resources being currently used to support a higher growth rate of population for other areas of development. The public expenditure on education was found to be stagnant at 3.2 percent of the GDP during the last 25 years. The youth literacy at 72 percent is much lower than the achievement of a majority of medium human development countries, which is around 90 percent and above.

Health indicators revealed a continuous improvement in life expectancy, infant mortality rate and maternal mortality rate though they do not commensurate with the levels attained in several of the medium developed countries. Gender related development indicators reveal the gap between male and female population in adult
literacy, gross enrolment ratio and earned income as being too wide and indicate the existence of a strong gender bias.

The public expenditure on the health has been pitiably low at less than 1 percent of the GDP. Military expenditure as a percentage of GDP indicated a declining trend during the 1990s. The growth rate of the Indian economy has remained at 6 percent during the last two decades and can be considered as satisfactory. The study concluded that though the human development index of India has improved from 0.406 in 1975 to 0.571 to 1999 but still she has miles to go before she can enter the group of high human development countries.

Study also suggested the need to enlarge UNDP measure of HDI to include urbanization, population below the poverty line and quality of life as indicated by (I) access to safe drinking water (II) availability of electricity (III) provision of two square meals a day and (IV) resident in pucca houses.

Hendricks (2002) study offers new evidence on the sources of cross-country income differences. It exploits the idea that immigrant workers provide an opportunity to estimate the human capital endowments of workers from a variety of source countries based on earnings attained in a labour market. This approach captures both observed and unobserved skill differences without having to postulate a particular human capital production function. Study found that cross country differences in unobserved skills are much smaller than cross country income gaps. Study rejects the hypothesis that human and physical capital account for the bulk of the cross country income differences. Further study found that in low income countries human and physical capital account for a reduction in output per worker to one half of the U.S. level.

Jeong (2002) proposed that aggregate human capital output can be measured by comparing aggregate input and the wage rate of industrial labour. The assumptions that support this method of measuring the human capital input are that the human capital inputs of the industrial labourers are the same across countries, that the human capital inputs of the workers within a country are proportional to their wage rates, and that the human capital input (labour) share of the aggregate output is the same across countries. The main advantage of this method over the methods based on schooling is that it takes
into account cross-country differences in the skills acquired outside the school and in health status.

The study found that low income countries use less human capital input in the production and that the human capital input differs between the lowest-income and the highest-income countries by a factor of 2.2 or 2.8, depending on the inclusion of the outlier countries. This is significant but little less as compared relative to their output difference or relative to the results from the method based on the years of schooling. In neoclassical output accounting, this implies that the human capital input difference between the lowest-income and the highest-income countries can account for their output difference by a factor of about 1.8. Even if we add the physical capital input as an additional input of production, the factors are needed other than the human or the physical capital input to account for a large part of their output difference.

Schultz (2002) opined that women and men often receive the same percentage increase in their wage rates with advances in schooling. Because these returns decline with more schooling, the marginal returns for women will tend to exceed those for men, especially in countries where women are much less educated. The health and schooling of children are more closely related to their mother's education than father. More educated women work more hours broadening the tax base and thereby potentially reducing tax distortions. These three conditions, it is argued, justify the disproportionate allocation of public expenditures toward women's education. The study has focused on the micro economic evidence from household surveys and censuses of the private productive returns and social externalities of human capital and schooling by gender. Merging school administration and household survey information on the school and family inputs, enrolments and test scores should provide a firmer basis for evaluating national policy options to equalize educational opportunities between females and males and also between the poor and rich families, and rural and urban areas.

Yussof and Rahmah (2002) attempted to compare human resources competitiveness indicators such as labour costs and productivity, educational achievements of skilled workers, skill composition and technological progress in four selected ASEAN countries-Malaysia, Thailand, Indonesia and the Philippines with
developed countries in the region such as Singapore and to compare them to trends in FDI inflows. The analysis is based on data for the period 1985 to 2000.

According to the study FDI has been a major force in the transformation of the four ASEAN economies and has positioned the countries as significant players in the global business environment. Besides low cost labour, there are other factors namely the openness of the trade and investment policies, huge potential of the market that attract FDI. As greater emphasis is now being put on high technology and high value added industries at the present stage of development of the four ASEAN economies, a move towards strengthening the existing FDI base to add more value and to stress the qualitative rather than the quantitative aspects of employment is very important. Educational and training facilities are the key and these should be geared towards producing a well educated and skilled workforce tailored to the current and future needs of the economy. Study found that the problems faced by higher learning and training institutions in many developing countries as supplier of manpower is inadequate information regarding the market needs for various types of educated and skilled labour. This is likely to hinder the effective role of these institutions to produce appropriately skilled manpower needed by the country. The study also found that the proportion of scientists and engineers per million of population who are involved in R and D activities in the four ASEAN countries is extremely low compared with many countries. It was also observed that national spending on R & D with four ASEAN economies is still low compared to these countries.

The study opined that since information knowledge and communication technologies are important in the global economy in order to gain competitiveness, it is crucial to ensure that computers and information technologies are made more accessible to the majority of the population. The so called digital divide may be only a theoretical concept but it is abundantly clear that the availability at various levels is likely to produce major dividends by increasing the host country’s long term competitiveness.

Dholakia (2003) examined the trends in regional disparity in the economic and human development in India over the last two decades. While PCI does not show any significant trend in regional disparity over the last two decades, seven out of nine human
development indicators display a declining trend. Similarly, 12 of the other 16 related social and human development indicators show a marked decline in regional disparity during 1981-91. Further the study examined the question of the direction of causality between economic development and human development. The study found that the Indian regional data suggest a two-way causality between human and economic development. The structure of the relationship varies overtime when human development index (HDI) are the cause and PCI is the effect, but in the reverse causality case, the structure of the equations is stable over time. Moreover HDIs positively influence PCI with a lag of about eight years, whereas PCI affect the HDIs within two years. The study concludes that the central institutions need not be unduly concerned about reduction in regional disparity either in PCI or in HDIs. The states are best placed to choose their development strategy as per their felt need. This is the best time when the central institutions can and should purpose the natural priority of achieving high economic growth. The other concerns are more likely to be addressed hereby.

Gibson and Oxley (2003) identified three general approaches to measure human capital; cost based, income based and educational stock based. The study mainly concentrated on the first two approaches however all the three are clearly related. Inputs into the human capital production process, including, for example, the costs of rearing and educating people, form the basis for the cost-based approach to human capital valuation. The income based approach to measure human capital uses an individual's earnings which are assumed to be influenced by acquired skills and education. Human capital measures based upon literacy rates, school enrolment rates and mean years of schooling, which have been widely used in their own right as educational stock based measures of human capital, potentially form an input into such income based measures. Human capital play a critical role in the growth process as well as producing positive external effects such as enhanced self-fulfillment, enjoyment and development of individual capabilities, reduction in poverty and delinquency and increased participation in community and social and political affairs.

Heylen et al (2003) analyses the effects of inflation on human capital formation. The empirical results for 93 countries from 1975-1995 revealed that human capital is
positively affected by the rising inflation but when the inflation is too high then the trend is reversed and it affects negatively on human capital. A representative threshold may be 100%. For inflation rates below 15% the effect of rising inflation on human capital seems to be insignificant. The study developed an alternative theoretical model that can explain positive effects of inflation, the model was built on standard results from the literature on the real effects of inflation.

Ignacio (2003) studied the dynamic relationship between consumptions and human capital investments. The study found that the risk is not the only parameter with respect to investment of human capital for seeking premium on these human capital investments that are risk free under reasonable preference parameters. The study used a stochastic discount factor methodology to examine empirically the extent to which short scale constraints and irreversibility, borrowing and solvency constraints and psychic costs of investment may help explain the size of the risk-adjusted premium. The study is implemented for various utility specifications including non-separabilities in consumption such as habit persistence. Some of these frictions allow the models to satisfy the basic restrictions that human capital returns impose on the variability of the intertemporal MRS under feasible preference parameters, especially under certain preference specifications. The study also found that frictions in human capital markets are quite different across demographic groups, decreasing with education, age and experience and these frictions are from 4 to 14 times greater than in financial markets. The premium required for bearing human capital risk and being subject to market frictions may be such that the human capital rate of return is no greater than that of other assets.

Jellal and Wolf (2003) considered a model of international migration with heterogeneity in the skill level of workers which accounts for country-specific educational investment, unemployment expectations and return to the origin country. The study proved that migrants invest less than natives in human capital formation because of return migration, so that migrants are more likely to be unemployed and to have flatter earnings profiles.
Jimenez (2003) studied the effects of human and public capital on growth in terms of their impact on Total Factor Productivity of the Spanish regions. The growth in the region was analyzed by taking into account the levels of efficiency at which the different regions operate. Technological process and efficiency gains were considered as differentiated mechanisms of productivity growth. Productivity growth was found to be an important source of economic growth for Spanish regions especially in the agriculture and industry sectors.

Few effects of public capital on TFP growth were found at the aggregate level. However, a sector-by-sector analysis showed the significant positive influence of public capital on productivity in the agriculture and industry sectors where the link to water and transport infrastructure is greater. The role of human capital accumulation in TFP growth was also significant both for the aggregate and for the different sectors analyzed. Since the level of human capital effects TFP growth only at the aggregate level the effects of human capital was less clear, nevertheless, it was observed that the education level of the working force has a positive influence on efficiency gains via the catch up process at both the aggregate and sector levels, thereby contributing to growth.

Mayer-Foulkes (2003) stated that human competence has the great role to play so as to carry the country from stagnation to economic growth. Various micro economic studies done in the past have shown that the effect of nutrition and health on the income levels of different people in different countries have great variations. Exhaustive study of joint dynamics of life expectancy and income reveal that there is a coordinated and varying surge to overcome stagnation and is a continuous process which is further marked by hurdles in the way of human development as well as productivity. These observations can be described with the help of a model where human development is associated with technological changes and is marked by series of market failures. These dynamics, intergenerational, human development traps make economic growth slower, stratified and transitional. A micro economic study on Mexico finds evidence for an economy wide, intergenerational, low human capital trap consistent with this model. Early child development has the potential of getting better education for the children and
for stimulating adult income and this trend is comparable to historical and macroeconomic findings done earlier.

Schultz (2003) opined that a consensus has been forged in the last decade that recent periods of sustained growth in total factor productivity and reduced poverty are closely associated with improvements in a population's child nutrition, adult health, and schooling, particularly in low income countries. Estimates of the productive returns from these three forms of human capital investment are nonetheless qualified by a number of limitations in the data and analytical methods. The study reviewed the problems that occupy researchers in this field and summarizes accumulating evidence of empirical regularities. Social experiments must be designed to assess how randomized policy interventions motivate families and individuals to invest in human capital and then measure the changed wage opportunities of those who have been induced to make these investments.

According to WoBmann (2003) two crucial aspects of human capital specification which can strongly influence the estimated growth effect of human capital are the correct inclusion of rates of return to education and the consideration of the quality of education. The development accounting results show that the development impact of human capital seems to be severely understated by human capital specifications—which neglect these specification issues. The study has focused on education as a means to accumulate human capital, an encompassing specification of human capital should also consider the whole range of other investments which people make to improve their productivity. In addition to formal education, these investments include informal education acquired parallel to schooling, skills acquired after schooling through training on the job, and the experience gained through learning by doing. Furthermore, medical care, nutrition and improvements in working conditions which avoid activities with high accident rates can be viewed as investments to improve health.

Baldacci, et al. (2004) used the panel data from 120 developing countries from 1975 to 2000 and explores the direct and indirect channels linking social spending human capital and growth in a system of equations. The study found that both education and health spending have a positive and significant direct impact on the accumulation of
education and health capital and thus can lead to higher economic growth. An increase in education spending of 1 percent point of GDP is associated with 3 more years of schooling on an average and a total increase in growth by 1.4 percentage points in 15 years. Similarly an increase in health spending of 1 percentage point of GDP is associated with an increase of 0.6 percentage points in the under 5 child survival rate and a raise of 0.5 percentage point in annual per capita GDP growth. Two thirds of the direct impact of education spending is felt within five years, but the full impact materializes with a significant time lag of 10 to 15 years.

The study recommended that strengthening governance can have a strong pay off for social indicators as well as for growth. Reducing corruption and increasing accountability for public spending are no less important than increasing spending. In addition macro economic policies such as reducing inflation and improving fiscal balances have a positive effect on growth and in turn on the poverty headcount. Furthermore, improving human capital will have a salutary effect on growth, "it will be far from a panacea for unlocking the more robust expansion in economic activity needed to achieve the Millennium Development Goals". The study recommended additional research is needed to address the key policy interventions needed to achieve rapid economic growth.

Chadha (2004) opined that human capital most ostensibly in the form of education would be an inescapable input for ensuring competitive levels of productivity in various sectors and for accelerating the overall face of economic growth of Indian economy. The study underscores that a poor human capital base is the "Achilles' heel" of Indian economy. The quality of workforce poses a frightening scenario in agriculture, mining-quarrying, and construction; an enormous question mark for manufacturing, trade and transport, and a big issue for utilities and community social personal services. The rural-urban and male-female contrasts are no less frightening. Three types of policy interventions are suggested. The first must aim at improving the quality of would-be workers. The second needs to focus on training/retraining of the existing workforce. The third builds a case for enhanced focus on manufacturing.
Ghailani and Khan (2004) opined that the value of human capital has never been so important as in present times as we are living in a knowledge era where skills and education become quickly out of date. The education system as a whole has been a subject of continue evaluation and reinforcement. The role of education and training in enhancing the chances of better quality of life, prosperity and peace is being appreciated worldwide. The secondary level of education in particular plays very crucial role in shaping the human capital of a nation.

The study evaluated the challenges faced by the secondary education system and tried to find out the desirable structure, system and methods to import better learning and generation of knowledge so that the need of the private sectors can be fulfilled.

Heylen et al (2004) analyzed the panel data for 86 countries in 1975-2000 basically confirms the predicted positive human capital effects of inflation crisis. In regression explaining human capital investment, crisis dummies for inflation higher than 40% or 25% typically get statistically significant and positive coefficients. The study found that over a period of 5 years an inflation crisis may raise average schooling attained among the population of 15 and older by up to 0.3 years. In some regressions the study observed significant positive effects from inflation higher than 15%. A negative effect from inflation can be observed only at very high inflation rates. The study opined that one should not forget that each inflation crisis causes a deep recession in short run. So it stated that if government wants to stimulate human capital and long run output, there are undoubtedly better ways to achieve this than to create an inflation crisis.

Edwin and Oosterbeek (2004) studied the effects of different human policies directed to those groups who are not in an advantageous position in Netherlands. Their study included the policies like: decreasing the size of the class, additional resources for the faculty, additional expenses on computers, decreasing the prescribed age for admission to compulsory schooling and enhancing the age at the time of leaving the school. The results presented by them are based on partial experimental research model. The only intervention yielding worth mentioning positive effects is the decreasing of the age at the time of admission to the compulsory schooling. The positive effects of the other interventions mentioned earlier can be ruled out.
Ranis (2004) gives the two way relationship between economic growth and human development which suggests that nations may enter either into a virtuous cycle of high growth and large gains in human development or a vicious cycle of low growth and low rates of HD improvement. In these states, levels of EG and HD are mutually reinforcing either leading towards an upward spiral of development or a poverty trap. The existence and persistence of these cycles depends on the strengths of the linkages previously cited between EG and HD. Countries may also find themselves in a lop-sided state at least temporarily with relatively good growth and relatively poor HD or vice versa.

The findings of the study also have strong implications for government policy. If Human Development improvements are needed a pre condition for sustainable Economic Growth, government policy and public funding may be necessary to move a nation above the Human Development threshold level. Nations stuck in vicious cycles or low Human Development poverty traps may need targeted government investment to meet the fixed costs of Human Development improvements that will lead to economic growth. These fixed cost investment may include schools, hospitals and the necessary governance improvements to effectively implement investment projects.

Lutz, et al. (2005) argues that forecasting human capital is important for several reasons and that the most appropriate methods for doing so are demographic multi-state population projections. Under this method the population of a country or region is cross-classified by age (typically five-year or single-year age groups), sex and different categories of educational attainment. The population is projected into the future based on assumed education specific fertility, mortality and migration rates as well as age and sex-specific transition rates from one educational status into another. This explicit consideration of such dynamic features makes this method more appropriate for the projection of human capital. Such multi-state models can also be applied to the detailed analysis of education flows, modeling intake and enrolment, as well as completion rates. The study demonstrates the feasibility of the method through three detailed education projection studies for the priority countries Guinea, Nicaragua and Zambia. It shows that
for most developing countries, the data required for this approach are readily available and that the method is fairly easy to use.

Manuelli and Seshadri (2005) revisit the development problem and re-evaluate the role of human capital. The study found that cross-country differences in this factor are major contributor to differences in output. The key difference between this study and recent work in this area is that this study use theory to estimate the stocks of human capital, and that allowed the quality of human capital to vary across countries. This results in large cross-country differences in effective human capital per worker. As a result of this finding cross country differences in TFP are estimated which are substantially smaller than those reported in previous studies. Moreover this model implies that output per worker is highly responsive to differences in TFP and in demographic variables.

Ranis, Stewart and Samman (2005) explored ways of enlarging the measurement and understanding of human development beyond the relatively reductionist Human Development Index. From the extensive literature on well being, eleven categories of Human Development were derived. Within each category, the identification of potential set of indicators which were measurable and reflect performance with respect to that category was done. In order to reduce the number of indicators representing each category the study included only one for any set highly rank order correlated with any other indicator in that category. Only indicators which are broadly independent of each other were retained.

The study investigated the extent of correlation between the retained indicators and such generally accepted core indicators as the HDI, per capita income and under five mortality rate. The study found that HDI and under five mortality performed equally well in eliminating additional indicators while per capita income did some what less well. The study suggested that a further consolidation of indicators, possibly with the help of principal component analysis applied to each category should help to identify typologies of countries concerning success or failure with respect to the various dimensions of human development.
Vandewege and Heylen (2005) discuss the effects of macro economic volatility on human capital formation. Simple cross-country scatterplots as well as existing empirical studies which typically measure volatility by the standard deviation of GDP growth show a negative relationship. Using panel data for a large group of countries in 1970-2000, the study found that (a) The macro economic volatility does not have significant negative effect on human capital formation as revealed by the existing studies. (b) The volatility effect of decreased spending on government education may even give positive results. (c) Using a time-varying volatility measure and controlling for possible endogeneity of volatility and other explanatory variables in estimation, the effect found is always positive. Theoretically, the study build a simple model which can explain a positive volatility effect on human capital formation while at the same time being consistent with the basic negative cross-country correlation.

Bohacek and Kapicka (2007) set up a dynamic private information model with endogenous accumulation of observable human capital and analyzed optimal income taxes and schooling policies. The study found that under plausible condition and certainly in a steady state, the optimal schooling subsidies and the inter temporal human capital wedge are both positive. While the effective marginal schooling subsidies are typically higher for agents with higher abilities, they decrease at the very top of the ability distribution. In terms of magnitude the effective marginal schooling subsidies are smaller than the effective marginal income taxes. The study also analyzes two partial reforms where either income taxes or schooling subsidies are fixed exogenously. The study found that as long as the income taxes are set optimally, the welfare gain from the introduction of schooling subsidies is fairly small. On the other hand, schooling subsidies become much more important if income taxes are not set optimally.

Salisu and Ayinla (2007) examined empirically the causal impact of education on growth in Nigeria between 1970 and 2004. Education was broken down into primary, secondary and tertiary levels and the causal linkage between each level of education and growth was investigated. Also education was segregated by gender to ascertain whether the results will vary by gender. The study utilized correlation, unit root and granger casualty tests. The results generated from the estimation process suggest that only
primary education has a causal linkage with growth in Nigeria. Even when the enrolment was segregated by gender, the result did not seem to vary noticeably.

Chaudhuri and Maitra (2008) used panel data from 138 countries to describe the relationship between attainment of school education and economic development. The study examines the effect of other macro economic variables such as government expenditure on education and political instability on school attainment and completion. The results showed that income levels, government expenditure on education and political instability all generally have statistically significant effects on school attainment and completion rates, but interestingly the direction and significance varies across the different levels of school attainment and completion. In addition there is significant non-linearity in the effect of income in school attainment and completion rates. There are some interesting gender differences. In general the income effects are stronger for female school attainment and completion rates. Government expenditure on education has a stronger effect on female educational attainment and an increase in political instability significantly affects school completion rates of both males and females and the results show that females are more likely to stay on in school if there is an increase in political instability while males are more likely to drop out.

From a policy point of view this is an important issue. In recent years the issue of school drop outs and non-completion of secondary schooling has been a major concern to policy makers around the world. All agree that the consequences of dropping out of school early can be quite severe. The use of cross-country datasets allowed to examine the relationship between macro economic variables and educational attainment. This in turn allows policy makers to recognize various methods to hit the problem of non-completion of schooling at different levels.

Dougherty and Herd (2008) recommended institutional changes that may help to improve the performance of the educational system and so boost human capital formation in India. The delivery of educational and health services in India needs to be improved significantly. Considerable progress has been made through such government initiatives as those designed to draw more children into schools through projects such as the “Free Mid-day Meals” and “Education for All” programmes. Further action along the lines of
cash grants in exchange for attendance, as in number of Latin American countries may be necessary in five of the poorest states when two thirds of the out-of-school children are found. These grants should be, for equity purposes, financed directly by the centre. However, while school attendance is necessary for closing the literacy gap, it is not sufficient. The number of teachers is limited, making attendance and quality essential to compensate for lack of numbers. Here transparency and accountability to the local population is essential to ensure that educational outputs are high. It will be necessary to measure and publicize performance results for schools at the primary level.

Fraumeni (2008) proposed the construction of single and multiple country human capital accounts with five essential elements, which taken together differentiates it from the existing human capital indicators or indexes. The account should have at least two out of three components—volumes, values and prices—where the third can be determined by any of the other two. The account should have a common numeraire, such as base currency. The account should be related to a generally accepted macro measure, which is normally GDP, but could also be total population. The accounts should include both inputs and outputs. The account should form a complete system within the account itself and relative to both a non market and a market (GDP) set of accounts. A complete system of human capital accounts would provide a greater understanding of the impact of human capital by, for example, showing the sources of change in human capital. The starting point for a human capital account is a demographic account: the total number of people—including immigrants and excluding emigrants; their ages and sex; their highest level of attained education; and their participation in the labour force.

The construction of country-comparable human capital accounts is an important goal and the study recommended that work should begin for the process of quantifying that crucial factor without delay.

Fleisher, et.al. (2008) studied the dispersion in rates of provincial economic and Total Factor Productivity growth in China. The results show that regional growth patterns can be understood as a function of several interrelated factors which include investment in physical capital, human capital and infrastructure capital; the infusion of new technology and its regional spread; and market reforms, with a major step forward
occurring following Deng Xizoping's "South Trip" in 1992. The study found that FDI had much larger effect on TFP growth before 1994 than after, and this attribute to emergence of other channels of technology transfer when marketization accelerated. The study found that human capital positively affects output per worker and productivity growth. In particular, in terms of its direct contribution to production, educated labour has a much higher marginal product. Moreover the study estimated a positive, direct effect of human capital on TFP growth. This direct effect is hypothesized to come from domestic innovation activities. The estimated skill over effect on human capital on TFP growth is positive and statistically significant which is very robust to model specifications and estimation methods. The spill over effect appears to be much stronger before 1994. The study conducted cost benefit analysis and a policy "experiment", in which the study projected the impact of increases in human capital and infrastructure capital on regional inequality. Study concluded that investment in human capital will be an effective policy to reduce regional gaps in China as well as an efficient means to promote economic growth.

Jordon (2008) constructed a Human Development Index (HDI) for each of Georgia's 159 counties. The index includes education, employment and housing variables. Data are from the 2000 census collected by the state of Georgia office of planning and budget. According to the study the results from constructing on HDI for each of Georgia's counties is the starting point for further research on community development strategies. As part of a broader project on economic development sustainable agriculture and social capital in Georgia, the data base established in the study would be useful in future investigations into development strategies. The use of an HDI broadens the standard income measurements of economies well being. According to the study next step after this analysis will be to investigate whether levels of social capital are related to the HDI of Georgia's counties.

Siddiqui (2008) used simultaneous equation model for identifying the relevance of primary needs of methods for human development in Asia, Africa and rest of the countries in the world. It was found that the effect of human development on primary need satisfaction is overall in direct at world level that is the persons with higher income
have higher capabilities which in return give rise to higher per capita income. No doubt improvement in the infant mortality rate and per capita income both affect human development significantly but the role played by income for meeting the basic need expenditure is higher at the world level. These results may vary from region to region but the conclusion drawn remains the same that gainful expenditure has always an edge over the other methods of human development. Net results show that policies which are growth oriented and leading to development of capabilities are ultimately responsible for increasing of income and improvement of infant mortality rate needed for over all human development. Though income has priority among all the methods deployed for human development yet the public expenditure on social sector can not be ruled out. This is clear from the decomposition analysis that there is urgent need to increase the expenditure on gainful capital than on education and health in Pakistan so that the country may attain the level of achievement that has been attained at the regional as well as global level.

The results of the study provide a basis to achieve the goal of human welfare through growth oriented policies. The study concludes that institutions are important to determine the level of achievements.

Deininger, et.al (2009) in a primary study in the Indian state of West Bengal reveals that reform positively impacted the decision to invest in education within the beneficiary households. The size of the benefit was modest in first generation and much larger in second. The second generation does not have a gender bias, allowing women to catch up in their levels of education. Moreover, the study did not find any significant variation in initial investment behaviours of patia and barga reform beneficiaries. The impact for those who were initially landless is less and the impact does not differ for ST/SC household. The results suggest that the land reform benefits extend beyond the targeted outcomes of improvements in productivity with beneficiary household's strategy of investing in education.

Entorf and Tatsi (2009) tested potential social costs of educational inequality by analyzing the influence of spatial and social segregation on educational achievements. In particular, based on PISA data sets from the UK and Germany, the study investigated whether good neighborhoods with a relatively high stock of social capital lead to larger
'social multipliers' than neighborhoods with low social capital. Estimated 'social multipliers' are higher for the Germany because of early tracking schooling system than for comprehensive schools in the UK. After aggregating data and employing the Oaxaca-Blinder decomposition, the results suggest that the educational gap between natives and migrants is mainly due to the 'endowment effect' provided by the socioeconomic background of parents and cultural capital at home. Some adverse 'integration effects' do exist for female migrants in Germany who lose ground and other groups.

Fertig et al (2009) investigated that how any change in the demography can have effect on human capital accumulation. The effect of the relative Cohort size on educational attainment of young adults in Germany is analyzed utilizing data from the German Socio-Economic Panel for West-German individuals of the birth Cohorts 1966 to 1986. The study found that demographic changes measured by the various variables exert a great but heterogeneous impact on the human capital accumulation of young Germans. The change that has taken place in the labour market during the decade of eighties and nineties have a recognizable influence on the highest schooling and the highest professional degree obtained by the younger cohorts.

Lilly and Allen (2009) assessed the likelihood that earnings premiums influence college students' behaviour as human capital theory suggests. The study highlights several key observable patterns of earning by age, sex and for numerous college majors in recent decades and propose a model of heterogeneous human capital to explain the data. It also formulates and test the hypothesis that greater expected average annual earnings by college major will induce greater proportions of college students to select higher paying majors. The evidence implies that at least for the observed range of earnings premiums-monetary incentives are insufficient to fully explain behavior.

Mammen, et.al (2009) used sample of 163 mothers involved in a multi states three year longitudinal study to access the satisfaction with life (SWL) in the group of people having low income. Different forms of capital and the satisfaction level of the mothers from previous years were the part of dependant variable. Almost 66 percent of the mothers living in the rural area were found to be satisfied in all the three years. The level of satisfaction of the mothers was constant only for a period of one year. Satisfaction with
life was influenced by the depression score and adequacy of their income in all the three years. The ownership of home and confidence of being a parent have influenced their life satisfaction during the period of two years. Lastly, satisfaction from social relationships, age of the youngest child, and total number of children in the family had an influence on their life satisfaction for one year.

Sanroma, et.al (2009) examined the importance of various types of human capital in the wage calculation of recent immigrants within the Spanish labour market. Using micro data from the Encuesta Nacional de Immigrants 2007, the study examined returns to human capital of immigrants, distinguishing between human capital accumulated in their home countries and in Spain. It also examined the impact on wages of the legal status. The study reveals that the country inviting migrants add more to its resources of human capital than returns to human capital resources of the foreign country due to the limited scope of transferability. Wage return and wage premium to different kind of human capital are not homogenous and are linked to the legal status of the immigrant's area of origin.

Stewart (2010) studied the trends in human development in Europe in the last two decades. The study found that levels of both relative poverty and overall income inequality were on the rise across most of the region. Though gender gaps in pay were narrowing but poverty rates were generally higher for women especially in Bulgaria, Romania and Baltics. Migrants have lower employment and higher poverty rates than non-migrants. There was little improvement in health of the people that too was for higher social classes. Voting turnout rate dropped considerably particularly in the Eastern Europe. The European countries have to face three main challenges. Firstly the economic crisis threatens much higher levels of unemployment and absolute poverty over the coming years with potentially long term scarring effects, particularly for children and young people. Secondly these countries are facing the problem of aging population which will put pressure on key elements of social spending especially health and social care as well as state pensions. Third and most urgent is the challenge of climate change.

Islam (2010) used panel data of 87 countries over the period from 1970 to 2004 to investigate whether the contribution of human capital to productivity growth depends
upon the composition of human capital and the proximity to technology frontier. The study found that growth enhancing effects of skilled human capital increases as high and medium income countries move closer to the technology frontier. Growth effect of primary and secondary education for those economy decreases as they move closer to the technology frontier. The growth enhancing effects of unskilled human capital improves as low income countries approach technology frontier.

The study reveals that as countries approach technology frontier, both male and female workers with tertiary education contribute more to productivity growth for high and medium income countries though the magnitude of the contribution of male is relatively higher than that of the female, whereas both male and female labour with secondary education contribute more to productivity growth for low income countries though the magnitude of contribution of female labour is significantly higher than that of male. Increase in younger population with secondary education was found to be the key driver for growth in low income countries, whereas tertiary education with more matured population contributes more to productivity growth in high and medium income countries as they move close to the technology frontier.

Though the studies reviewed above have been very useful on their own yet they could not go into the depth of the problem being non comprehensive in nature. As a result there is a potential gap between the studies conducted so far and the study with comprehensive approach to human capital formation and economic development taking place world wide. The present study takes into account the broader view of human and economic development with demographic changes taking place in all the developed, developing and under developed countries. The studies conducted earlier have taken into account only one or two aspects of human capital formation and economic development and have remained country specific where as this study covers almost 100 countries and has taken into account more than 30 variables responsible for human capital formation and the economic development. Hence, the study can be simply put as very exhaustive elaborative and broader in scope and yardstick to measure human capital formation and economic development.

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