CHAPTER 2
THEORY AND EVIDENCE

2.1 Introduction

The last five decades have witnessed a volume of literature on the economic value of education, establishing the key role of education in development. In the present chapter, an attempt has been made to present an account of the theoretical and methodological developments relating to the educational and economic development. This may help in the understanding of the complex relationship between and among aspects such as public expenditure on education and economic development. It is pertinent to mention at the outset that the coverage of the chapter has deliberately been selective, the major criterion being the relevance of the material to the purpose and scope of the present study as outlined in the previous chapter. In reviewing the empirical literature, emphasis has been on studies related to (1) public expenditure on education (2) growth aspect of education and (3) impact of education on economic development.

2.2 Public Expenditure on Education

The concept of education as a form of investment in human capital dates back to eighteenth and nineteenth centuries. If educational expenditure is treated as investment, it leads to issues related to returns of education to the individual and to the nation; and the type of education in which investment should be made. Many studies have been undertaken on the financing of education in India. Education Commission (1964-66) made a fairly exhaustive study of the problem of financing education, presenting a detailed analysis of
different aspects of educational finances. The report of the Study Group on Resource Mobilization for Education of the Government of India, published by the Asian Institute of Educational Planning and Administration (1970) after examining the educational expenditures by sources, recommended the levy of betterment fee and education cess in all states as resources for education. Panchamukhi (1970), Azad (1975), are examples of other studies in educational finance. The Indian Council of Social Science Research (ICSSR), and the University Grants Commission (UGC) jointly sponsored a number of studies on University finance with reference to selected universities.

One of the earlier studies of the expenditure on education was that of Edding (1958). He had prepared estimates of expenditure on education by several countries for a number of years. This study indicated that over the years, education appeared to have a rising share of the national income in most countries. He also found several inter-connected reasons for the increase in expenditure on education. Lewis and Martin (1956) had made an international comparison of expenditure on education as a proportion of public expenditure. They had drawn attention to the difference in percentage of national income devoted to public expenditure and the difference within the public expenditure sector, of the proportion devoted to education.

In another study Vaizey (1966) employed various criteria to find out the impact of public expenditure on education namely, expenditure on education as a percentage of total public expenditure, expenditure on education in relation to other outlays and expenditures, percentage of gross national product provided by different countries to education and expenditure among various levels. Schultz (1961) has also attempted to study the relationship between expenditures on education and consumer’s income on the one hand, and between expenditure on education and gross formation of physical capital on the other in the United States during the
period 1900 to 1956. The study reveals that “resources” allocated to education rose about three and half times (a) relative to consumer income, and (b) relative to the gross formation of physical capital. He concludes that the “income elasticity” of the demand for education was about 3.5 over the period, and alternatively, education considered as “investment” might be considered as 3.5 times more attractive than investment in physical capital. Schultz has also tried to measure the total stock of “educational capital” at different points of time for the United States and Japan respectively. Both the studies show that ‘educational’ capital has grown many times faster than the ‘non-human’ capital.

In another study Tolley and Olson (1971) studied the interdependence of public expenditure and per capita income among the states of the United States. They were concerned with sorting out the reciprocal effects of two variables when the two are mutually supportive, higher income leading to higher educational expenditure and so in turn, to higher income, and so on. Building on human investment theory, they began by setting up behavioural equations to estimate relationships of presumed causation in each directions separately, going on from these structural equation to a reduced form of simultaneous systems. They found responsiveness of expenditure on education to income to be substantially greater for income from private, non-human wealth than for income from human wealth, with only small equation bias. Looking at the other directions, they found that the number of years of schooling in the adult population was a strong predictor of per capita income. The main finding in their study was that adult education attainment had a stronger effect on current income.

Psacharopoulos (1973) made the first attempt to compare the rate of return to investment in education in thirty two developed and developing countries. In this study, he compared the private and
social rates of return to education. However, in 1981 he modified and updated the earlier study by including forty-four countries and concluded that the returns to primary education (whether social or private) were highest among all educational levels. He also found that the returns to education in developing countries are higher than the corresponding returns in more advanced countries. These conclusions have some important policy implications for the choice of investment in developing countries. There is now considerable evidence that the investment on education in developing countries have gone up. This may be due to the belief of the government that education would promote economic growth and provide the skilled manpower needed for development. According to World Bank estimates, the proportion of GNP devoted to education in developing countries rose on the average from 2.3 per cent in 1960 to 4.5 per cent in 1984 and the proportion of the national government budget rose from 11.7 per cent in 1960 to 16.1 per cent in 1984.

Padmanabhan (1986) studied regional disparities in educational financing, by analyzing educational expenditure incurred by different states of India. He argued that disparities in educational financing would deprive opportunities for sections of population and thereby hamper the well-known social objectives of the state.

Upendranath (1992) examined the growth of educational expenditure in Andhra Pradesh in India. He observed that the pattern of educational expenditure in the state had been similar to those followed in many states and all India pattern, with higher education taking precedence over primary education. Andhra Pradesh stood below all India average in terms of budget allocations and sectoral distribution of funds on different sectors within education. Further, he observed that the expenditure on different sectors within education had not seen any perceptible shift. The share of primary education in total had improved slightly from 43.94 per cent in
1977-78 to 47.19 per cent in 1987-88. Andhra Pradesh spent comparatively less amount on education among the southern states and also the share of higher education in total educational expenditure was higher in the state than the other states.

With the objective of assessing the importance of education as an investment for national survival, Tilak (1997) observed in his study the pattern of financing education in India during the 50 years of independence. The results of the study showed that the expenditure on education in India had increased remarkably and its relative share in the total government expenditure on education had also increased from less than 40 per cent at the time of transfer of power from colonial rulers to independent government in India to more than 85 per cent in the recent years. Consequently, the shares of all other non-governmental sources had declined steeply. The significant growth of public expenditure on education and the consequent relative decline in the share of fees and other non-governmental sources was deliberately chosen policy of India after independence. The study further concluded that the policy had improved access to education at all levels, even higher education was transformed from an elitist system of the 1950s to mass based higher education by the 1990s. But these achievements were not found to be adequate for India to survive as a great nation, to take the nation to the 21st century and to make India a strong nation in the increasingly globalised world economy with stiff international competition, as India accounted at the same time for the largest number of illiterates in the world.

In another study Roy, Kamaiah and Rao (2000), utilizing the pooled data for 15 large Indian states over the period 1992-93 to 1997-98, employed panel data models to estimate the normative (average) levels of expenditure on primary, secondary and higher education. The findings of that study were consistent with generally
maintained hypothesis that rich states spent more and poor states spent less as far as social sectors were concerned. Gujarat and Maharashtra emerged as champions of the cause of primary education, whereas Andhra Pradesh and Punjab spent substantially more on secondary and higher education. Poor states like Uttar Pradesh and Bihar were found to be lagging far behind the normative levels for all the three expenditure heads considered in this study. The findings also suggested existence of unutilised capacity in both primary and higher education. This, to a great extent, could be attributed to the shift in preference from government education to private education.

Reddy and Rao (2003) looked at various aspects of education in an effort to pinpoint the reasons for the poor performance of the primary education sector. Though Andhra Pradesh was found to be faring better with regard to school density, size and distribution of habitations, student-teacher ratio, etc, declining allocation for education in successive budgets could have undermined these gains. They further highlighted that budget allocations were better indicators of the priority given to education but Andhra Pradesh provided a lesser share of its budgetary allocations to education compared to the national budget. Allocation was even observed to be lower when compared to southern states. According to the researchers, the non-formal system had proved to be ineffective and for the state to achieve genuine literacy, it was the formal sector that needed enhanced investment.

In a comprehensive analysis, Tilak (2003) attempted not only a descriptive and analytical review of major issues relating to public expenditure on education in India, but also highlighted a few important policy implications for the improvement of education system in India. He observed that the constitutional directive of universalisation of elementary education in India, which was to be
achieved four decades ago still eluded. Secondary and higher education systems were also found to be associated with several problems, many of which were related to paucity of funds. Though huge amount of investments were made in education in the post independence period, they were not found to be adequate to meet the modest targets of providing quality education to the children. As a result, five decades had been a period of under investment in education. Tilak concluded that the pattern of allocation of resources to education and allocation of resources within education remained far from satisfactory, judged in terms of adequacy, efficiency and equity.

In one of his studies, Tilak (2004) reviewed, the policies of higher education of public sector in India during the 1990's pertaining to two important aspects of the dominant characteristics of the decade viz., government’s apathy to higher education and public sector disinvestments in higher education. The study observed disappointing trends which indicated a growing public apathy for higher education followed by reduction in public expenditures on higher education. He further argued that the absence of any policy on development of higher education was helping in erratic and unregulated growth of private higher education which might lead towards laissez-faireism in higher education in India. Tilak attributed this kind of situation to the faulty assumptions that (a) higher education was not important for development and (b) that the state could as well withdraw from its responsibility of providing higher education in favour of the markets.

Mehrotra (2004) investigated the scope for reforms in the pattern of education spending and considered ways to mobilise additional resources for elementary education, including earmarking funds for the same. The study emphasized the inordinately high share of total elementary education spending on teacher salaries, as
well as the bias in favour of secondary education with regard to public education spending in many states. All of these were found to have serious consequences for both the efficiency and equity of public education spending. Finally the study also put forward a case for new taxes for elementary education, and the earmarking of funds from such revenues for elementary education, both at the state and central levels.

Chakrabarti and Joglekar (2006) utilizing state level data, empirically examined government financing of education in India over a span of 1980-81 to 1999-2000 across the 15 major states of the country with the help of macro-level indicators. Their main focus had been on analysing if there existed a structural break in the pattern of expenditure in pre and post economic reforms. Income with elasticity less than one was found to significantly enhance educational expenditure at aggregate elementary, secondary and higher level. Moreover, contrary to general perception, education expenditure at all levels had been significantly lower after liberalization vis-à-vis pre-economic reform era. This was particularly detrimental for the vulnerable sections of the population i.e. for females and backward social groups. The study concluded that even after controlling for the economic reform process, privatisation exerted a negative significant impact on expenditure on higher education.

Prakash (2007), examined the trends in the expansion of higher education and also analysed variations in participation across states, gender and social groups. He also discussed the trends in the financing of higher education and the required resources to meet the target of allocating 6 per cent of the GDP to education. The study came to the conclusion that without appropriate policy interventions in school education, it would be of little use to have little interventions at the higher education level, which discriminated in
favour of girls, Scheduled Casts and Scheduled Tribes. Quantitative expansion and Qualitative improvement of higher education should command highest priority in the policy discourse.

Reddy (2007) in his study, argued that in the changing global socio-economic context, the secondary education was acquiring the characteristics of pure public good in line with the elementary education. The study examined the trends in public financing of secondary education with the help of a few select indicators like growth rate, public expenditure on education and secondary education expenditure as a proportion to Gross National Product (GNP), and the budget provisions since 1990s. The results of the study clearly established the inadequacy of resources for secondary education, even if its importance grew. It observed that the entire education sector suffered from paucity of resources and the priority given to it in public allocation was also declining. The growth rate of public expenditure on secondary education since 1990s was found to be much lower than the same observed during the 1980s, with the exception of the second half of the 1990s. The per student expenditure on secondary education in real prices was found to have remained constant since 1990s. This suggested that limited expansion had taken place with poor or even deteriorated infrastructural facilities during that time.

2.3 Development in Education

A number of cross-country and inter-state studies have examined the inequalities of education development (Panchamukhi, 1970; Rudolph and Rudolph, 1972; Heyneman, 1979; Manocha and Sharma, 1979; Ram, 1989, Reddy and Reddy, 1992; Bhaty, 1998; Tilak, 2007). The results of these studies were not uniform because the nature and number of variables considered were different, the
methods were different from study to study and the reference period was not the same. For example, Pandit and Heyneman ranked the states by pooling together, the unweighted individual rank order of individual variables of educational development as in the case of Rudolph and Rudolph. On the other hand Panchamukhi (1970) used principal component analysis to construct a composite index of educational development on the basis of which different states were ranked and compared. While Reddy used the taxonomic method and Manocha and Sharma used cost-proportions for the same purpose.

The variables considered also differed from study to study in their definitions and numbers. Rudolph and Rudolph (1972) considered enrolment ratio at primary, middle, high/higher secondary, secondary (Technical/vocational) and higher levels. Their rank order referred to state enrolment performance. Panchamukhi took into account eleven indicators of education and educational expenditure as per cent of state income, percentage of trained teachers to total number of teachers at school levels, enrolment ratio and total teachers. Pandit (1977) used the enrolment ratio at primary and middle levels, percentage of girls in all the three school levels, teacher-pupils ratio and percentage of state budget expenditure on education, besides enrolment rates, percentage of girls and percentage of untrained teachers, as indicators of educational development. He concentrated only on school level education. Heyneman (1979) also used the same method but his conclusion was different. His ranking referred to ten indicators of formal and informal education. Reddy (1977) used the taxonomic method to find out the inequality in educational development. He considered the literacy rate as a stock variable along with flow variables namely enrolment ratios, percentage of girls and percentage of untrained teachers for educational development. He analysed that the taxonomic method was useful in ranking, classifying and comparing
the educational development of various states. Manocha and Sharma (1979) constructed an index of stock of human resources considering the stock of population with different levels of education and weighting them by cost-proportions. Chaudhry and Nair (1981) evaluated the role of education in regional development in India. They constructed an index of educational development and measured the regional disparities in educational development. They found out that there was a positive relationship between education and economic development and concluded that as a social indicator education could play an important role in reducing regional disparities.

In a study pertaining to educational development in different states, Nair (1978) examined the influence of various socio-economic factors on the process of educational development and the direction of their relationship. He evaluated the historical factors underlying the process of educational development in Kerala and compared the structural aspects of the educational system of Kerala with that of other states. A methodology for calculating effective cost of education at the primary stage was developed and used for comparison. The main findings of the study included among other things that economic backwardness by itself need not hinder the progress of education. He also concluded that educational development by itself played only a limited role as a catalyst for promoting economic equality, as educational expansion did not result in increasing employment opportunities or decrease in the differences in educational attainment among various socio-economic groups.

Raja, et al. (1984) presented the regional patterns in higher educational growth in India. Apart from surveying higher educational growth in India in quantitative terms such as in terms of enrolment, the study observed spatial spread of higher education
also. The study took National Sample Survey region viz., agro-climatically homogeneous region as a unit for analysis with an assumption that a balanced regional development would be facilitated with a regional resource base. Inequality in spatial spread has been discussed by using location coefficient, and coefficient of inequality.

Reddy and Reddy (1992) focussed their attention on inequality in utilization of and participation in education in rural areas of Andhra Pradesh. More, specifically, differences in gross enrolment ratios between different socio-economic groups and sex were examined. It was found that though sex discrimination existed irrespective of economic positions, was more prevalent in poor families. The results also showed more disparities in higher education as compared to primary and secondary education. The study finally, concluded that inequality in education was not an educational problem alone. It cut across the entire social, economic, and political fabric of a nation.

Bhatty (1998) emphasized the fact that although free and compulsory education was included in the Indian constitution yet educational backwardness of India was quite glaring even after 50 years of independence. This study based on a survey of field-level investigations, addressed the issues of economic constraints, schooling quality and parental motivation as a set of possible influences determining the educational decisions with a household and contributing to the overall picture of educational deprivation at the national level. She found an exaggerated emphasis being placed on child labour and inadequate motivation among poor parents as the major obstacles to universalization of primary education. She further pointed out that it was the direct cost of schooling, which imposed substantial burden on families and the low quality of schooling facilities, which reduced child’s interest in education that primarily
account for educational deprivation. She examined that poverty was the main cause of educational deprivation. In the end, the conclusion was drawn out that in both these aspects reducing private costs of schooling and improving schooling quality—the state has a crucial role to play.

Jean and Sen (2002) observed that during 1960’s Himachal Pradesh was in the list of educationally backward states, but after some years, in case of education, it reached with Kerala in front of all other states. There were certain reasons for the sudden progress in Himachal Pradesh. The schooling revolution in Himachal Pradesh had done a great deal to make it a better place to live. In the wake of this transition to near universal elementary education, the region had witnessed a dramatic reduction of poverty, mortality, illness, under-nutrition and related deprivation.

De, et al. (2002) analysed that at the time of independence Himachal Pradesh had the lowest literacy level but recently Himachal Pradesh had shown remarkable progress in literacy over time. Himachal Pradesh ranked second in literacy among 16 major states. The total literacy campaign (TLCs) in the 1990s had made some contribution as well. Statistics indicated that Himachal Pradesh had been attacking and closing the gap between regions and people less well served by the education system. The study found that disadvantaged section of the community had shown a remarkable rise in literacy rates. The DPEP conducted a baseline assessment survey of the four difficult districts in Himachal Pradesh in 1996. Achievements in these areas were fairly respectable; so was the quality of infrastructure as compared to the BIMARU states (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh). The study bestowed the credit for the success of people of Himachali’s upon the character and nature of the hill society.
Ramachandran (2003) in her study observed that creation of backward and forward linkages were essential to create an environment where every child not only went to school but benefited from it. In her study she found out that the literacy rates had improved everywhere and that improvement had been particularly rapid in Rajasthan, Orissa, Madhya Pradesh whereas Uttar Pradesh and Bihar lagged behind. She further concluded that while the national all-age sex-ratios had increased in most areas, the situation had worsened in Himachal, Gujarat, Haryana, Punjab and New Delhi. It was alarming to note that in Himachal Pradesh, while the literacy level had gone up and almost 98 per cent of children in the school going age were enrolled and attending school, the sex ratio had declined from 976 in 1991 to 970 in 2001.

Rana, et al. (2003) in their study observed that government had played a positive role in the expansion of primary education in West Bengal but certain problems still prevailed. Poor attendance, perceived class differences, power and gender discrimination prevented socially under-privileged groups from accessing education opportunities. They suggested that the success of the government’s experiments in providing cost-effective primary education, particularly to the most under-privileged sections of society must be recognized.

Kaushik and Karol (2003) depicted the remarkable progress that Himachal Pradesh had made in literacy rates from 21.36 per cent in 1961 to 77.13 per cent in 2001 and was found to be far ahead of many other states of India. Himachal Pradesh was observed to be ahead of all her neighbouring states by margin of 7 to 20 percentage points. They concluded that the real development of education in Himachal Pradesh began in the second half of the nineteenth century when an integrated and well thought of educational policy was articulated and implemented. This education policy consisted of (1)
high level of per capita expenditure on education (2) expansion of government educational institutions and (3) provision of financial incentives to students from the deprived sections of the society. The researchers also pointed out towards the mismatch of the demand and supply of educated labour power in the state. Over the time from 1980 to 2000 the strength of the unemployed was found to have increased from 1,41,920 persons to 8,86,433 persons that is more than 6.25 time increase. The share of uneducated unemployment in the total unemployment had increased from 90.14 per cent in 1980 to 98.69 per cent in 2000, which was observed to be indicative of the low and declining employability of the educated labour power in the state.

The main aim of the study conducted by Vaid (2004), was to empirically test the factors that were responsible for the inequality of educational opportunities for both boys and girls from socially deprived origins. Using data set of National Election Study (1996), the study identified several factors such as caste, class, religion, and parental characteristics as important determinants of educational inequality.

Manabi Majumdar (2005) focused her views on variations in secondary schooling across the states of Andhra Pradesh, Kerala, Maharashtra and Tamil Nadu. The study emphasized on the need to deal with the challenges of universal elementary education and the expansion of secondary schooling simultaneously, rather than in a gradual sequence. Except in a few educationally forward regions of the country, secondary participation was found to be highly restrictive because, a majority of young people, in particular from deprived communities, did not have access to secondary education. The study pointed out that decisions regarding virtually all school related activities were concentrated at the state level. Vocational secondary education and skilling of adolescents had always been
receiving step-motherly policy attention. It was further observed that there was a case for strengthening aided schools, as a potentially effective means of narrowing the gaps between the privileged youth and their disadvantaged peers.

Using 52nd round (1995-1996), a rich nationwide data set of the National Sample Survey Organisation (NSSO), India, Chandrasekhar and Mukhopadhyay (2006) constructed the incompressible direct costs of attending primary schools in India. After controlling for the opportunity cost of going to school (as proxied by the ratio of children’s wages to adult’s wages), it was found that the direct costs of education adversely affected the probability of children going to school, more so for children from poor households. The results, further showed that in comparison to boys, girls were found to be affected more by the direct costs of schooling. The study opined that making primary education completely free would not increase the attendance rates to hundred per cent. They concluded that the government would have to incur additional minimum expenditure of over Rs.2,900 crore every year in order to defray the basic or incompressible cost of attending school.

2.4 Education and Economic Development

The studies reviewed in the previous section have indicated that education was not only an important basic need in itself (Wood, Jr. 1980; Burki and Haq, 1981; Hicks, 1982) but also that it helped in the realization and satisfaction of a number of other basic needs. Rightly so a majority of developing countries has been laying high priority on expansion of primary education (Burki, 1980). Studies have also shown that the primary education has the efficacy in increasing productivity, especially among the poor. Researches have shown that educated farmers are more productive than the
uneducated, particularly in modernizing agricultural technology. In South and East Asia, a study (Lockheed et al. 1980) has indicated that four years of school education directly results in about 8 per cent of increase in the earnings of the small farmers. In another study, it has been found that public financing of primary education has a strong and positive effect on the distribution of income by redistributing income in favour of the lower income groups (Jallade, 1979).

In the classical school of economic doctrine, later economists considered education as an effective measure for population control (Malthus, 1966), social justice (Ricardo, 1971) and civilized development of the society (Senior, 1928, 1939). Thus at the eighteenth and beginning of the nineteenth century, education was being mentioned as a means for bringing about improvement in purchasing power of labour force, economic welfare and social peace (Mill, 1909). In the Neo-Classical school of economic thought, education was considered as a strong source of human capital formation and an effective source to increase the income stream (Fisher, 1929). Blandy (1967) examined that the most valuable form of investment was investment in human beings. In non-economic field, education was regarded as a pre-condition for stock of society’s knowledge for geographical and occupational mobility (Samelsar, 1966) and for high degree of urbanization which were basic factors favourable to economic development (Charles, 1958).

In the beginning, the unexplained proportion of economic growth, viz., the “residual” was attributed to “technical progress” (Solow, 1957; and Svensson, 1964). Later works (Denison, 1962; and Griliches and Jorgenson, 1966) clearly established that this residual was not “a coefficient of ignorance,” as some critics (Balogh, 1963) argued, but human capital, particularly education forms a significant proportion of this residual. With (Griliches, 1964
and 1970) works, it was made clear that education could enter as an important input in the production function analysis.

Various approaches were adopted in the context of international comparisons; but most studies yielded similar results. In one of earliest major cross-country studies, Bowman and Anderson (1963) analyzed the relationship between literacy and economic development. They found that literacy contributed significantly to economic growth. 40 per cent adult literacy rate was a necessary, but not a sufficient, condition for an economy to reach a GNP per capita level of US $ 200 (in 1950), and it was only when literacy rate exceeds 80 per cent, that GNP per capita could cross $ 500. They also found from the evidence of 77 countries that primary enrollments in 1930s had a substantial explanatory power for income levels 20 years later, i. e., in 1955 (Bowman, 1980).

Correa (1963) analysed the data for 48 countries. He compared enrolments in the age group 5-14 with the per capita income of the respective countries and co-efficient of correlation came out to be 0.617. This approach was found to be correct as a general comparison of education with the level of economic growth.

Other cross-country evidence also supported the idea that human capital development in general and education in particular, was an important element in explaining variations in growth rates and level of per capita income. The quantification of human capital would be an exercise to understand educational development of different nations. This would lead to the question of disparities in human capital formation and the policy measures in that direction. Harbison and Mayers (1964), in their study on inter-country comparison of human resource development is one of the pioneering studies that quantifies the human capital at macro level. In their study of comparing 75 countries on the basis of human resource development, the authors have used arbitrary weights to arrive at a
composite index of educational development which was the target of
criticism from many quarters. There have been many studies
subsequently which quantified educational growth of nations at
national and international settings.

Adam Curle (1964) correlated educational indicators in the
mid-1950s and per capita income 1954-59 in 50 countries, and found
a correlation coefficient of 0.53 between GNP per capita and
percentage proportion of GNP invested in education, and 0.64
between GNP per capita and post-primary enrollments. Similarly
Bennet (1967) found in a study on 69 countries, high correlation
between GNP per capita and secondary vocational education and low
correlation between GNP per capita and general secondary
education. He also found that enrollments in vocational education, as
a ratio of general secondary education, increased in countries upto a
GNP per head level of $500, and then declined with increase in
income levels.

The importance of education in the Canadian economic growth
has been emphasized in a study by Bertram (1966). Bertram
estimated that “better education appears to have raised labour
earnings per man about 30 per cent from 1911-61 in Canada”. For
purposes of comparison, it may be mentioned that these increased
labour earnings represent merely about one half of the corresponding
achievement in the United States, and this difference is attributed to
the widening gap in the average level of schooling between the two
countries. According to Bertram’s estimates, about one-third of the
income difference per capita between the two countries observed at
the beginning of the 1960’s appears to have been the result of
relatively lower Canadian educational attainment. In a regional study
of Canada, Chaudhry (1971) also found out the significant
relationship between educational level of workers and per capita
provincial income.
Krueger (1968) made a pioneering attempt to compare differences in per capita income between the United States and a wide range of other countries. Her technique consisted of breaking down the labour force by age, education and rural-urban areas for each country. Under the assumption that each of these categories had the same productivity as that of the United States, an estimate of "attainable income" was worked out. In most cases, even if countries had the same factor endowment as the United States Krueger found that they would attain a per capita income only half that of the United States level, with the balance being attributed to the different levels of development of human capital. Bowman (1980), after making some modifications to Krueger's estimate has shown that in most cases, education accounted between 25 and 40 per cent of the per capita income gap between the United States and other countries.

Some recent studies using econometric techniques analysed the link between various aspects of economic growth and human resource development. Razin (1977) analysed the data for eleven countries in 1950s and 1960s and found a positive correlation between the percentage of population aged 15-19 enrolled in secondary education and per capita national income. His results suggested that an increase in the percentage enrolled in secondary education would lead to an increase in the rate of growth of national income.

Analysing the relationship between the development in human resources and economic growth in 86 countries, during the period 1960-77, Hicks (1980) found that the twelve developing countries, with the fastest growth rate, were well above average levels of literacy and life expectancy. The author further developed a growth model in which growth rate of per capita output was observed to be related to three factors i.e., the growth rate of imports, the level of investment as a proportion of GDP and the level of human resource
performance. These three factors were found to explain about 60 per cent of the variations in per capita growth rate in developing countries.

Wheeler (1980), with the help of a simultaneous equation model for 88 developing countries (for two periods 1960-63 and 1970-73), found that education, literacy and nutrition contributed to growth of output not only directly, but also indirectly by increasing the rate of investment and by lowering the birth rate. He also observed a positive relationship between manufactured export growth, health and education measures.

Most of the studies on education and economy relationship mentioned earlier are centred around economic growth, i.e., growth of income. But development is a broad concept including within itself growth plus qualitative change in various parameters of social, political, cultural, religious and economic life (Foster, 1987). However growth may be considered as one of the most important indicators of economic development. The studies concerning education and economic growth may be examined on the basis of the investment approach. The Hicks' study observes positive relationship between the level of income and the levels of attainment in education (Hicks, 1987). But the relationship is not supposed to be a causal one as the result is based only on the correlation method. Many other micro level studies also found this result (Wheeler, 1980; Marris, 1982; Hallak et al., 1980).

Colclough (1982) summarizing studies in several less developed countries, argued that primary education made a substantial contribution to economic development and its social rates of return was considerably greater than secondary and higher levels of education. Similarly, according to another study (Selwsky, 1981) the mean rates of return for Brazil, Colombia, and Chile were primary education (25.1 per cent), secondary education (17.0 per
cent), and higher education (10.9 per cent). Psacharopoulos (1988) reviewed the evidence on the nexus between education and development and concluded that it provided grounds for confidence that investment in education was a major contributor to development.

Tilak (1986), using a linear regression model, analysed the relationship between education and economic development in 75 countries of the world. Classifying the countries into very poor, poor, rich and very rich countries. Tilak found that in very poor and rich countries education had a positive and significant relationship with economic development. On the other hand, in poor and very rich countries the relationship between the two was found to be positive but statistically not significant. While primary and secondary education were significantly related with economic development in the very poor countries, in rich countries, it was secondary and higher education which had significant impact on economic development. In both poor and very rich countries only secondary education was found to have some impact on economic development.

Mehta (1988) examined the data pertaining to 41 Asian and the Pacific countries in order to find out as to how education in terms of literacy rate, net enrolment ratios, gross enrolment ratios and economic growth in terms of per capita GNP were related to each other. There was a constant relationship between literacy rate and per capita GNP with log functions as the best fit. Asia and Pacific countries were divided into four sub-groups on the basis of literacy, gross enrolment ratio, net enrolment ratio and per capita GNP. This had also been supported by another study (Veeraraghavan and Prakash, 1988).

In a study of 17 major states of India, Zaidi (1988) explored relationship between economic development and educational
attainment. Here, economic development was measured in terms of per capita income, and educational attainments in terms of literacy rates, enrolment at primary and middle levels and per capita expenditure on education. The trend observed that prosperous states were educationally advanced while poor states were not with the exceptions of Karnataka, Kerala and Tamil Nadu. It also observed positive correlation between per capita expenditure on education and economic development. Thus, the study concluded that generally states having higher levels of income also possessed higher levels of educational attainment, but the states having lower income did not necessarily have lower levels of educational attainment.

Tilak (1988), in another cross-country analysis, estimated the relationship between education and economic development by using data on 100 countries for vocational secondary education vis-à-vis general secondary education with the help of a semi-log regression model. Classifying the countries into low income, middle income and high income countries and using one year, 10 year and 15 year time lag on enrolments, the author found that vocational education contributed positively to economic growth only in case of middle income countries. In low and high income countries the contribution of vocational education turned out to be negative and statistically insignificant. It was concluded that vocational education could contribute positively and significantly to economic growth of those countries which have GNP per capita more than $400 and less than $5000.

Ram (1989) examined that the schooling played a vital role in reducing income inequality and poverty in less-developed countries. About a dozen empirical studies on the subject were briefly discussed and some new evidence of a preliminary kind was presented. He examined that the number of teachers in developing countries increased three-fold over a 25 years period. A similar
increase appeared to have taken place in the number of students and in real expenditure on education. Further, he examined that education especially female education, might make a major contribution towards reducing fertility and population growth, and raising the quantity and quality of schooling of the next generation. He stressed that female education should be considered important in raising the status of women in less developing countries, which could be regarded as a major dimension of economic development. At the end, he concluded that educational expansion might serve as an important tool in provision of basic needs, reduction of poverty, and increasing equalities of income, living standard and economic opportunities.

Tilak (1994) examined the major determinants of economic development - both supply side factors (technological progress and accumulation of physical and human capital) and demand side factors (government involvement and export expansion) in the context of South Korea and Taiwan. The authors investigated the role of human capital measured by output growth in enlarging the labour income share, by using both Cobb-Douglas production function and Ordinary Least Square (OLS) methods. The empirical results indicated that investment in human capital, especially through improved education had accelerated the economic growth. This finding corroborates the assertion made by Schultz (1961) and the cross-country study by Schultz (1988).

Yusefi (1995) examined the role of education as an important determinant of economic development of Iran. He included education as an independent variable in his functional relationship along with per capita income, level of investment, resource endowment and infrastructure development such as transport and communication to determine the growth of industrial sector as a proxy for economic development. The results of the study indicated that the level of
economic development and industrialization had positive and significant relationship with per capita income, level of education and resource mobilization in Iran. Further, he highlighted the importance of education in improving quality and quantity of human capital or for the provision of efficient decision makers, managers, skilled labour and technicians for industrial development of Iran.

Lin (2003) analysed the effects of education and the role of technical progress in economic growth in Taiwan over the period 1965–2000. A structural earnings function and indicator for average schooling years were applied to a measure of education, and a transcendental production function was used in the model. Findings of the study revealed that education had a positive and significant effect on growth, but the role of technical progress did not appear to be extraordinarily important. According to the complimentarity test, no markedly significant relationship existed between capital and education or between education and technical progress.

Self and Grabowski (2004) analysed the relationship between education at primary, secondary and tertiary level and economic income growth in India for the time period 1966-1996. Time series techniques were used to determine whether education had a causal impact on growth for each category. Having found these encouraging correlations, they utilized Granger Causality Test to analyse the predictive powers of each level of education of future growth in the presence of its own lagged values. Over and above allowing for a test of causality, this technique was helpful in Times Series Regression Analysis since it also helped to eliminate any possible serial correlation by adding lagged values of the dependent variable on the right hand side. The results showed that education which according to the correlation analysis indicated a strong positive relation between all education levels and growth, was found to be causal only at the primary and secondary level. Further, the results
showed that female education at all levels had potential for generating economic growth. Males, on the other hand, appeared to have a causal impact on growth at primary level and perhaps, weakly, at the secondary level.

Tilak (2005) emphasized on the fact that the higher education system in many countries today were at the cross-roads. There was a gradual shift from education being a state responsibility to its privatization. He pointed out that many considered the public sector to be inefficient in the field of education and correspondingly the private sector as efficient and therefore desirable. He emphasized that for public provisioning of education remained strong. It was imperative for the state to play a dominant role in the provision of higher education because it was also widely recognized that higher education was an important factor of economic growth and it was education that made the basic difference between the developed and the developing countries.

In one of the studies Kaur (2006) tested the hypothesis that knowledge and skills embodied in humans directly raised productivity in all the sectors and increased the economy's ability to grow and adopt new technologies. The study examined the impact of different levels of education on the economic growth of 17 major states of India for the period 1999-2000 through regression analysis. The study concluded that educated workers were likely to reap more financial benefits than the uneducated ones as these workers generate more value additions. The evidence from the study was found to be consistent with the view that measures aimed at increasing the quantity and quality of the stock of human capital should be an important part of any growth promoting policy package.

Inclusive growth is regarded as the new mantra of development. Tilak (2007a) critically looked at the approach to the development of education outlined in the Approach to the Eleventh
Five-Year Plan and highlighted the weaknesses and the continuation of the big policy vacuum. Tilak found the approach paper full of contradictions, lack of vision for development of education and absence of a critical outlook of the strategies required. It did not focus adequately on the glaring and widening inequalities in education, social, economic, gender, and regional, and to propose clear strategies of developing an equitable system of education. According to Tilak equity was not the main concern of the approach paper, it was quality that occupied the attention of the Planning Commission and the commission assumed that quality would automatically promote equity.

In another article Tilak (2007b), critically examined the recommendations on higher education in India submitted by the National Knowledge Commission to the Prime Minister. According to Tilak, the report did not seem to have been based on any in-depth analysis of the higher education system in India. Secondly, the commission seemed to be strongly favouring privatization of higher education, the growth of private and foreign universities and correspondingly and more importantly a drastically reduced role of the state. Tilak lamented that basically, the knowledge commission did not recognize the importance of public education and the significant role that the state played in the development of higher education for it to contribute to national development in most civilized parts of the world.

Nayyar (2007) in his study reflected upon the intersection of and explored the inter-connections between, globalization and higher education in the wider context of development. According to the study, in the past, it was land, natural resources, labour skills, capital accumulation or technical progress that were the source of economic growth and prosperity. He observed that in the future, knowledge would be critical in the process of economic growth and
social progress. Without correctives, the widening gap between the haves and have-nots could then be transformed into a widening gap between those who knew and those who knew not. Nayyar concluded the entire debate with an old Buddhist proverb which said that “The key to the gate of heaven is also the key which could open the gate to hell”. Markets and globalization provided a mix of opportunities and dangers for higher education. According to Nayyar, markets and globalization should not be allowed to shape higher education. Instead, we should shape our agenda for higher education, so that we could capture the opportunities and avoided the dangers unleashed by markets and globalization.