CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

Education expenditure and economic growth is a debatable topic since the days of Adam Smith. Many scholars have acknowledged the importance of relationship between education and economic growth. Economists like Adam Smith, Lucas, Romer, and Solow have accepted education as an important factor of economic growth.

The opinion of different researchers about the relationship between education expenditure and economic growth is debatable. Few studies claims that there is a positive relationship between education expenditure and economic growth while other finds negative relationship between both. Discussing about the direction of relationship between education expenditure and economic growth, literatures found different directions. Some of them found that the relationship goes from education expenditure to economic growth. It means spending on education leads to economic growth. This nexuses becomes more critical when direction of relationship is taken into account. Few researcher says the relationship between education expenditure and economic growth is uni-directional while other finds it bi-directional. The details of these researches are discussed in this chapter.

2.2 Education Expenditure and Economic Growth: Theoretical Background

Most of the economists have discussed about plenty of things regarding economic growth. Apart from the various thoughts the main theme is remain same that is Land,

labour and capital are the main factors of economic growth. This section has underlined the significant theories related to economic growth.

Neo-classical Growth Model: In 1956 Solow developed a model to understanding the growth theory. In this model he states that to understand the size, strength and growth potential of an economy, physical capital and labour are not only the necessary things to study. He understood and advocated that economic output depends upon the rate of technological changes. He added technology as exogenous variable in the production function equation which works as the engine of growth in an economy.

Endogenous Growth Model: Romar (1986) and Lucas (1988) have attempted to determine the growth in his theory. This theory provoked economists to think that the technology is an important factor for increasing returns to scale. It is advocated by this theory that being a limited amount of capital by diminishing returns to scale the capital can be used in more planned manner. With the help of technology the diminishing return to scale can be offset. Further Lucas (1988) and Romer (1990) has accepted human capital as the growth engine and pointed out it as the process of innovation ad incorporation of new technologies.

Human capital and Technological change: This is the other category of endogenous growth model which maintains the assumption made by the Solow in his growth theory. This category of model states that large section of invention is the result of meaning full research and development activities carried out for the economic reason. In this model human capital has been incorporated as a proxy of technological progress in spite of independent medium of sustained economic growth.

Nelson and Phelps (1966) have acknowledged first that education of people may have a significant influence to a change and to introduce a new technology. Attainment of higher level of human capital enables to achieve the technological changes in the economy and it leads to enables those nations which are lagging behind the world in terms of technology to cash them faster to those countries which are leader in the technology.

2.3 Education Expenditure and Economic Growth: Empirical Background

2.3.1 Empirical Background: International Perspective

Judson, R. (1998) investigated that does investment in education help growth. This study used the panel data of UNESCO from time period 1970to 1990 on educational enrollment and spending to estimate the efficiency of existing education allocations in the panel of countries taken in the study. With the help of cross country panel regression the correlation between human capital accumulation and growth has been calculated. The result of this model has shown that educational resources are nearly optimal manner in many countries. Those countries that have very inefficient allocation of education, gain little from their investment in education according to a growth decomposition regression. It means human capital accumulation and GDP growth has not significant correlation in those countries which have poor allocation of education but there is significant correlation between human capital accumulation and GDP in those countries which have better allocation of education. Finally the result reveals that the allocation of education investment does matter for macro growth. This result should be interpreted as the complement and not to the substitute for the many richer findings of micro studies which

tell about what types of investments in education seems to be effective in different settings.

Musila, J.W. and Belasi, W. (2004) investigated the relationship between government education expenditure per worker and economic growth in Uganda. Researcher has taken the data from1965 to 1999 to fulfill the objectives of this paper. Time-series technique has been used to investigate the relationship between government education expenditure and economic growth in Uganda. This paper examined the short run as well as long run relationship. The empirical results show that education expenditure per worker has a positive and significant impact on economic growth both in the long run and short run.

Leclerq, F. (2005) investigates the relationship between education expenditure and economic growth i.e. Gross Domestic Product (GDP). This relationship has been analyzed among developed and developing nations. Large number of empirical studies has been surveyed in this paper. The important feature of this paper is to investigate the lack of consensus about the results of standard studies. The conceptual framework of education production function has been used in this study. In this paper the study has been carried out at micro level and macro level. This paper found that there were no controversial facts related to the impacts of infrastructural inputs on out puts. This study proved that there is no link of achievement of production and parallel research program. A bitter contrast has been found quality and quantity of education in terms of individual income. Finally this paper found that there is no relationship between inputs and outputs of school education. It is so because schools are not sufficient factors or other factors are not considered in the relationship.

Bose, N. Haque, E. and Osborn, D. (2007) investigated the growth effect on economic growth in thirty developing nations. In this study the panel data for developing nations has been collected from the time period 1970 to 1980. Particularly this study has given attention to the growth of sectoral expenditure and its impact on economic growth. This study has used the aggregate capital and current expenditure which was divided into different sectors like defense, education, health, agriculture, transport and communication. Simingly Unrelated Regression (SURE) method has been used for empirical analysis in this study. The result appeared in twofold, first reveals that the share of government capital expenditure in GDP is positively and significantly correlated to economic growth, but current expenditure is insignificantly correlated to the economic growth. In the second fold it is found that at the sectoral level government investment and total expenditures in education are the only expenses that are significantly correlated with economic growth.

Ndiyo, N.A. (2007) studied the economy of Nigeria. The purpose of his study is to find out causes of absence of growth promoting externalities of education after a huge investment in education in Nigeria. This study also focuses that why there is declining real income and sluggish economic growth rate after significant investment in education in Nigerian economy. In this study the annual time series data from time period 1970 to 2000 have been used. These data has been collected from three main sources like International Financial Statistics Year Book - a publication of the IMF; Statistical Abstract-a publication of Nigeria's Federal Office of Statistics and Statistical Bulletin - a publication of the Central Bank of Nigeria. GDP has been taken as dependent variable while independent variables are gross fixed capital formation (GFCF), aggregate labor

force (LABF) and real education expenditure (EDUEXP). Further the estimation model is extended to consider the number of university graduates and time (t) as a markup for the difference. This study uses Vector Auto regressive model (VAR) for empirical analysis. This study found that there is education which has no positive growth impact on economic growth in Nigeria. It also found that the causes responsible for absence of positive impact of education on economic growth. Those causes are the failure of newly created education system, slow growth in demand for educated labour.

Khalifa, Y. and Yousif, A. (2008) investigated the relationship between human capital and economic growth in six GCC countries. It also found the nature of the relationship between the variables. In this paper education expenditure has been used as the proxy of human capital. Time series data from the period of 1977 to 2004 has been taken for the analysis. For the empirical analysis a Granger-causality test within an error-correction framework. The empirical results found the following points: 1.There is bidirectional causality between education and economic growth. 2. Findings of this study show that the results are country specific and it vary with the proxies used to measure human capital. 3. These results of the study show that the nature of the relationship between education and economic growth cannot be generalized across the nation.

Baldwin, N. and Borrelli, S.A. (2008) analysed the relationship between education and economic growth in US states. This study mainly examines the relationship between states per capita income and education. On the same time it is controlling for the effects of infrastructure spending, saving deposits and population growth. Direct and indirect both relationships between education spending and economic growth had been investigated in this study. Cross sectional data for eight states from time period 1988-89

to 2004-05 had been collected and cross-sectional regression analysis had been carried out for analysis purpose. More over data from time period 1997-98 to 2004-05 had also been collected as sub periods. In this study the control variables like infrastructure spending, saving deposits and population growth were used and these variables are averaged according to these time frame. It led to utilise lagged time frames to measure and average the delayed effects of all variables of human capital. Empirical results showed that there is a positive and significant relationship between high school attainment and income growth. On the other hand the results showed that there is a negative and significant relationship between college attainment and income growth.

Cooray, A.V. (2009) investigated the quality and quantity of education on economic growth in low or medium income countries. This study has used the cross section data from 46 developing nations from time period 1999-2005. This study measured the quantity estimation by (a) education on primary, secondary and tertiary level enrollment ratio (b) total government expenditure on education as the percentage of GDP and (c) expenditure per student at the primary level and secondary level as a percentage of GDP per capita. The results of OLS (Ordinary Least Square) method reveal that enrollment at primary, secondary and tertiary level is positive and significant for economic growth. According to the results the effect of total government expenditure on economic growth is not direct but contingent on its interaction with the quality variables. However this study argued that as more expenditure is done it leads to an improvement in quality of education which appears as an improvement in the economic growth in an economy.

Omojimite, B. U. (2010) studied the causal relationship between federal government spending on education and economic growth in Nigeria. This study took the time series

data of Nigeria from the time period 1980 to 2005. Two variables are taken here. One is Public Education expenditure and other is Real GDP. For empirical analysis Granger causality test has been utilized in this study. The results show that there is bidirectional relationship between recurrent education expenditure and economic growth in Nigeria.

Hussin, M.A.M., et al. (2012) investigated the long run relationship between government education expenditure and economic growth in Malaysia. For empirical study of the Malaysian economy a time series data set from 1970 to 2010 has been taken. In this paper researcher has taken four variables like Gross Domestic Product (GDP), Capital Formation (CAP) and Labour Force Participation (LAB) and Government expenditure on Education (EDU). By using Vector Auto Regression Model (VAR) researcher found that GDP is positively co integrated with taken variables. This study found that the economic growth is short term granger cause for education and vice versa. It also proves that education plays an important role to affect economic growth in Malaysian economy.

Bashir, B., et al. (2012) investigated the relationship between higher educational growth and economic growth in West Virginia. This study has used three variables which are change in per capita income, change in education and change in population. Simultaneous equation model has been used to analyse the relation. Change in per capita income, change in higher education and change in population density are the inter dependent variables. This approach account for interaction among the interdependent variables and give a comprehensive estimation. It helps to overcome the inconsistency and biasness and then leads to comprehensive estimation. A three-stage least squares estimations are used to solve the simultaneous equations. A system of equations estimates all the identified

structural equations together as a set. The important benefit of this method is to have a small asymptotic variance. The empirical finding says that a change in income positively and significantly related to the change in education in West Virginia. It shows that one per cent increase in education leads to 0.3 percent increase in income. Result states that one percent change in income growth increases 1.7 percent educational growth. More over the study reveals that increasing educational change leads to decrease population in West Virginia.

Ejiogu. et al. (2013) investigated causal relationship between government expenditure on education and economic growth in Nigeria. This study used the time series data from 1981-2011on expenditure on education and Economic growth. In this study Vector Error Correction Model and Granger Causality test has been utilised. The result shows the expenditure on education is positively related to the GDP of Nigeria but the gross fixed capital formation is negatively related to GDP. The result of Granger Causality test shows that GDP granger causes to expenditure on Education while education does not granger cause to GDP.

Solaki, M. (2013) examined the long-run relationship between human capital and economic growth in Greece. By measuring human capital in terms of quantity this paper examined the causal direction between human capital and economic growth. The vector error correction model has been utilized in this paper. In this paper empirical analysis has been carried out using annual data for the period 1961 to 2006 for Greece. Enrolment rates in Tertiary, Secondary and Primary Education are used as proxies for human capital. The combined results of all methodologies indicate that the real GDP per capita (GDPC) depends on Tertiary education and the public expenditures on education, while Primary

education is affected by economic growth. The empirical results using the error-correction estimation indicate that the direction of causality runs from Tertiary Education and public educational expenditures to real GDP per capita and that both variables should be considered as exogenous variables. As for the primary and secondary education, the findings reveal that causality runs through the opposite direction, from real GDPC to the levels of education. Finally this paper shows that there is existence of a uni-directional causality relationship between human capital and economic growth in Greece.

Idrees, A.S. and Siddiqi, M.W. (2013) examined the long run relationship between public expenditure on education and economic growth. This study has used panel data of fourteen cross section which covers the time period from 1990 to2006. In this cross sectional data there are seven developed and seven developing countries. Developed countries including G7 in which UK, US, Canada, Germany, France, Italy and Japan are included. In the developing countries seven countries has been included which are Pakistan, India, China, Turkey, Poland, Russia and South Africa. The co-integration test has been applied to examine the long run relationship between the variables. The empirical results in this study found that the impact of public expenditure on education on economic growth is more in developing countries than that of developed countries.

Mehmet, M. (2013) analysed the relationship between education expenditure and economic growth in Turkey. This study is based on the quarterly data from time period 1980:Q1 to2012:Q4. In this study two variables are used which are Gross Domestic Product (GDP) and total Expenditure to Education. To study the effect of education expenditure on economic growth the bound test has been used. This test was developed by Pearson and et al. In this method the series used in the study is assumed to be unit root

in the level and when it is being differentiated it should be integrated in the same order. Before doing test and analysis Augmented Dickey fuller test (ADF) and Phillips- Perron test (PPT) has been used. The result of Granger Causality test says that there is bi directional causality between education expenditure and economic growth. Co-integration test result reveals that there is long term relation between the variables taken in this study.

Kaur, H. et al. (2014) investigated the relationship between education expenditure and economic growth in China and India. They took the data from 1970 to 2005. The main objective of this paper is to find out and check the role of education expenditure in explaining the economic growth in China and India. The researchers have used the multi econometric tools like Johausen –Juselius co integration test, Ordinary Least Squared method (OLS), Dinamic Ordinary Least Square (DOLS), Vector Error Correction Model (VECM) as well as variance decomposition to get the strong and consistent results. This paper found that in China and India there is a long run trending relationship between GDP per capita (income level) and education expenditure. This paper urges that there is a unidirectional causal relationship between income level and education expenditure in China. In the case of India Education expenditure Granger causes income level which is also unidirectional. The paper also shows that the education can be an important engine for growth of an economy.

Chika, O. Z. and Ogugu, O.C. (2014) studied the impact of education expenditure and economic growth in Nigeria. The main focus of this paper is to examine the impact of education expenditure on economic growth as a means to achieve the desired socio-economic change in Nigeria. The researcher has taken the time series data from 1981 to

2012 and applied econometric techniques like co-integration Method and error correction model for analysis. This found that there is a positive relationship between education expenditure and economic growth but a long run relationship does not exist during the study period.

2.3.2 Empirical Background: Indian Perspective

De, A. and et al (2008) studied the trends in public financing in education in India. Public finance expenditure of central government, state governments, other local bodies and NGO are included in this study. Apart from this foreign aid which is being transferred through central Government budget is also included in this expenditure. This study investigated the level and composition of public expenditure on education. It also studied the mechanism for sharing, allocation and utilization of resources. For analysis this study has taken data from 1990-91 to 2003-04. This study found that while expenditure in real terms increased during the 1990s it has stagnated since then. But it has a major change in composition and modalities of expenditure. The study found that center is playing an important role in state education finance. After seeing the data of seven states researcher found that trends for education expenditure has changed. It shows that in less developed states expenditure has improved access but retention and learning achievement remain very low.

Pradhan (2009) examined the causal relationship between expenditure on education and economic growth in India. He took the data from 1951 to 2001 and investigated on the bases of error correction modeling. His finding suggests that there is unidirectional relationship between education expenditure and economic growth in India. The direction

of the relationship is from educational expenditure to economic growth and not from the economic growth to education expenditure.

Chandra, A. (2010) uses linear and non-liner Granger causality test and found the causal relationship between education expenditure and economic growth. Bidirectional relationship is also found between the government expenditure and economic growth. After examining the data set from 1950-51 to 2008-09 he found that the time series data which is used in the study are found to be non-stationary at the level and it became stationary after first difference. He found that there is bi-directional causal relationship between education expenditure and economic growth. It means the causality goes from education expenditure to economic growth and vice versa.

Tamang, P. (2011) has tried to redefine the relationship between education expenditure and economic growth in Indian economy. He analyzes the time series data from 1980 to 2008. By using error correction model he stated that education expenditure per labour has lesser impact on economic growth than the physical capital per labour. In this study GDP (Gross Domestic Product) has been taken as the proxy for the economic growth performance, Gross domestic Capital formation has been taken as the proxies for the physical capital and government expenditure on education. Finally this paper found that the Indian economy can expect to grow by investing in education but the rate of return will be comparatively low.

Ghosh, S. D. (2012): Endogenous growth theory states that human capital is the driver of economic growth. Theoretically he argues that education expenditure should speed up economic growth. There are other certain factors like institutional structure of a country, which determines whether the expenditure in education impacts significantly or not. The

institutional structure, the labour market and openness policies largely varies across countries. Most of the empirical studies do not take those factors into account while estimating the impact of education expenditure on economic growth. This is why empirical literatures failed to find the healthy relationship between the two variables.

Dastidar, S.G. et al. (2012) investigated some of the major empirical literatures on the relationship between education and economic growth for India. The investigator discussed the reason behind the failure of the empirical literatures to find a strong relationship between education expenditure and growth. In this paper it is found that education expenditure is necessary but not the sufficient condition for growth. It is found that other factors like institutional structure and labour market of a nation shall also be considered for the growth in that nation. These factors contribute to determine whether investment in education sector will affect or not.

Gangal and Gupta, H. (2013) examined the impact of public expenditure on economic growth of India. Researcher took the annual data set from year 1998 to 2012. In this research paper two variables have been taken to analyze the impact of public expenditure on economic growth in India. Total public expenditure and Gross Domestic Product (GDP) has been taken as the proxies for the Public Expenditure and economic growth respectively. Augmented Dickey Fuller test, Co-integration test, Impulse Response Function (IRF) test and Granger causality test has been applied in this paper. The results of this paper say that there is liner stationarity between public expenditure and economic growth. This result shows the long run equilibrium between the variables. Granger Causality test result shows that there is positive impact of public expenditure on economic growth in India. It also says that there is unidirectional relation between public

expenditure and economic growth and the direction goes from total public expenditure to economic growth. This study also reveals that there is a positive impact of socks on the variables.