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Returns to Investment in Education: New Dimensions in India

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ABSTRACT

In the present paper an attempt has been made to analyze the impact of investment in education on economic development. The present study, examined the impact of public investment in education and its contributions to gross domestic product (GDP). Plan outlay for education considered as a proxy for public investment. GDP and disaggregated GDP data have been considered as dependent variables. The study has been observed that there is positive linkage between investment in education and GDP and related variables. In India, however, resources allocations for education is less compared to developed countries and some of developing countries, it has made significant positive impact on the increase of GDP and related variables. The study has found some unique results. Co-efficient parameters have shown that POED has made almost similar influence, irrespective of the sectors. Constant parameters have shown that it was agriculture sector, which has got highest constant value, compared to all other sectors. Therefore, excluding agriculture sector, none of the other sectors could have been sustained and achieved growth what they have achieved today without the investment in education. Hence, resource allocation to education has to be continued and share of education in total plan outlay has to be increased.

Keywords : Education, Development, Public Investment and Returns to Education

Introduction:

In the present paper an attempt has been made to analyze the impact of investment in education on economic development. There is a long history of research on returns to education, which have been proved, positive relationship between investment in education and returns to it. However, the rates of returns to investment in education have been differed based on type of education, cost of education, location of education and others. Given the background, the present study, examined the impact of public investment in education and its contributions to gross domestic product (GDP). The GDP data further disaggregated sector wise, like agriculture, industry and service sectors and tested the differentiated impact of investment in education.

Traditionally development refers to increase in GDP or Per-capita Income. Development was mainly focused on economic development which was more of materialistic in nature. This phenomenon could found during the period of traditional economy, which was known as market economy. With the failure of market economy, the concept of development has got changed from simply increased the national income to ensuring the distributive justice and social welfare. This period was known as government led development and period of political economy. Even during these period inequalities have been increased (Michal & Stephen, 2011).

Even though there were efforts by respective governments, during the period of political economy, there was a huge poverty all over the world, which has created a great debate among the philosophers and economists and other social scientists. At the end of the period of political economy United Nations Organization (UNO) has thought of redefining the meaning of development. UNO constituted a committee headed by Mahbub-Ul-Haq along with amartyaa K. Sen, Inge Kaul, Leo Goldstone, Saraswathi Menon Paul Streeten and others to find a new definition for development which effectively explains development with broader sense. The committee has given new definition for development namely 'human development'(UNDP, 1990).

According to the human development definition education is the one of the important parameters or factors which has been played immense role in enhancing the welfare of human wellbeing. Therefore development education has got prime importance in the academic field (Jha, 1991). There have been ample attempts to measure the returns to investment in education (Premakumara, 2006). However, consideration of parameters to measure the returns to education has been one of the major issues took in the subject matters of economics of education.

Empirical Works:

Since 1950, there have been a good number of research works emphasized on measuring the returns to investment in education (Psacharopoulas, 1994). Most of the earlier studies have used public investment and GDP as parameters to identify the casual relationship. There are few studies which have also analyzed social benefits, direct and indirect benefits of education. Some studies have tried to estimate the gestation period of returns to investment in education. The rate of returns to investment in education varies based on stage of investment, gender, nature of course, geographical background and social constraints (Neugart, Michel, Tuinstra, & Jan, 2002). There are studies have analyzed spillover effects of educated people which indirectly benefits to the community society and at a larger sense, the nation (Trostel & Philip, 2007).

Methodology:

The present study has been used secondary time series data collected from economic surveys of India and plan documents

for the period from 1992-93 to 2011-12. The deflator method has been applied for data conversion and actual values have been converted to constant values form by taking 1993-94 as base year. The traditional method of estimating the impact of investment in education on GDP has been adopted. Plan outlay for education considered as a proxy for public investment. GDP and disaggregated GDP data have been considered as dependent variables. Since the time series data have used, the stationarity tests (Dickey-Fuller Unit Root Tests) have been conducted and wherever necessary, the co-integration tests (Engel-Granger Tests) have been conducted. After confirming the stationarity and co-integrity of variable, the time series data have been used for econometric models in natural log form.

Results and discussion:
The econometric models have been constructed to know the impact of plan outlay for education on various dependent variables. The GDP disaggregated data are available in five different heads like, agriculture related, manufacture related, trade related, finance related and personal services related. Hence, including overall GDP, six models were constructed to estimate the impact of public investment in education. The following section presents models, results and followed by analysis.

$$\ln GDP = \alpha + \beta \ln POED + e \dots\dots\dots\dots\dots\dots\dots (1)$$

Where; GDP = Gross Domestic Prices, POED = Plan outlay for education.

$\ln GDP = 889.80 + 0.968 \ln POED$
t: (14.971) (16.390)
Sig: 0.000 0.000 R^2: 0.934

It has been found from the results that the model is good fitted with high R squared values. If the plan outlay for education was zero the GDP could have been 889.80 crores and it is accepted. The co-efficient parameter is positive and accepted. Therefore, if POED is increased by one time the GDP will be increased by 0.968 times. Hence, POED has made positive impact on GDP of India.

$$\ln IA = \alpha + \beta \ln POED + e \dots\dots\dots (2)$$

Where; IA = Income of Agriculture, forestry, fishing, mining, and quarrying;

$\ln IA = 2545.2 + 0.964 \ln POED$
t: (24.359) (15.463)
Sig: 0.000 0.000 R^2: 0.930

It has been found from the results that the model is good fitted with high R squared values. If the plan outlay for education was zero the IA could have been 2545.2 crores and it is accepted. The co-efficient parameter is positive and accepted. Therefore, if POED is increased by one time the IA will be increased by 0.964 times. Hence, POED has made positive impact on IA of India.

$$\ln MF = \alpha + \beta \ln POED + e \dots\dots\dots (3)$$

Where; MF = Income of Manufacturing, Construction, electricity, gas and water supply.

$\ln MF = 151.56 + 0.961 \ln POED$
t: (9.441) (14.652)
Sig: 0.000 0.000 R^2: 0.923

It has been found from the results that the model is good fitted with high R squared values. If the plan outlay for education was zero the MF could have been 151.56 crores and it is accepted. The co-efficient parameter is positive and accepted.

Therefore, if POED is increased by one time the MF will be increased by 0.961 times. Hence, POED has made positive impact on MF of India.

$$\ln TD = \alpha + \beta \ln POED + e \dots\dots\dots (4)$$

Where; TD = Income of Trade, hotels, transport and communication.

$\ln TD = 55.48 + 0.963 \ln POED$
t: (6.949) (15.105)
Sig: 0.000 0.000 R^2: 0.927

It has been found from the results that the model is good fitted with high R squared values. If the plan outlay for education was zero the TD could have been 55.48 crores and it is accepted. The co-efficient parameter is positive and accepted. Therefore, if POED is increased by one time the TD will be increased by 0.963 times. Hence, POED has made positive impact on TD of India.

$$\ln FN = \alpha + \beta \ln POED + e \dots\dots\dots (5)$$

Where; FN = Income of Financing, insurance, Real estate and business services.

$\ln FN = 29.05 + 0.962 \ln POED$
t: (5.640) (14.902)
Sig: 0.000 0.000 R^2: 0.925

It has been found from the results that the model is good fitted with high R squared values. If the plan outlay for education was zero the FN could have been 29.05 crores and it is accepted. The co-efficient parameter is positive and accepted. Therefore, if POED is increased by one time the FN will be increased by 0.962 times. Hence, POED has made positive impact on FN of India.

$$\ln PS = \alpha + \beta \ln POED + e \dots\dots\dots (6)$$

Where; PS = Income of Community, Social & personal services.

$\ln PS = 85.46 + 0.974 \ln POED$
t: (10.489) (18.361)
Sig: 0.000 0.000 R^2: 0.962

It has been found from the results that the model is good fitted with high R squared values. If the plan outlay for education was zero the PS could have been 85.46 crores and it is accepted. The co-efficient parameter is positive and accepted. Therefore, if POED is increased by one time the PS will be increased by 0.974 times. Hence, POED has made positive impact on PS of India.

Conclusion:
The study has been observed that there is positive linkage between investment in education and GDP and related variables. In India, however, resources allocations for education is less compared to developed countries and some of developing countries, it has made significant positive impact on the increase of GDP and related variables. The study has found some unique results. Co-efficient parameters have shown that POED has made almost similar influence, irrespective of the sectors. Constant parameters have shown that it was agriculture sector, which has got highest constant value, compared to all other sectors. Therefore, excluding agriculture sector, none of the other sectors could have been sustained and achieved growth what they have achieved today without the investment in education. Hence, resource allocation to education has to be continued and share of education in total plan outlay has to be increased.

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