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THE LINK BETWEEN EDUCATION AND ECONOMIC GROWTH IN ASSAM

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ABSTRACT

This study examines the link between educational levels (literacy) and economic growth and estimates the impact of education on economic growth in Assam over the period of 2001-2011. The study is based on the use of the collection of secondary data from various publications like Census Report 2011, Government of India, Statistical Handbook of Assam, and Economic Survey, Assam. Both Karl Pearson's coefficient of correlation and regression tools are used to estimate the results. The empirical result reveals that there is a positive and significant relationship between education (literacy rate) and gross state domestic product (GSDP). Also, regression results confirmed that about 92 percent increment in GSDP of Assam could be explained by the increase in the literacy rate in the state. The study concludes with the suggestion that along with the efforts to achieve full literacy, necessary steps be undertaken for developing the specific technical skills and knowledge that are relevant to economic activities to access jobs of the labour force in the globalised labour market.

KEYWORDS: *education (literacy), economic growth (GSDP), human capital, Assam.*

I.   INTRODUCTION

There is a general consensus, borne out of theoretical as well as empirical literature, on economics of education that improvements in human capital can contribute to economic growth of a nation or region. These improvements, both quantitative and qualitative, come about from education, on-the job training and work experience (World Bank, 2000). Education is the most important variable, which plays an important role in the development of human capital which is the principal driving force behind rapid national development. Education is a crucial catalyst for Human Resource Planning and Development (Blaug 1967; Becker 1960; Schultz, 1961) that ultimately determines the character and pace of its economic and social development. The formal educational system provides the institutional basis for developing human skills, knowledge and other dexterities of people and transforms raw human beings into human capital. Most empirical studies have proved that developed human capital has a positive effect on the economic growth, political stability and social cohesion. It is therefore clear that a country which is unable to develop the skills and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else.

Education is the foremost need in the era of globalisation. Education is necessary owing to the atmosphere of competition and technological progress. As stated by Battle and Lewis, "in this era of globalisation and technological revolution, education is considered as a first step for every human activity. It plays a vital role in the development of human capital and is linked with an individual' wellbeing and opportunities for better living." The 2016 National Policy on Education recognizes the criticality of education as the most important vehicle for social, economic and political transformation (GOI, 2016).

The progress of education of a nation or a state can be evidenced from the literacy rates, Number of Educational Institutions, Enrolment in Schools, Number of School Teachers, and Dropout Rate in Schools during the census periods. When

literacy rate of India is considered, it stands at 74.04 percent as per 2011 census. India's literacy rate in 1951 was just 18.33 percent which shows over the years an increasing trend but with varied rates in different states with some states like Kerala and Mizoram well above national average and Bihar with a dismal rate of 63.8 percent (Census, 2011). The male literacy rate for all India is 80.89 percent as against the female literacy rate of 64.64 percent. The literacy rate for Assam is 72.19 percent which is below the national average (74.04 percent). Over the years, Assam has shown an encouraging sign in the growth of rate of literacy with a mere literacy of 18.53 percent in 1951 to 72.19 percent. But there is a concern for female literacy rate (66.27%) which is much below the male literacy rate (77.85%) indicating a literacy gap of 11.58 percent. There is also a concern for the rural literacy rate (69.34 percent), which is much below the urban literacy rate (88.47%). Assam has been ranked at 26th position in terms of literacy among the 29 states of India (Census, 2011).

India is today one of the faster developing economies in the world. But the country to emerge as a developed economy it has to use its most important resource (human resource) exhaustively and our ability to do so to a very great extent will depend on the formation of human capital which can be attributed to a large extent on how soon we can have full literacy (Desai, 2012). Therefore, there is need to improve the overall literacy rate as literacy will play a very important role in turning the young population into potential human capital which has a significant impact on increasing a country's economic growth rate. Once the literacy rate concern is addressed there is an immediate need for creating jobs to absorb the growing labour force in the economy. Strong and effective measures to create employment opportunities such as tax reforms and other supply-side policies must be undertaken which will help in enhancing the labour productivity which otherwise might not be utilized and thus hampering the growth of the economy in the long run.

The remaining layout of this paper is structured as follows: after introductory part, Section II shows a brief profile of literature review, Section III states the objective of the paper, Section IV presents data and methodology and Section V provides results and discussion, and, finally, Section VI concludes the paper

II. A BRIEF PROFILE OF SELECTED LITERATURE

A plethora of studies, both theoretical as well as empirical, are available on the literature of economics of education. The theoretical literatures have prescribed education as an important determinant of economic growth and have over time developed many economic growth theories and models by economists like Adam Smith, Paul Romer, Lucas and Robert Solow. The main theoretical approaches of modelling the linkages between education and economic performance are the neoclassical growth models of Solow (1957) and the endogenous growth model of Romer (1990) which give governments a theoretical basis for actively fostering economic growth. Over the past, a substantial volume of empirical studies have been directed to focus on the issue of education and economic development.

Romer (1986) argued focusing on the contribution of education that investing in education, training and research and other forms of human capital may assist in achieving long-run economic growth and that the acquisition of human knowledge, which has increasing marginal productivity, should be included as a part of factor inputs for production.

Barro (2001) examined the role of education as a determinant of long run economic growth by using data of 100 countries with various levels of economic development and the result revealed that the growth is positively related to the average year of school attainment of males at the secondary and higher education level and workers with high educational background would be complementary with new technologies which can diffuse the technology. The study concluded that both quality and quantity are important, quality being the more important to economic growth.

Hanushek and Woessmann (2005) using global data on education and GDP per capita, revealed a positive relation between education output and GDP per capita growth rates.

Pegkas (2014) in Greece examined the linkage between educational levels and economic growth and estimated the potential impact of the different educational levels on economic growth over the period 1960-2009. The result revealed that there is a long-run relationship between educational levels and gross domestic product. The overall results show that secondary and higher education have had a statistically significant positive impact on growth, while primary hadn't contributed to economic growth. The results also suggest that there is evidence of unidirectional long-run causality running from primary education to growth, bidirectional long-run causality between secondary and growth, long-run and short-run causality running from higher education to economic growth.

Hong and Ahmed (2009) investigated the impact of public goods such as education on the per capita income and poverty reduction in India. The results showed that the Government expenditure on education and health had a large and positive significant impact on per capita income with substantial reduction in the poverty of the country. The study also found other development expenditure to have significant positive effects on growth, but only about one half of the share of spending on education and health.

Huebler (2005) showed the correlation between GDP per capita and education by plotting the school net enrolment ratios (NER) against GDP per capita of 120 different countries. The result revealed a clear linkage between the GDP and school enrolment, especially at the secondary level of education and nearly all countries with a secondary school NER below 60% have a GDP per capita less than $10,000 and countries with a per capita income of more than $15,000 have NER levels near or above 80%.

The causality might work both ways between in the above cases: better education will lead to higher GDP as human capital is an important cause of growth and higher GDP per capita will lead to better education due to more investment in education. Desai (2012) has empirical tested in Indian case on the impact of literacy on economic growth and population growth and revealed a very high positive correlation between literacy and GDP in India and that the growth rate of GDP in turn has its effect on increasing the literacy rate.

Thus, there is sufficient evidence to suggest that increasing education levels of people will lead to a higher growth of the economy. It is, therefore, imperative to examine the impact of education in a state level studies to recognize the status of education as influential factor to economic growth.

In this study, we will investigate the impact of education (literacy rate) on economic growth (GSDP) in the state of Assam for the period of eleven years from 2001 to 2011.

III. OBJECTIVE OF THE STUDY

The main objective of this paper is to study the relationship between education (literacy rate) and economic growth (gross state domestic product) over a period of 2001-2011 in Assam.

IV. DATA AND METHODOLOGY

To investigate the impact of education on economic growth in the case of Assam, we have collected data from various government publications and secondary sources like Ministry of Home Affairs, Economic Survey, Government of India, Basic Statistics of North Eastern Region 2015, Census Reports 2011, journals, etc.

Statistical tools like correlation and regression analysis have been used. We estimated correlation coefficient value which is the measure of linear association between the two variables of literacy rate and GSDP. This can indicate the extent to which these two series of variables had been associated with each other. Since the annual literacy data are not availability, the decadal census data has been taken and Compound Annual Growth Rate (CAGR) between the two successive decadal literacy rates has been calculated. Then the literacy rate for all the years in between the two years is calculated as by multiplying the base year literacy rate with $(1+CAGR)^n$, where n is the nth year from the base year.

To interpret the empirical result, hypothesis testing is done for acceptance and rejection of either null hypothesis (H_0) or the research hypothesis (H_1) based on the empirical data result.

H_0: Literacy rate has no significant impact on the on economic growth (GSDP) in the state of Assam.

H_1: Literacy rate has a significant impact on the on economic growth (GSDP) in the state of Assam.

To examine the influence of education on economic growth, we have run a regression analysis taking literacy rate as the independent variable and the GSDP of the state as dependent variable.

The regression equation takes the form:

$$Y = a + bX$$

Where 'Y' stands for the GSDP of the state and 'x' stands for the literacy rate where 'a' is the Y-intercept and 'b' is the slope of the line.

V. RESULTS AND DISCUSSION

Gross State Domestic Product is taken as a proxy for economic growth performance and literacy rate as a measure of the levels of education development.

We measured the linear association between series of aggregate data on the literacy rate and aggregate data on the GSDP pertaining to the years from 2000-01 to 2010-11. Table 1 shows the estimated correlation coefficient value which is the measure of linear association between the two variables of literacy rate and GSDP.

5.1 Result of the Correlation Analysis:-

The Correlation result for Literacy and GSDP is shown with the help of the use of graph first and then the estimated Pearson's correlation coefficient value in Table 1. The graph clearly indicates the positive association between the increases of GSDP with the increases of literacy rate. The estimated correlation coefficient value is found to be 0.958 which is statistically significant at one percent level (Table 1).
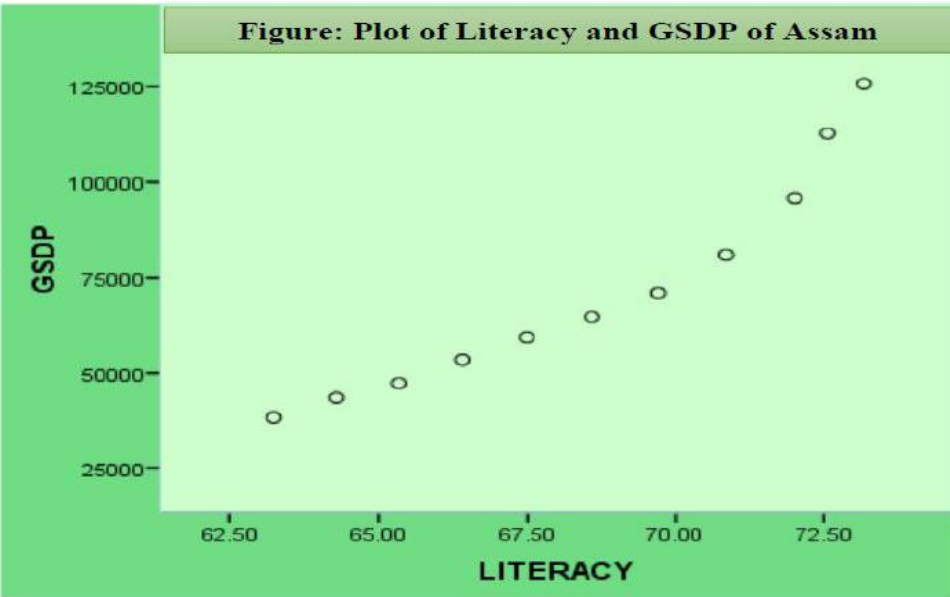
Figure: Plot of Literacy and GSDP of Assam

Table 1: Pearson's Correlation Coefficient Value		LITERACY	GSDP
LITERACY	Pearson Correlation	1	.958**
	Sig. (2-tailed)		.000
GSDP	Pearson Correlation	.958**	1
	Sig. (2-tailed)	.000	
**. Correlation is significant at the 0.01 level (2-tailed).			

As a glance at the table 1, the correlation result indicates a very high positive and significant correlation between literacy and GSDP, the null hypothesis (H_0), i.e., "Literacy rate has no significant impact on the economic growth (GSDP) in the state of Assam" is rejected and thus the research hypothesis (H_1) is accepted. Thus, an increasing change in literacy rate may lead to economic progress in the state of Assam.

However, correlation analysis does not tell whether literacy is dependent on GSDP or whether GSDP is dependent on literacy. Therefore, we run a regression analysis to explore the relationship between a dependent variable and one or more independent variables.

5.2 Result of the Regression Analysis:-

The estimated result of the regression analysis is presented in the following tables 2 to 4. The model summary table 2 shows the good fit of the model. The explanatory variable (literacy rate) has explained about 92 percent (R^2=0.918) of the variation of the dependent variable, GSDP.

Table 2: Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.958a	.918	.909	8694.700
a. Predictors: (Constant), LITERACY				

Table 3: ANOVAb

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.650E9	1	7.650E9	101.199	.000a
	Residual	6.804E8	9	7.560E7		
	Total	8.331E9	10			
a. Predictors: (Constant), LITERACY						
b. Dependent Variable: GSDP						

The ANOVA Table test indicates that about approximately 92 percent of the variation in predictor is explained by the model. The significance value of the F-statistic is less than 0.05, which means that the variation explained by the model is not due to chance (Table 2).

Table 4: Regression Coefficients[a]

Model		Unstandardized Coefficients		t-Value	Significance
		B	Std. Error		
1	(Constant)	-466894.601	53643.694	-8.704	.000
	LITERACY	7860.673	781.398	10.060	.000
a. Dependent Variable: GSDP					

Table 4 shows the intercept value as (-) 466894.601. It represents the point at which the trend line crosses the 'y' axis. The value of the slope is 7860.673.The regression coefficient has the necessary sign and is statistically significant with the explanatory power of the variable by 92 percent as revealed by R-square. In other words, at least 92 percent increment in GSDP of Assam can be explained by the increase in the literacy rate in the state. Therefore, literacy having a strong impact in the economic progress of Assam verified from the above result confirmed us that increasing GSDP had been significantly associated with increasing educational attainment in the case of Assam.

VI. CONCLUSION

From the analysis of the above results, it can be concluded that an increased literacy (educational attainment) will lead to an increased level of GSDP (economic growth). However, there are certain challenges as just being literate will not guarantee access to jobs in the labour market. Hence efforts should be made to achieve full literacy level as early as possible. In the modern era, global economy is very much dependent on the advanced techniques and technology. Hence, just being literate (as per the definition of census operation) does not make people competent enough to enter the labour force in the market. As a consequence, along with the concerted efforts to achieve full literacy, necessary steps be undertaken for developing the specific technical skills, knowledge, competencies and other attributes that are relevant to specific economic activities to access jobs of the labour force in the competitive globalised labour market.

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