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EDUCATION HUMAN CAPITAL IN JAMMU AND KASHMIR: ESTIMATION AND ANALYSIS

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ABSTRACT

In this paper an attempt has been made to estimate the growth rate of education human capital in Jammu and Kashmir over the time period 1994-95 to 2012-13, by employing both econometrics and non- econometrics methods. The proxy variables for education human capital taken for the study included expenditure on education, enrollment ratios of primary, secondary and territory. The study concludes that the compound annual growth of expenditure on education, primary enrollment, secondary and territory enrolment were 58.41%, 1.41%, 1.61 % and 5.02 % and were significant. Following the findings the study recommends the attention of government to increase the standard of education in Jammu and Kashmir. Substantial amount of government budgetary allocation should be directed towards the educational sector is strongly recommended.

KEYWORDS: Human capital, Econometrics, components of human capital.

Section I

1.1 INTRODUCTION

When asked about the major determinants of economic development in an international perspective, the average economist, or the World Bank, is likely to point to the important role of human capital formation. Human capital in nature encompasses knowledge, information, ideas, skills, and health of individuals. Technology may be the driver of present day modern economic growth (MEG), especially for the science base sector and advanced economies of the world, but human capital is certainly the energy required to drive the vehicle of modern economic growth (Becker, 2002). Various growth theorists have various approaches to human capital as an important component of economic development. Both theoretical and empirical researches have substantiated the fact that investment

in human capital formation of a country plays a fundamental role in improving the efficiency and productivity of human beings, and through them the various factors that complement and supplement the production process.

Human capital is widely accepted as an important determinant of economic growth and the importance of human capital accumulation is unconditionally acknowledged in the existing exogenous and endogenous growth theories (Mankiw et al. 1992, Bergheim. 2005 and Howitt. 2005). However what is still debatable is what factors should be considered as components of human capital. The exclusion and inclusion of different components of the human capital to relate it empirically with other variables such as growth makes it more complex and changing concept.

Talking about the components of the human capital education and health remains the priority. Education which is probably the most important determinant of human capital affects the output through various channels. It increases knowledge which helps to produce more output in relatively smaller time and also it is intuitively suggested that an educated person could learn much faster (Bergheim, 2005). Education is a merit as well as a public good and is associated with large sets of externalities which are often indirect, invisible and non-quantifiable.

Increase in the level of education also leads towards better health due to an increase in the awareness of the benefits of healthy living, which in turn increases the output. Moreover, education also enhances the labor force participation in an economy particularly in the case of female participation and output increases further, due to the higher labor force participation rate.

Given the role of education human capital in the development of the economy both developed and an underdeveloped country tries to increase the human capital. Different strategies are taken by different countries to increase it. India after independence also struggling for increasing the human capital particularly education component and health component. In this phase of struggle some states of India succeeded but others failed. Jammu and Kashmir economy does not succeed much in this struggle. The government of India has already identified 373 districts as educationally backward out of which 11 districts are in the J&K State.

In this study an effort is made to estimate the growth rate of education human capital in Jammu and Kashmir. Different variables like expenditure on education, enrollment ratios of primary, secondary and territory have been taken as the proxy variables to estimate and analyze the growth of education human capital in Jammu and Kashmir. The paper is divided into three sections. Section first provides the introduction, section II research methodology and section III provides results, discussion and conclusion.

1.2 REVIEW OF LITERATURE

Keeping in view the need of the survey of the related literature, the references of research literature enlisted in this paper are mostly based on research of available sources of literature including books, research abstracts, periodicals and journal

1.2.1 Human Capital and Economic Growth: - A Theoretical Approach:-

Petty(1690), the most prominent founder of the Political Arithmetic School of Economics was concerned with the main national socioeconomic and

political roles of human capital. He believed that labour was the ‘father of wealth’ and that a measure of its value should be included in the estimation of national wealth. Petty’s thesis was that factors other than land and population were important in determining the wealth of a nation.

Smith (1776), Smith’s principal aim was not to measure the ‘value of the stock of human capital’ but to understand the reasons why there are different remunerations between different occupations. According to Smith, the sources of human capital are experience, associated with the specialization of the economy (division of labour).

Alfred Marshall (1890), Marshall’s conception of human capital is similar to Mill’s: ‘We may define personal wealth so as to include all those energies, faculties and habits which directly contribute to making people industrially efficient.

McCulloch (1849), instead of understanding capital all that portion of the produce of industry extrinsic to man, which made be applicable to his support, and to the facilitating of production, there does not seem to be any good reason why man himself should not, and very many why he should be considered as part of the national capital.

Schultz (1961), there is nothing in the concept of human wealth contrary to [the] idea that it exists only for the advantage of people. By investing in themselves, people can enlarge the range of choice available to them. It is one way free men can enhance their welfare’

1.2.2 Survey of Empirical Studies:-

Nelson and Phelps (1966), find that working population with good quality education are relatively prone to be more innovative and absorptive of new technology compare to a labour force with minimal, poor or no education. They conclude that more educated economies grow faster than less educated economies.

Lucas (1988), revealed that the major importance of the educational system to any labour market would depend major in its ability to produce a literate, disciplined, flexible labour force via high quality education. Consequently, with economic development new technology is applied to production, which results in an increase in the demand for workers and better education. The work revealed that the growth rate of human capital, which is also dependent on the amount of time, allocated by individuals to acquire skills.

McMahon (2000) has argued that the direct effect of education on economic growth is separable from the indirect effect or externalities. Of these externalities, probably about 75 % are non-market outcomes which feed back into economic growth, but

are not readily measurable in the same way as GNP. The main non-market externalities are: health, including longevity, infant mortality and fertility; environmental impact, including various forms of pollution and deforestation; crime, including rule of law, crimes against the person as well as property crime; better income distribution and the issue of poverty; and democratization, including human rights and political stability.

Sianesi and Van Reenen (2000) concluded that an overall 1 % increase in school enrolment rates leads to an increase in GDP per capita growth of between 1 and 3 %. An additional year of secondary education which increases the stock of human capital, rather than just the flow into education, leads to more than a 1 % increase in economic growth each year

Wilson and Briscoe (2004) examines the links between education and training in a country and its macroeconomic growth. The study confirms that increased investment in education is shown to lead to higher productivity and earnings for the individual and similarly, such investment results in significant social rates of return.

Bergheim, (2005) approved that Education which is probably the most important determinant of human capital affects the output through various channels. It increases knowledge which helps to produce more output in relatively smaller time and also it is intuitively suggested that an educated person could learn much faster. Increase in the level of education also leads towards better health due to an increase in the awareness of the benefits of healthy living, which in turn increases the output. Moreover, education also enhances the labor force participation in an economy particularly in the case of female participation and output increases further, due to the higher labor force participation rate. Along with education, the role of experience is also very important in productivity growth.

Bakhsh, et al. (2006) conducted a study to estimate the factors which effected higher yields of radish. They concluded that the availability of good seed, more labor hours for weeding and more educated farmers who used latest technology can improve the production of radish.

Amin and Aaditya in their working paper entitled Human Capital and the Changing Structure of the Indian Economy by Using panel data for the fourteen major states of India over the 1980-2000 period, the authors estimate the effect of human capital endowment on the performance of the state economies. They find that greater availability of skilled workers had a positive and significant impact on output in the service sectors

Section II

1.2 RESEARCH METHODOLOGY

In this paper an effort is made to estimate and analysis the growth rate of education human capital in Jammu and Kashmir. Different methods can be used for the problem but in this paper both econometrics and non-econometrics methods were used for estimation. Besides graphs, charts and tables both percentage and compound growth rate methods are used in this paper the test like t test is used for different variables to test the significance. The secondary data was collected from various sources of the Jammu and Kashmir government reports and HRD reports of India.

1.2.1 Percentage growth rates:-

$$Y_n - y_0 / y_0 * 100$$

Where:

Y_n is new value

y_0 is old value in the series and resulting values are multiple by 100

1.2.2 Compound Annual Growth:-

Compound annual growth rates (CAGRs) for the overall period were estimated by fitting an exponential function of the following form:

$$Y_t = \beta_0 \beta_1 t e^{ut} \quad (1)$$

Where Y_t is the dependent variable, B_0 and B_1 are the unknown parameters, and U_t is the disturbance term. Equation (1) could be written in the logarithmic form as follows:

$$\text{Log } Y_t = \text{log} B_0 + t \text{ log } B_1 + U_t \quad (2)$$

Above equation was estimated by applying Ordinary Least Square method and Compound rate of growth (grc) was obtained by taking antilog of the estimated regression Coefficient, subtracting from it one and multiplying the difference by 100, as follows:

$$\text{grc} = (\text{anti log } b_1 - 1) 100 \quad (3)$$

Where b_1 is an estimate for B_1 . The significance of growth rates was tested by applying t-test, given as follows.

$$t = b_1 / s(b_1) \sim t(n-2) \text{ df} \quad (4)$$

Where b_1 is the regression estimate and $s(b_1)$ is the respective standard error.

Models Used:-

$$\text{Model 1 } \ln(\text{TEEP})_t = \beta_1 + \beta_2 t + \mu t$$

$$\text{Model 2 } \ln(\text{SER})_t = \beta_1 + \beta_2 t + \mu t$$

$$\text{Model 3 } \ln(\text{PER})_t = \beta_1 + \beta_2 t + \mu t$$

$$\text{Model 4 } \ln(\text{TER})_t = \beta_1 + \beta_2 t + \mu t$$

Here, Number of Expenditure on education, enrolment ratio at primary level, enrolment at secondary and enrolment at territory are dependent Variables and time period is Independent variable.

Where

TEEP – total education expenditure

PER – primary enrolment ratio

SCSE – secondary enrolment ratio

TER – territory enrollment ratio

Section III

1.3 RESULTS AND DISCUSSION

This section presents the results and discussion of the study. Measurement of growth has been one of the most extensively researched areas. The growth rate analysis provides the whole vision of growth performance. The year to year growth rates and compound annual growth rates (CAGRs) of expenditure on education, primary, secondary and territory enrollment ratio are shown in table 1.2. The results have been discussed in brief under the following two sub heads.

1.3.1 Expenditure on education:-

Perusal of year to year growth rates of number of expenditure on education as contained in column II of table 1.2 exhibits quite fluctuating trend of the growth rate. Starting from 30.25 percent in 1995-1996 it went down to 4.8 percent in the year 2001-02 and turned negative in 2006-07. Thereafter, the annual growth rates observed reached highest 128 percent in 2009-10 but didn't maintained the pace till reached negative and stood at -59 percent in 2012-13. However, a CAGR of 58.41 percent was observed for overall period of the study.

1.3.2 Enrollment ratios primary, secondary and territory:-

The primary enrollment ratios presented in the column third of the table 1.2 represented a dramatic and fluctuating trend. The growth rate was 10.8 percent in the starting year of the sample period but decreased continuously till 2002-03 and reached at negative 31.3 percent. However it started increasing then after and reached highest mark in 2004-05 completely 44 percent and started decreasing further as compared to 2004-05. However the CAGR of 1.41 percent was observed in the whole study period. The investigation of the growth of secondary enrollment ratio in the fourth column of the table 1.2 portrays phases of low, negative, moderate and spikes of high growth rates. Starting

from 17 percent in 195-96, reached to 32 percent in 2007-08. The growth rate was zero in 1999-2000 and was negative 31 percent in 2002-07. However the CAGR of 1.61 was witnessed in the whole period of study. The growth rates in the column fifth of the table 1.2 represents the growth rate of the territory education enrollment ratio. The variable shows similar trend. The growth rate of territory was highest in the year 2012-13 represented by 132 percent but was mostly negative and low. However the CAGR OF 5.02 was observed for the time period of the study. From the table 1.2, it is observed that the compound annual growth of education human capital by taking proxy variables as expenditure on education, primary enrollment, secondary and territory enrolment are 58.41%, 1.41%, 1.61 % and 5.02 % respectively. The coefficient value shows the relationship between the variables in the model and the obtained coefficients for all parameters show that independent variable has more positive and significant relation with dependent variable. The t-values of all the growth rates are significant at 5 % significance level. The R-square which is the coefficient of determination, shows the percentage of variation in the dependent variable that was accounted for by variation in the explanatory variables. It measures the explanatory power of the model. It is usually between zeros to one. The obtained R-square is also satisfactory for all variables.

1.4 CONCLUSION

The study aimed at estimating and analyzing the growth rate of education human capital in Jammu and Kashmir. The secondary data from 1995-96 to 2012-13 were used. Both econometric and non-econometrics approaches were used to estimate the year to year growth rates and compound annual growth rates (CAGRs). The expenditure on education, primary, secondary and territory enrollment ratio were taking as proxy variables for education human capital. The conclusion that emanates from the entire discussion is that the CAGR of expenditure on education was 58.41 percent and was highly significant. The CAGR of primary, secondary and territory enrollment were 1.41, 1.61 and 5.02 respectively and were highly significant. Following the findings the study recommends the attention of government to increase the standard of education in Jammu and Kashmir. Substantial amount of government budgetary allocation should be directed towards the educational sector is strongly recommended.

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APPENDIX

Table 1. 2 Compound Annual Year to year and Growth Rates (in percent)

Year	TEEP	PER	SER	TER
1994-95	-	-	-	-
1995-96	30.2559969	10.08526	17.8585086	-1.04054
1996-97	17.85311236	9.426864	10.64243997	28.66193
1997-98	19.58125305	7.178969	3.958944282	2.802341
1998-99	6.893199893	3.584906	7.898448519	-0.1605
1999-2000	10.84200226	0.664845	0.91503268	-0.23611
2000-01	13.66674298	1.221388	-1.930051813	23.40501
2001-02	4.88929467	-13.4877	28.80729098	22.92406
2002-03	9.544287408	-31.3152	-31.56275636	42.71369
2003-04	10.72567047	11.73285	-1.738088103	26.45113
2004-05	29.36140662	44.42649	23.78774016	-23.6027
2005-06	25.55397354	15.20321	3.190440995	-1.86599
2006-07	-29.91782668	-19.3139	-12.64175719	79.92051
2007-08	6.425283868	19.25391	32.63186663	22.77996
2008-09	-2.458985555	-14.2281	-13.45559448	5.642125
2009-10	128.52579	40.19608	21.42857143	-35.4558
2010-11	44.78104508	9.79021	16.66666667	-2.18512
2011-12	10.50957694	-6.36943	-2.521008403	-0.91755
2012-13	-59.80326473	23.80952	11.20689655	132.7731
2013-14	-8.494596922	4.89011	2.325581395	3.249097
CAGR				
CAGRs	58.41*	1.41*	1.61*	5.02*

Sources: authors own calculation based on figures in table1 *significant at 5 percent level of significance