An Empirical Analysis of Relationship between Higher Education and Economic Growth in India

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Abstract: **- "Education is the most powerful weapon which you can use to change the world" - Nelson Mandela**

Higher Education plays a vital role in achieving sustainable and inclusive growth of any country. It is an important input in the process of economic growth through its contribution to human capital. Indian Constitution made free and compulsory education to children between the ages of 6 and 14 as a fundamental right. The vision of higher education in India is to realize the country's human resources potential to its fullest extent with equity and inclusion. The higher education sector, in recent decades has witnessed a remarkable growth in its institutional capacity, enrolment, teacher-student ratio, funding, etc. The rapid expansion of the higher education system at the same time has brought several issues related to equity, efficiency, excellence and access to higher education. Government of India aimed at increasing Gross Enrolment Ratio (GER) in higher education to 21% during the Twelfth five year plan (2012-17).

Since the introduction of new economic policy in 1991 government of India has been encouraging private participation in higher education. According to the AISHE (2014-15) report, there are 757 universities, 38056 colleges and 11922 stand alone institutions and among them 267 universities are privately managed. There are 43 central universities, 14 open universities, 69 institutes of national importance, and 316 public universities. Out of the total higher education institutions 76% colleges are privately managed and among this 61% are private-unaided and 15% are private aided. Over last two decades, a growing Indian economy has led to increased demand for educated and skilled labour. To match the manpower needs of an accelerating economy, private institutions are encouraged to complement government education institutions.

In this scenario, an attempt is made in the present paper to analyze the relationship between the growth of higher education sector and economic development in India by using Granger's Causality Technique. This analysis is based on the secondary data collected from various published sources.

Keywords: **Higher Education, Economic Development, Gross Enrollment Ratio, Expenditure**

JEL Code: I23, O11

I. INTRODUCTION

Higher Education plays a vital role in achieving sustainable and inclusive growth of any country. It is an important input in the process of economic growth through its contribution to human capital. Indian Constitution made free and compulsory education to children between the ages of 6 and 14 as a fundamental right. The vision of higher education in India is to realize the country's human resources potential to its fullest extent with equity and inclusion. The higher education sector, in recent decades has witnessed a remarkable growth in its institutional capacity, enrolment, teacher-student ratio, funding, etc. The rapid expansion of the higher education system at the same time has brought several issues related to equity, efficiency, excellence and access to higher education.

Economic development means increase in choices to people and education is one of the critical inputs for promoting economic development. Theory of endogenous growth focuses on the importance of human capital as one of the main sources of the economic growth. The main engine of growth is the accumulation of human capital – of knowledge – and the main source of differences in living standards among nations is differences in human capital. Physical capital plays an essential but decidedly subsidiary role. (Lucas, 1993). Realizing this Government of India has set out the target of bringing the Gross Enrolment Ratio (GER) in higher education to 25 percent by the end of twelfth five year plan (2012-17) and to 30 per cent by the 2020. There is a two way relationship between economic growth and development of education. While education promotes growth through its contribution to human capital, economic growth provides the necessary financial resources for the promotion of this capital. In the present paper the relationship between the promotion of higher education and economic growth is analyzed at macro level.

II. REVIEW OF LITERATURE

There have been several studies on education and economic development focusing on different aspects. Some of the empirical studies are presented below.

Some empirical studies used education level to measure the level of human capital. The positive impact of education on the economic growth is confirmed in several studies (**Barro 1991; Mankiw et al. 1992, Pegkas, 2014**). Furthermore **Meulemeester and Rochat (1995)** analyzed the relationship between higher education and economic development for various developed countries using the Johansen co-integration and the Granger causality approach. Their results show that

there is a unidirectional causality running from higher education to economic development for three countries: Sweden (1910-1986), UK (1919-1987), and France (1899-1986). A study by **Khorasgani (2009)** using ARDL model demonstrates long and short-term relationship between higher education and economic growth of Iran. It was observed that higher education had a positive influence on the economic growth. In a recent study by **Obradovic et al (2016)** a unidirectional causality between higher education and real GDP per capita was found. This relationship was positive, but not mutually reinforcing. **Pandey (2016)** observed that, education is one of the most empowering tools for an individual. It lays the foundation for a better life. It prepares and trains workers at all levels to manage capital, technology services and administration at every sector in the economy.

III. RESEARCH GAP

From the review of earlier studies, it is observed that empirical studies relating to the relationship between education and economic growth considered several variables but very few focused on higher education in terms of Gross Enrolment Ratio (GER), expenditure and Gross Domestic Product in India. Therefore the present study fills this gap by analyzing the relationship between higher education and Gross Domestic Product (GDP) in India.

IV. OBJECTIVES OF THE STUDY

The central focus of this paper is to show the causal relationship between higher education and economic growth in India in the short and long run. The specific objectives of this study are:

1. To analyze the trends in public expenditure on higher education and gross enrollment in India
2. To analyze causality between higher education and Gross Domestic Product in India

V. HYPOTHESES OF THE STUDY

1. There is a significant increase in public expenditure on higher education and gross enrollment in India.
2. There is a significant positive relationship between higher education and Gross Domestic Product in India.

VI. METHODOLOGY OF THE STUDY

This study is primarily based on secondary data, collected from various annual published reports by MHRD and University Grant Commission (UGC) , NSSO, Economic survey of India and other reports for the period from 2000-01 to 2015-16. Granger's causality test has been used to test the relationship between higher education and GDP. Growth in higher education is measured by public expenditure on higher education and enrollment in higher education and economic growth is measured by annual growth rate in GDP. Compound Annual Growth Rate (CAGR) and percentages have been used to analyze the data.

VII. GROWTH OF HIGHER EDUCATION IN INDIA

Growth in enrollment is one of the indicators for measuring the growth of education sector. A trend in enrollment in higher education in India over a period of sixty years is presented in the table-1. Compound Annual Growth Rate (CAGR) is calculated to measure the growth rate in the enrollment of male and female students.

Table- 1 Trends in Enrollment in Higher Education in India (in Lakhs)

Year	Male	Female	Total
1950-51	4	0	4
1960-61	8	2	10
1970-71	26	7	33
1980-81	35	13	48
2000-01	54	32	86
2005-06	88	55	143
2006-07	96	60	156
2007-08	106	66	172
2008-09	112	73	185
2009-10	124	83	207
2010-11	155	120	275
2011-12	162	130	292
2012-13	166	135	301
2013-14	175	148	323
2014-15	185	157	342
CAGR	**0.291**	**0.337**	**0.345**

Source: MHRD report

The data reveals an increasing trend in the enrollment of both male and female students. While the enrollment of male students increased at an annual growth rate of 29 percent, the enrollment of female students increased by 34 percent. The overall growth rate was 34 percent. It is observed that the enrollment of male students showed a considerable increase after 2007-08. But in the case of female students visible increase is observed only after 2010-11. Another observation is that through the enrollment of female increased from 83 lakh in 2009-10 to 157 lakh in 2014-15, still there is a gender gap in enrollment during 2014-15. While 185 lakh male were enrolled during 2014-15, 157 lakh female were enrolled. The analysis shows that female enrollment is increasing at a higher rate, but still gender gap is maintained.

VIII. GROSS ENROLLMENT RATIO OF HIGHER EDUCATION IN INDIA

Gross Enrollment Ratio (GER) is a relatively better measure to understand the status of higher education. It shows the total enrolment in a specific level of education, regardless of age, expressed as a percentage of the eligible official

population corresponding to the same level of education in a given academic year. Data relating to the GER of male and female is presented in table-2.

Table- 2 Trends in Gross Enrollment Ratio of Higher Education in India

(18-23 years)

Year	Male	Female	Total
2001-02	9.3	6.7	8.1
2002-03	10.3	7.5	9
2003-04	10.6	7.7	9.2
2004-05	11.6	8.2	10
2005-06	13.5	9.4	11.6
2006-07	14.5	10	12.4
2007-08	15.2	10.7	13.1
2008-09	15.8	11.4	13.7
2009-10	17.1	12.7	15
2010-11	20.8	17.9	19.4
2011-12	22.1	19.4	20.8
2012-13	22.7	20.1	21.5
2013-14	23.9	22	23
2014-15	25.3	23.2	24.3

Source: MHRD reports

From the data it can be observed that GER has increased from mere 8 percent in 2001-02 to 24.3 by 2014-15 which is a considerable improvement. The GER increased considerably after 2010-11. It is also observed that the gender gap in GER at higher education is declining. Female enrollment increased from 6.7 percent in 2001-02 to 23.2 in 2014-15 while male enrollment increased from 9.3 to 25.3 during the same period. However there are differences in the enrollment of male and female students at higher education. While the enrollment ratio of male students crossed ten during 2002-03 itself, in the case of female students it crossed ten only after 2007-08. The gap continued and during 2014-15 the GER in the case of male students was 25.3 and a female student was 23.2.

IX. PUBLIC EXPENDITURE ON EDUCATION

Public expenditure plays an important role in improving the access to higher education. A trend in Public Expenditure on Education is presented in table-3.

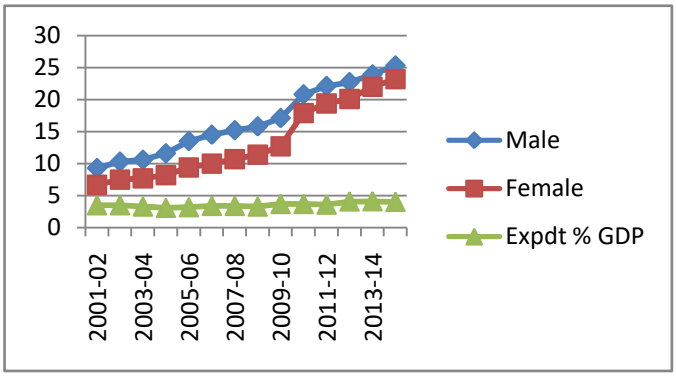
Table- 3 Public Expenditure on Education as Percentage of GDP in India

Year	Public Expenditure on Education as Percentage of GDP
2000-01	3.9
2001-02	3.5
2002-03	3.5
2003-04	3.3
2004-05	3.1
2005-06	3.2
2006-07	3.4
2007-08	3.4
2008-09	3.3
2009-10	3.7
2010-11	3.7
2011-12	3.6
2012-13	4.1
2013-14	4.13
2014-15	4.04

Source: MHRD report

The data shows the percentage of public expenditure on education by the Central and State governments as a proportion of GDP. It is observed that the share of public expenditure in GDP did not show much increase over the past twenty years. It was always below 4 percent till 2012-13. Only during 2012-13 it reached to 4.11 and in 2014-15 it was 4.04 percent. It is a matter of concern for the development of higher education and human development. When we look at the developed countries it is observed that the counties ranking high on HDI have spent large percentage of their GDP on education. The countries like Norway, the Netherlands, Ireland, Sweden etc have spent more than 5 percent of their GDP on education.

Figure-1 Higher Education Enrollment and Expenditure on Education



X. PUBLIC EXPENDITURE ON EDUCATION AT DIFFERENT LEVELS

Priority given to different stages of education reflects the changes in the policy and public expenditure. An analysis of public expenditure on education at different levels presented in table-4 indicates this.

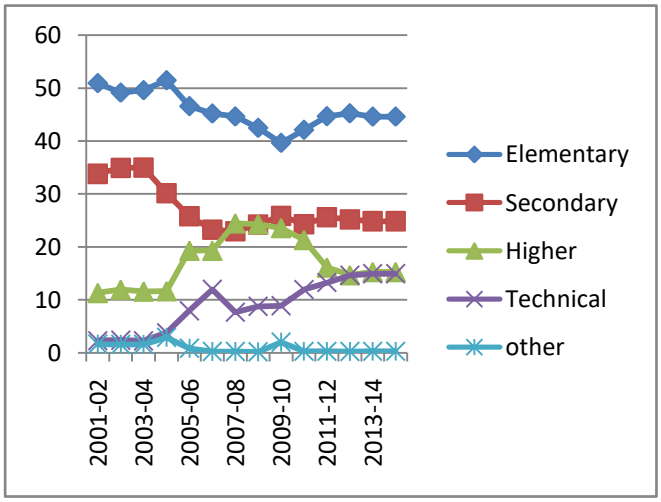
Table-4 Trends in Share of Expenditure on Education at different levels in India (Revenue Account)

Year	Elementary	Secondary	Higher	Technical	other
2001-02	50.91	33.8	11.34	2.32	1.64
2002-03	49.12	34.91	11.95	2.42	1.59

2003-04	49.57	34.95	11.61	2.28	1.59
2004-05	51.45	30.13	11.67	3.82	2.93
2005-06	46.56	25.8	19.31	7.96	0.89
2006-07	45.17	23.27	19.3	11.98	0.28
2007-08	44.62	22.98	24.47	7.67	0.26
2008-09	42.47	24.24	24.3	8.79	0.2
2009-10	39.63	25.87	23.59	8.91	2.0
2010-11	42.09	24.31	21.34	11.95	0.31
2011-12	44.66	25.62	16.14	13.28	0.3
2012-13	45.21	25.19	14.7	14.62	0.28
2013-14	44.59	24.86	15.29	14.95	0.31
2013-14	44.59	24.86	15.29	14.95	0.31

Source: Calculated from Analysis of Budgeted Expenditure on Education, Ministry of HRD, Govt. of India various issues

Figure-2 Share of Different Levels in Expenditure on Education in India



In the early years of 2001-02, elementary education was given greater priority with 51 percent of the funds flowing to this and only 11 percent was allocated for higher education. This percent was maintained until 2004-05. From the year 2005-06, the share of elementary education in the total expenditure on education declined and in turn expenditure on higher education increased. There is a decline in the share of secondary education, but increase in the share of technical education. These changes reflect the change in the National policy on education 1986, revised in 1992. The policy document says that in the context of the unprecedented explosion of knowledge, higher education has to become dynamic as never before, constantly entering uncharted areas (NPE, 1986).

XI. PUBLIC EXPENDITURE BY CENTRE AND STATE GOVERNMENTS

The 42nd constitutional amendment act of 1976, placed education sector under concurrent list indicating that both central and state governments have the responsibility of promoting education. Accordingly, the financial assistance comes from both the central and state governments. Trends in the allocation of funds by the central and state government is presented in table -5.

Table- 5 Trends in the Share of Centre and States in Public Expenditure on Education in India

(Rs. in crore)

Year	State	Share of State	Centre	Share of Centre	Total
1999-2000	63909.23	85.42	10906.86	14.58	74816.09
2000-01	72290.53	87.64	10195.95	12.36	82486.48
2001-02	65746.19	82.32	14119.52	17.68	79865.71
2002-03	69350.7	81.10	16156.63	18.90	85507.33
2003-04	71978.28	80.80	17100.97	19.20	89079.25
2004-05	78668.14	81.36	18025.96	18.64	96694.1
2005-06	90018.94	79.50	23209.77	20.50	113228.71
2006-07	103147.47	75.08	34236.52	24.92	137383.99
2007-08	115877.9	74.38	39919.37	25.62	155797.27
2008-09	141091.25	74.62	47977.59	25.38	189068.84
2009-10	177232.79	73.46	64023.23	26.54	241256.02
2010-11	212817.5	72.52	80660.73	27.48	293478.23
2011-12	247855.86	74.22	86074.52	25.78	333930.38
2012-13	278375.27	75.62	89757.6	24.38	368132.87
2013-14	332046.33	76.57	101594.26	23.43	433640.59
2014-15	380440.01	75.64	122489.34	24.36	502929.34
CAGR	***0.118***		***0.163***		***0.126***

Source: Ministry of Human Resources Govt of India. (Budgetary Analysis) various issues

The data reveals that there is as continuous increase in both central and state governments expenditure. However, the expenditure by the state governments has grown at a lower rate compared to the central expenditure. While central expenditure has recorded a growth rate of 16 percent, state expenditure has grown by 12 percent between 1999-20000 and 2014-15. The data also shows the declining share of state governments and correspondingly the increase in the share of central government. While the share of states declined from 87.64 percent in 2000-01 to 75.64 percent by 2014-15 and at present one fourth of the education expenditure is supported by the central government. This is due to the introduction of several centrally sponsored programmes for increasing enrollment.

XII. CENTRAL AND STATE GOVERNMENT EXPENDITURE ON HIGHER EDUCATION IN INDIA

As observed earlier, there is a shift in the priorities of education expenditure at different levels. Greater priority is given to higher education in subsequent education policies. Growth rate in the public education on higher education by

the central and state governments over a period of 20 years is presented in table-6.

Table- 6 Trends in States & Central Government Expenditure on Higher Education in India (In Crores)

Year	Total Expenditure by States	AGR	Total Expenditure by Central	AGR
1990-91	1836.4	-	475.5	-
1991-92	1948.1	0.113	495.6	0.1413
1992-93	2195.1	0.104	504.9	0.1413
1993-94	2589.3	0.091	514.2	0.1404
1994-95	2841.1	0.091	684.2	0.1256
1995-96	3158.1	0.086	713.1	0.1235
1996-97	3571.3	0.08	716.5	0.1233
1997-98	3920.9	0.075	938.1	0.1096
1998-1999	4516.8	0.068	1599.9	0.0830
1999-2000	6047	0.054	2201.4	0.0674
2000-01	6909.4	0.048	2285.3	0.0656
2001-02	6440.0	0.051	1647.6	0.0816
2002-03	7107.7	0.047	1751.8	0.0786
2003-04	7298.5	0.045	1761.5	0.0783
2004-05	7404.2	0.045	2099	0.0697
2005-06	8681.9	0.037	2331.4	0.0646
2006-07	9585.4	0.032	2955.5	0.0532
2007-08	10416	0.029	3895.3	0.0401
2008-09	12098.6	0.022	6506.4	0.0161
2009-10	15939.4	0.009	8346.6	0.0047
2010-11	17131.9	0.006	8553.76	0.0035
2011-12	19344.7		9246.85	
CAGR	***0.112965***		***0.1444***	

Source: Annual Reports of MHRD

The data shows that expenditure by states increased from Rs1836.4 crores in 1990-91 to Rs19344.7 crores by 2011-12. But the growth rate is not continuous across years. Annual growth rate shows that up to 1997-98, the annual growth rate was between 11 and 7 percent. Later it has shown a slower growth rate ranging from 6 to 4 percent. Similar trend is observed in the case of central expenditure also. In the early period the annual growth rate was 14 to 12 percent and later it declined to 6-4 percent. Compound Annual Growth during the entire period shows that while expenditure by the states increased by 11 percent and expenditure by the center increased by 14 percent.

XIII. GROWTH IN GDP AND PUBLIC EXPENDITURE ON EDUCATION

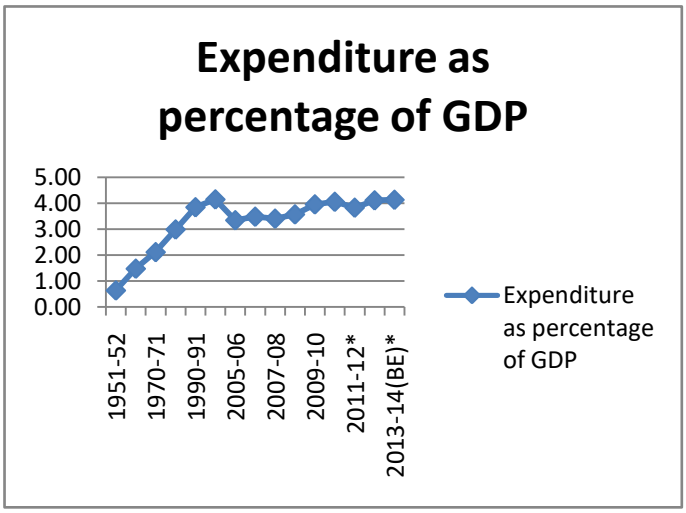
Increase in the GDP of any country provides greater opportunity for increased expenditure on education. Trends in GDP and expenditure on education since the introduction of planning period in India is presented in table- 7.

Table - 7 Trends in Gross Domestic Products and Total Expenditure on Education in India (Rs in crore)

Year	GDP at Current price (at factor cost)	Total Expenditure on Education	Expenditure as percentage of GDP
1951-52	10080	64.46	0.64
1960-61	16220	239.56	1.48
1970-71	42222	892.36	2.11
1980-81	130178	3884.2	2.98
1990-91	510964	19615.85	3.84
2000-01	1991982	82486.48	4.14
2005-06	3390503	113228.7	3.34
2006-07	3953276	137384	3.48
2007-08	4582086	155797.3	3.40
2008-09	5303567	189068.8	3.56
2009-10	6108903	241256	3.95
2010-11	7248860	293478.2	4.05
2011-12*	8736039	333930.4	3.82
2012-13(RE)*	9951344	408421.7	4.10
2013-14(BE)*	11272764	465142.8	4.13

Source: Ministry of Human Resource Development, Government of India

* Base year has been revised from 2004-05 to 2011-12



The data shows a considerable increase in GDP and also public expenditure on education. Expenditure on education increased from Rs. 64.46 crores in 1951-51 to Rs. 465142.8 crores by 2013-14. However the share in GDP has not shown considerable increase. There is a reduction in the share of expenditure during 2005-06 to 2006-07 but later it increased to around three percent.

XIV. STATE-WISE EXPENDITURE ON EDUCATION AND GROSS STATE DOMESTIC PRODUCT (GSDP)

Education being in the concurrent list state governments also contributes to the promotion of education. The share of education expenditure in GSDP across different states during 2014-15 has been presented in table 8.

Table-8 Trends in Budgeted Expenditure on Education and Gross State Domestic Product (GSDP) of States and UTs during 2014-15

States/UTs	GSDP at Current Prices	Total Expenditure on Education	Share of Education Expenditure in GSDP
Andhra P	526468	19225.4	3.65
Arunachal	16761	1471.83	8.78
Assam	198098	14605.8	7.37
Bihar	373920	27961.9	7.48
Chhattisgarh	234982	8590.53	3.66
Goa	40633	1447.1	3.56
Gujarat	895027	20059.2	2.24
Haryana	437462	11898	2.72
Himachal	104369	4676.62	4.48
Jammu	100404	5541.21	5.52
Jharkhand	217107	6665.32	3.07
Karnataka	921788	24588.6	2.67
Kerala	526002	16412.7	3.12
Madhya.p	481982	15828	3.28
Maharashtra	1792122	45958.9	2.56
Manipur	18043	935.32	5.18
Meghalaya	24408	1221.56	5.0
Mizoram	11559	985.77	8.53
Nagaland	18414	1221.88	6.64
Odisha	321971	11540.6	3.58
Punjab	368011	9009.42	2.45
Rajasthan	612194	20708.9	3.38
Sikkim	15209	771.92	5.08
Tamilnadu	1092564	26173.7	2.4
Telangana	511178	7845.03	1.53
Tripura	29667	1489.56	5.02
Uttarakhand	161985	5737.37	3.54
Uttar .p	1043371	36946.6	3.54
West.Bengal	706561	23395	3.31
A&N	5721	456.37	7.98
Chandigarh	27844	680.62	2.44
Delhi	492424	5135.62	1.04
Puducherry	24089	827.35	3.43
All India	***12433749***	***502929***	***4.04***

Source: Analysis of budgeted Expenditure on Education 2012-15 report

The data reveals a considerable variation across the states. The share of expenditure on education ranges from 8.78 percent in Arunachal Pradesh to 1.04 percent in Delhi and 1.53 percent in Telangana. It is observed that states with higher GDP (Tamilnadu, Uttar Pradesh, Maharashtra, Gujarat, and Karnataka) are spending lower share of GSDP (2 to3 percent) on education and states with lower GSDP(Arunachal Pradesh, Manipur, Goa, Mizoram, Tripura, Andaman and Nicobar, Pondicherry) are spending more than 5 percent of the GSDP on education. It is justified because in absolute amounts the richer states also would be spending the same amount.

XV. RELATIONSHIP BETWEEN PUBLIC EXPENDITURE ON EDUCATION AND ECONOMIC GROWTH

The relationship between GDP and growth in higher education has been analyzed using the Granger Causality Test. It is based on the hypothesis that increased GDP contributes to the promotion of higher education and on the other hand increased higher education contributes to economic growth through the promotion of human capital. While economic growth is indicated by GDP, growth in higher education is indicated by enrollment rate and expenditure on higher education. The results are presented below.

Result and Discussion Granger Causality Test

Pairwise Granger Causality Tests

Sample: 1 10

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
ENR does not Granger Cause GDP	9	3.86088	0.0970
GDP does not Granger Cause ENR		1.04494	0.3461
EXP01 does not Granger Cause GDP	9	21.8002	0.0034
GDP does not Granger Cause EXP01		0.09161	0.7724
EXP01 does not Granger Cause ENR	9	10.2984	0.0184
ENR does not Granger Cause EXP01		3.50189	0.1105

The above table shows the result of Pairwise granger Causality test for the three variables such as GDP, Enrollment in Higher education and Expenditure on education in India for the years from 2005-6 to2014-15. The result indicates the probable causality between education expenditure and GDP. The causality runs from expenditure on education to increase in GDP. The causality is indicated by the significant P value. This means that expenditure on education is causing an increase in GDP through its contribution to human capital. The causality runs from expenditure on education to GDP and it is significant, but not the GDP on expenditure indicating that increased GDP has not caused increase in expenditure.

Expenditure on education (0.01 P-value) also found to be influencing increase in enrollment in higher education with high F – Value (10.2984) and here also relationship is not vice versa. A weak relationship between enrollment and GDP is observed.

XVI. SUMMARY AND CONCLUSIONS

Higher Education plays a vital role in achieving sustainable and inclusive growth of any country. It is a very important factor influencing the short and long term economic growth through its contribution to human capital which is a critical input for the social, economic and technical development of the economy. It is a powerful tool to build knowledge based economy of the 21st century. India possesses a highly developed higher education system after USA and China which offers education and training in almost of all branches of knowledge.

The study shows that India's higher Education sector has witnessed a remarkable growth during the past one decade. Today, the country has a well developed higher education system in terms of number of institutions and enrollment. There is a continuous progress in higher education especially in terms of number of institutions and gross enrollment in both public and private sector institutions.

The analysis shows that the enrollment of male students increased at an annual growth rate of 29 percent and the enrollment of female students increased by 34 percent over a period of fifty years. It is observed that the enrollment of male showed a considerable increase after 2007-08. But in the case of female students visible increase is observed only after 2010-11. Another observation is that through the enrollment of female increased from 83 lakhs in 2009-10 to 157 lakhs in 2014-15, still there is a gender gap in enrollment during 2014-15.

GER has increased from a mere 8 percent in 2001-02 to 24.3 by 2014-15 which is a considerable improvement. The GER increased considerably after 2010-11. It is also observed that the gender gap in GER at higher education is declining. Female enrollment increased from 6.7 percent in 2001-02 to 23.2 in 2014-15 while male enrollment increased from 9.3 to 25.3 during the same period.

The share of public expenditure in GDP did not show much increase over the past twenty years. It was always below 4 percent till 2012-13. Only during 2012-13 it reached to 4.11 and in 2014-15 it was 4.04 percent. It is a matter of concern for the development of higher education because higher allocations for education are very essential for the promotion of human capital.

Over a period of time there is a change in the expenditure on different levels of education. The share expenditure on elementary education was high in the year 2001-02. Later it declined to 44.59 in 2013-14. But this declined expenditure is diverted towards higher education. The share of expenditure on higher education is increasing in over a period. The expenditure by the state governments has grown at a lower rate compared to the central government expenditure. While central expenditure has recorded a growth rate of 16 percent, state expenditure has grown by 12 percent between 1999-20000 and 2014-15.

The study revealed that the expenditure on education has increased at a much higher rate compared to the GDP and there is a lot of disparity among the states and union territories in expenditure on education. It is observed that richer and highly literate states and union territories such as Andhra Pradesh(3.65%),Maharashtra(2.56%),Gujarat (2.24%),Tamil Nadu (2.4%), Uttar Pradesh (3.54 %), Kerala (3.12%) have been spent lesser percentage of GDP on education compared to low and middle income states and Union territories such as Arunachal Pradesh(8.78%),Mizoram(8.53%),Bihar(7.84%), Assam(7.37%), and Tripura(5%) .

The study found that that there is a causal relationship between expenditure on higher education and GDP indicating that increased expenditure on education is contributing to economic growth through its contribution to human capital. Positive link between expenditure and enrollment in higher education is observed. The analysis suggests for increased expenditure on higher education in order to promote higher economic growth in India.

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