State - Wise Public Expenditure on Higher Education in India : An Empirical Analysis

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Abstract

Public expenditure is a major component of education expenditure in India. Though the higher - education expenditure in India increased significantly after Independence, budgetary allocations to higher education were squeezed off in the post economic reforms period and this sector also suffered significantly. The proportionate spending on the higher - education sector in India is much below the Central Advisory Board of Education (CABE) committee recommendation of 1% of gross domestic product for general higher education. The present study aimed to analyze state-wise disparity in public higher education expenditure in India by different parameters like per capita and per student higher education expenditure in terms of plan and non expenditure as well as revenue and capital expenditure. The regression results revealed that many states had elasticity of higher - education expenditure to gross state domestic product (GSDP) less than unity. Central and state governments of India should implement policies for more funding in the higher - education sector.

Keywords : **elasticity, GSDP, higher education, India, public expenditure**

JEL Classification : H52, H75, I22, I23, I28

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No country can achieve sustainable development without sustainable investment in human capital. Higher education has been found to be significantly related to the human development index and is greater for the disadvantaged groups (Joshi, 2006). During the 21st century, education, skill, and the acquisition of knowledge have become crucial determinants of people and productivity of nations (Al - Alak, 2009 ; Jana, 2012, 2017). Though all education levels have significant impact on economic growth in the short run, in the long run, only tertiary education shows significant impact on economic growth (Shaihani, Haris, Ismail, & Said, 2011). Long ago, in 1966, the Kothari Commission recommended that the government should allocate 6% of national income to education. The country is still far away from the quantum suggested by the Kothari Commission. Though expenditure on education has increased in nominal terms, in real terms, expenditure on education has decreased (Khan, 2013). It is well known that our education system is severely starved of funds, and it requires huge sums for quantitative expansion, improvement in quality and equity, strengthening diversity, and other vital aspects of educational development (Tilak, 2005). Public funding should be such that different levels of education can meet their needs in promoting access, equity, and quality of education. In the recent years in India, it was promised that about half of the allocation of education would be made available for elementary education, meaning that the remaining half would be post-elementary education (Tilak, 2006). Only 12.6% of total

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Table 1. Percentage Expenditure on Each Sub - Sector of Education in India (Revenue Account), 2014 -15

	% to Education Expenditure	% to GDP
Elementary	51.7	1.93
Secondary	29.1	1.09
Higher (General)	12.6	0.47
Higher (Technical)	4.7	0.18
Others*	1.9	0.07
Total	**100**	**3.75**

Source : Ministry of Human Resource Development, Government of India (2015) and Reserve Bank of India (n.d.)

Note. *includes expenditure on adult education, physical education, general education, and language development.

education expenditure was available for higher general education in India in 2014-15. Report of the Central Advisory Board of Education (CABE) (2005) on financing higher and technical education suggested that of the proposed 6% of GDP to education, 3% should be allocated to elementary education, 1.5% to secondary education, 1% to higher general education, and 0.5% to higher technical education (Ministry of Human Resource Development, Department of Secondary and Higher Education, Government of India, 2005). In 2014 - 15, elementary education received 1.93% of GDP, secondary education 1.09%, higher general education 0.47%, and technical education 0.18%. Although we promised 6% of GDP to education, we spent only 3.75% (Table 1).

Education expenditure in India is mostly a state - sponsored activity. Higher education expenditure has increased significantly after Independence, but after economic reforms during the 1990s, budgetary allocations to higher education were squeezed off, and this sector suffered significantly. Quantum of government spending on higher education increased, but it was offset by increase in prices, increase in population, and increase in number of students in this sector. These trends, taken together, led to a sharp decline in real per student expenditure. After 71 years of independence, higher education is still not accessible to all sections of the people. Inter-state variations in terms of access, equity, and quality in higher education have significant problems in India. Unsatisfactory funding pattern is mainly responsible for this crisis of higher education across different states in the country. In this context, we are interested in studying the public higher education expenditure pattern across major states of India.

Literature Review

Some of the studies on expenditure on higher education are mentioned here. Chattopadhyay (2007) opined that higher education holds the key to inclusive growth and to lead in the world of knowledge production. According to Tilak (2003), the development experience of many developing and developed countries showed the importance of higher education for economic growth. It was only those countries that had developed their higher education systems and attained a gross enrolment ratio of at least 20% could achieve economic miracles, and not others. The empirical study done by Mallick and Dash (2015) investigated the dynamics of educational expenditure and economic growth in India during the period from 1951 to 2012, and they found that there existed unidirectional Granger causality from education to economic growth. According to Teles and Andrade (2004), the significance of the relation between public spending on education and economic growth was altered by changes in the composition of government spending with regard to basic and higher education, and this relation might be insignificant when higher education was not promoted. According to Tilak (2018), policy makers often pitted higher education against school education, particularly elementary education, arguing that given the constitutional compulsions of universalization of elementary education, higher education cannot be given any priority. It was also argued that developing countries like India that are constrained by resources cannot afford to,

and hence, should not spend on higher education, as if we have to choose one of the two, and not both. Tilak (2004) showed that trends indicated a growing public apathy for higher education, which is evident with falling public expenditure in the sector. Along with this, a coherent policy has not evolved on its development. This led to erratic and unregulated growth of private higher education.

Tomar (2017) showed that in Punjab and Haryana, total education expenditure and expenditure on major heads of education had increased in absolute terms during 1990 - 2013, but as a percent of state education budget, state budget, and state income, the expenditure declined. According to Rajalakshmy (2012), the amount of spending in the higher-education sector in India did not increase commensurate with global standards and needs. According to Chakrabarti and Joglekar (2006), educational expenditure at all levels was significantly lower after liberalization vis-à-vis the pre-economic reform era. This was particularly detrimental for the vulnerable sections of the population as higher education has generally been treated as a 'public good,' at least as a 'quasi-public good'.

Prakash (2007) concluded that public good nature of higher education warranted that the state should play a more active role in the financing of higher education. After adoption of the New Economic State Policy, funding to education in general and higher education, in particular, declined in real terms. The mode of financing of higher education is crucial for understanding how higher education is provided to the society and at what price. Prakash (2007) found that per student public expenditure on higher education increased in nominal terms but declined in real prices. Anand (2014) showed that the proportionate spending on overall education and the higher education sector, in particular, was very low in India as compared to developed countries in the world. A study in West Bengal by Jana, Maiti, and Manna (2018) confirmed that the basic problem of higher - education institutions, as perceived by students, was the lack of availability of resources.

The higher education system in India is facing enormous pressure in recent times. There has been a remarkable growth in the number of higher education students in India. On the other hand, there is also an inadequacy of resources for providing higher education. The main sources of public funds for higher education in India are mainly the central government and state governments. However, there is a limited number of studies on state disparity on public higher - education expenditure in India. The present paper attempts to explore the discrepancy among states of India in terms of per capita higher - education expenditure and elasticity of higher-education expenditure.

Objectives

The present study aims to analyze state wise disparity in public higher education expenditure in India using the following parameters :

(i) Share of higher education expenditure to gross state domestic product.

(ii) Share of higher education to total education expenditure by the states.

(iii) State-wise plan and non-plan expenditure on higher education.

(iv) State-wise revenue and capital expenditure on higher education.

(v) State-wise per head higher education expenditure in India.

(vi) State-wise elasticity of higher education expenditure to GSDP.

Methodology

Method : We have used the following relations in our analysis :

(i) Allocation of Resources for Higher Education by the State =

$$\frac{\text{Higher education expenditure by the state for a particular financial year}}{\text{Gross State Domestic Product for that year}} \times 100$$

(ii) Priority Given to Higher Education by the State =

$$\frac{\text{Higher education expenditure by the state for a particular financial year}}{\text{Gross State Domestic Product for that year}} \times 100$$

(iii) Share of Plan and Non - Plan Expenditure :

$$\text{Share of Plan Expenditure} = \frac{\text{Plan higher education expenditure}}{\text{Total higher education expenditure}} \times 100$$

$$\text{Share of Non-Plan Expenditure} = \frac{\text{Non-Plan higher education expenditure}}{\text{Total higher education expenditure}} \times 100$$

(iv) Share of Revenue and Capital Expenditure :

$$\text{Share of Plan Expenditure} = \frac{\text{Plan higher education expenditure}}{\text{Total higher education expenditure}} \times 100$$

$$\text{Share of Non-Plan Expenditure} = \frac{\text{Non-Plan higher education expenditure}}{\text{Total higher education expenditure}} \times 100$$

(v) Per Head Higher Education Expenditure :

Per Student Higher Education Expenditure =

$$\frac{\text{Total higher education expenditure by the state for a particular financial year}}{\text{Total enrolment in higher education of respective state for that year}}$$

Per Capita Higher Education Expenditure =

$$\frac{\text{Total higher education expenditure by the state for a particular financial year}}{\text{Total population between the age group of 18-23 of respective state for that year}}$$

We determine elasticity coefficients by fitting log - log regression model. In our analysis, we determine state wise elasticity of public expenditure on higher education to state income (GSDP) by fitting the following models :

$$\ln(PHE) = \alpha_1 + \beta_1 \ln(GSDP) + u \qquad (1)$$

where,

$\ln(PHE)$ = logarithm of annual public higher education expenditure,

$\ln(GSDP)$ = logarithm of annual gross state domestic product,

u is the error term of the model and α_1 is the intercept term of the model.

We estimate the regression coefficient by applying ordinary least square (OLS) regression technique.

β_1 = Elasticity coefficient of public higher education expenditure to total income of the state (GSDP).

We did the analysis for the period from 2004 - 05 to 2014 - 15.

Analysis and Results

(1) State - Wise Higher Education Expenditure : This section presents the public expenditure pattern on higher education across states in India. The level of expenditure by government reveals the relative importance given to the sector. The analysis of major parameters across states has been done to understand the relative priorities given to higher education.

(i) State - Wise Education Expenditure Percentage to GSDP in India : The primary responsibility for education

Table 2. Education Expenditure Percentage to GSDP

Region	States	Total Education Expenditure % to GSDP			Higher Education Expenditure % to GSDP		
		2004-05	2009-10	2014-15 (BE)	2004-05	2009-10	2014-15 (BE)
Central	Chhattisgarh	2.3	3.2	3.8	0.26	0.16	0.15
	Madhya Pradesh	2.2	2.5	2.6	0.27	0.20	0.24
Eastern	Bihar	3.3	4.4	5.9	0.68	0.57	0.92
	Jharkhand	2.1	2.8	2.9	0.22	0.35	0.48
	Odisha	2.5	3.2	3.3	0.39	0.56	0.55
	West Bengal	2.3	2.9	2.6	0.28	0.34	0.28
North Eastern	Arunachal Pradesh	5.4	7.3	8.2	0.54	0.44	0.46
	Assam	4.5	4.2	7.2	0.49	0.51	0.95
	Manipur	6.1	4.8	5.5	1.38	0.86	1.01
	Meghalaya	4.0	3.6	4.2	0.36	0.37	0.48
	Mizoram	7.1	7.7	8.9	0.77	0.83	1.07
	Nagaland	3.8	4.0	5.4	0.34	0.34	0.47
	Sikkim	8.8	6.3	5.6	0.23	0.21	0.14
	Tripura	5.3	5.0	5.0	0.27	0.26	0.30
Northern	Haryana	1.7	2.4	2.5	0.20	0.28	0.26
	Himachal Pradesh	4.2	3.9	4.9	0.26	0.28	0.33
	Jammu and Kashmir	2.5	3.4	4.5	0.34	0.38	0.59
	Punjab	2.1	1.8	2.2	0.20	0.24	0.19
	Uttarakhand	4.2	4.1	3.6	0.31	0.21	0.20
	Uttar Pradesh	2.6	3.0	3.3	0.22	0.20	0.21
Southern	Andhra Pradesh	3.1	2.9	2.7	0.43	0.45	0.42
	Karnataka	2.6	2.4	2.9	0.30	0.22	0.37
	Kerala	3.0	2.5	3.3	0.44	0.34	0.47
	Tamil Nadu	2.0	2.2	2.2	0.23	0.22	0.22
Western	Goa	2.4	2.2	2.1	0.47	0.36	0.32
	Gujarat	1.9	1.8	2.1	0.17	0.14	0.15
	Maharashtra	2.4	2.5	2.3	0.22	0.19	0.25
	Rajasthan	3.0	3.4	3.4	0.21	0.20	0.19
All States		**2.5**	**2.7**	**3.0**	**0.28**	**0.27**	**0.32**

Source: Ministry of Human Resource Development, Government of India (2015) and Reserve Bank of India (n.d.)

Note. BE = Budget Estimate

expenditure lies with the states, though education falls under the concurrent list. The share of education expenditure in gross state domestic product (GSDP) is the most widely used indicator to measure the priority given to education by states in India. A high percentage of GSDP invested on education denotes a higher level of attention given to education. During 2004 - 05, the expenditure on education by all states was 2.5% of the total GSDP of the states. During 2014-15, this was increased to 3%. For the time period under study (2004 - 05 to 2014 - 15), states like Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim, and Tripura were spending relatively higher proportion of the GSDP on education amongst all the states of the country.

The Table 2 also presents state - wise higher education expenditure percentage to GSDP during 2004-05 to 2014-15. During 2004-05, the higher education expenditure by all states was 0.28%, and then it was increased to 0.32% of GSDP in 2014-15. During 2014-15, states like Assam, Bihar, Manipur, Mizoram, Odisha, and Jammu & Kashmir spent a relatively higher proportion of the GSDP on higher education among all the states of India.

The data in Table 2 also shows that in most of the states, proportionate expenditure on education in GSDP increased in the study period. However, this did not happen in case of higher education. In 11 states (mostly in Eastern and North-Eastern states) out of 28 states, the share of higher education to SDP increased.

(ii) State - Wise Priority Given to Higher Education : Relatively high percentage of expenditure committed to

Table 3. Expenditure on Higher Education as a Percentage of Budgeted Expenditure (Revenue Account)

Region		Percentage to Total Government Budget			Percentage to Education Budget		
		2004-05	2009-10	2014-15 (BE)	2004-05	2009-10	2014-15 (BE)
Central	Chhattisgarh	1.7	0.9	0.7	11.1	5.0	3.8
	Madhya Pradesh	1.7	1.3	1.2	12.4	7.9	9.0
Eastern	Bihar	3.6	2.9	3.7	20.5	13.0	15.4
	Jharkhand	1.6	2.1	2.4	10.4	12.8	16.7
	Odisha	2.4	3.6	2.8	15.3	17.4	16.7
	West Bengal	**2.1**	**2.3**	**2.1**	**11.8**	**11.9**	**10.6**
North Eastern	Arunachal Pradesh	1.2	0.9	0.8	10.1	6.0	5.6
	Assam	2.5	2.3	3.3	10.7	12.6	13.2
	Manipur	4.3	2.3	1.7	22.7	17.8	19.5
	Meghalaya	1.5	1.5	1.2	9.0	10.2	11.5
	Mizoram	1.5	1.6	1.5	10.8	10.7	10.7
	Nagaland	1.2	1.1	1.2	9.1	8.5	8.8
	Sikkim	0.2	0.5	0.4	2.6	3.4	3.0
	Tripura	1.1	1.0	1.1	5.1	5.2	6.7
Northern	Haryana	1.7	2.5	2.0	11.9	11.7	11.2
	Himachal Pradesh	1.1	1.2	1.5	6.1	7.3	7.3
	Jammu & Kashmir	1.1	1.2	1.7	13.7	11.1	13.1
	Punjab	1.1	1.7	1.4	9.1	13.5	8.7
	Uttarakhand	1.5	1.4	1.1	7.3	5.0	5.7
	Uttar Pradesh	1.3	1.2	1.1	8.5	6.7	6.3
Southern	Andhra Pradesh	1.8	1.9	2.2	13.7	15.2	15.8
	Karnataka	2.0	1.6	2.4	11.6	9.1	12.8

	Kerala	3.0	2.5	3.1	14.8	13.6	17.0
	Tamil Nadu	1.7	1.8	1.6	11.3	9.9	10.0
Western	Goa	3.1	2.5	2.2	19.4	16.3	15.6
	Gujarat	1.4	1.3	1.2	9.0	7.8	7.0
	Maharashtra	1.8	1.7	2.1	9.2	7.7	10.7
	Rajasthan	1.3	1.3	1.1	6.8	6.0	5.5
All States		**1.8**	**1.8**	**1.9**	**11.0**	**9.8**	**10.8**

Source: Ministry of Human Resource Development, Government of India (2015) and Reserve Bank of India (n.d.)
Note. BE = Budget Estimate

specific level of education denotes the priority given to that level of education in the government's education policy and resource allocation. State wise study of expenditure on higher education shows that during the period under study, higher education was not a preferable sector as compared to primary and secondary education across all states and due concentration and priority was given to these sectors (primary & secondary) in budget of the state governments. During 2004-05, out of the total expenditure on education sector, all states spent 11.0% on higher education. During 2014-15, share of higher education decreased to 10.8% of the total education budget. The Table 3 presents state wise higher education expenditure percentage to total government budget and total education budget.

(iii) State - Wise Plan and Non - Plan Expenditure on Higher Education in India : Public expenditure on education is also classified as plan and non-plan expenditure. Plan expenditure refers to the expenditure which is incurred

Table 4. Plan and Non - Plan Expenditure on Education as Percentage of Total Expenditure in 2014-15 (BE)

Region	States	Higher Education		Total Education*	
		Plan	Non - Plan	Plan	Non-Plan
Central	Chhattisgarh	71.1	28.9	65.1	34.9
	Madhya Pradesh	4.6	95.4	14.1	85.9
Eastern	Bihar	5.4	94.6	51.0	49.0
	Jharkhand	13.7	86.3	23.2	76.8
	Odisha	31.5	68.5	48.0	52.0
	West Bengal	8.5	91.5	27.8	72.2
North Eastern	Arunachal Pradesh	54.9	45.1	57.0	43.0
	Assam	14.6	85.4	25.8	74.2
	Manipur	8.0	92.0	18.1	81.9
	Meghalaya	9.4	90.6	42.4	57.6
	Mizoram	48.5	51.5	52.3	47.7
	Nagaland	3.7	96.3	3.8	96.2
	Sikkim	73.9	26.1	37.8	62.2
	Tripura	4.0	96.0	16.6	83.4
Northern	Haryana	32.4	67.6	41.3	58.7
	Himachal Pradesh	31.5	68.5	11.9	88.1
	Jammu & Kashmir	16.4	83.6	11.5	88.5
	Punjab	14.4	85.6	23.5	76.5

	Uttarakhand	23.1	76.9	20.8	79.2
	Uttar Pradesh	1.8	98.2	17.7	82.3
Southern	Andhra Pradesh	1.5	98.5	7.3	92.7
	Karnataka	24.8	75.2	39.1	60.9
	Kerala	15.2	84.8	14.8	85.2
	Tamil Nadu	3.8	96.2	25.1	74.9
Western	Goa	30.2	69.8	32.0	68.0
	Gujarat	9.4	90.6	24.8	75.2
	Maharashtra	2.4	97.6	7.1	92.9
	Rajasthan	14.1	85.9	26.8	73.2
All States		**11.7**	**88.3**	**25.2**	**74.8**

Source : Ministry of Human Resource Development, Government of India (2015)

out of the funds provided under different specified plans and programmes of development of the state/country. On the other hand, non-plan expenditure is committed expenditure for the maintenance of the existing infrastructure. The Table 4 presents state - wise breakdown of education expenditure in plan and non-plan expenditure for the time period of 2014-15. During this year, the non-plan expenditure in higher education was 88.3% and plan expenditure was 11.7% in all states in India. During the same time period, the non-plan expenditure in higher education was 91.5% and plan expenditure was 8.5% in West Bengal. Plan expenditure on higher education in some of the states like Chhattisgarh (71.1%), Odisha (31.5%), Arunachal Pradesh (54.9%), Mizoram (48.5%), Sikkim (73.9%), Haryana (32.4%), Himachal Pradesh (31.5%), and Goa (30.2%) was relatively higher as compared to the other states in India during 2014-15.

Table 5. Revenue and Capital Expenditure on Education as a Percentage of Total Expenditure in 2014 -15

Region	States	Higher Education		Total Education	
		Revenue Exp. (%)	Capital Exp. (%)	Revenue Exp. (%)	Capital Exp. (%)
Central	Chhattisgarh	86.0	14.0	96.9	3.1
	Madhya Pradesh	97.2	2.8	99.1	0.9
Eastern	Bihar	100	0.0	95.8	4.2
	Jharkhand	100	0.0	97.7	2.3
	Orissa	97.7	2.3	97.4	2.6
	West Bengal	95.9	4.1	89.3	10.7
North Eastern	Arunachal Pradesh	95.4	4.6	99.7	0.3
	Assam	100	0.0	100	0.0
	Manipur	98.4	1.6	99.4	0.6
	Meghalaya	99.8	0.2	99.5	0.5
	Mizoram	91.3	8.7	99.0	1.0
	Nagaland	94.6	5.4	98.3	1.7
	Sikkim	59.2	40.8	95.9	4.1
	Tripura	70.7	29.3	94.9	5.1
Northern	Haryana	91.6	8.4	97.9	2.1
	Himachal Pradesh	93.7	6.3	97.5	2.5
	Jammu & Kashmir	99.8	0.2	92.8	7.2

	Punjab	99.2	0.8	95.3	4.7
	Uttarakhand	86.0	14.0	94.9	5.1
	Uttar Pradesh	90.0	10.0	95.7	4.3
Southern	Andhra Pradesh	95.5	4.5	97.6	2.4
	Karnataka	85.4	14.6	96.8	3.2
	Kerala	97.9	2.1	98.7	1.3
	Tamil Nadu	96.3	3.7	97.6	2.4
Western	Goa	93.3	6.7	93.5	6.5
	Gujarat	94.6	5.4	86.4	13.6
	Maharashtra	99.8	0.2	99.4	0.6
	Rajasthan	99.1	0.9	99.7	0.3
All States		**95.8**	**4.2**	**96.3**	**3.7**

Source : Ministry of Human Resource Development, Government of India (2015)

(iv) State - Wise Revenue and Capital Expenditure on Higher Education in India : The Table 5 presents the state - wise breakdown of revenue and capital expenditure on higher education and total education for the time period from 2014 - 15. It shows that during this period, expenditure on revenue accounts constituted the bulk of the budget expenditure on higher education in all states in India and very little was spent on the capital account. During this period, out of total expenditure on education in all states in India, 96.3% was spent on revenue account and 3.7% was spent on capital account. In case of higher education, during the same period, all states spent 95.8% of the total expenditure on revenue account and 4.2% on capital account. In case of higher education, Chhattisgarh, Goa, Haryana, Himachal Pradesh, Karnataka, Mizoram, Sikkim, Tripura, Uttrakhand, and Uttar Pradesh made a relatively higher capital expenditure as compared to the other states.

Table 6. State - Wise Per Head Higher Education Expenditure (in ₹ Thousands)

Region	State	Per Student Higher Education Expenditure*		Per Capita Higher Education Expenditure (18 - 23 Years)	
		2010-11	2014-15	2010-11	2014-15
Central	Chhattisgarh	9.2	6.9	1.3	1.0
	Madhya Pradesh	4.9	7.1	0.7	1.4
Eastern	Bihar	9.0	26.0	0.9	3.3
	Jharkhand	10.5	19.2	0.9	2.6
	Odisha	16.7	21.0	2.7	3.7
	West Bengal	12.6	11.9	1.6	2.0
North Eastern	Arunachal Pradesh	6.7	16.9	1.8	4.4
	Assam	16.2	28.3	2.2	4.8
	Manipur	6.3	13.4	2.3	5.2
	Meghalaya	8.9	16.6	1.6	3.5
	Mizoram	17.6	30.0	3.8	7.2
	Nagaland	7.9	24.3	1.7	3.8
	Sikkim	7.2	8.9	1.7	2.6
	Tripura	6.4	12.1	0.9	2.0
Northern	Haryana	9.2	12.5	2.2	3.5

	Himachal Pradesh	9.0	13.1	2.3	4.0
	Jammu and Kashmir	8.4	14.7	1.4	3.8
	Punjab	5.4	7.7	1.1	2.0
	Uttrakhand	6.6	6.5	1.8	2.3
	Uttar Pradesh	3.4	3.8	0.5	0.8
Southern	Andhra Pradesh	6.6	13.0	1.9	3.9
	Karnataka	8.0	13.8	2.0	3.6
	Kerala	14.1	27.5	3.1	7.4
	Tamil Nadu	6.0	6.5	2.0	2.9
Western	Goa	22.7	37.4	7.5	10.4
	Gujarat	5.9	7.9	1.3	1.6
	Maharashtra	7.4	11.2	2.1	3.1
	Rajasthan	4.0	6.3	0.7	1.2
All States		**9.2**	**15.2**	**1.4**	**2.5**

Source: Authors' own estimation based on Analysis of Budgetary Expenditure on Education (different years), AISHE Report (Different Years), MHRD

Note. *Total Enrolment = (Ph.D + M.Phil + Post Graduate + Under Graduate + PG Diploma + Diploma + Certificate + Integrated Courses)

(v) State - Wise Per Head Higher Education Expenditure in India : The study of per capita government expenditure on higher education is necessary to assess the quality and efficiency of education in any state. Lower per capita expenditure indicates availability of fewer resources per student, which in turn implies lower quality of higher education (Ministry of Human Resource Development, Department of Secondary and Higher Education, Government of India, 2005). The Table 6 presents the state - wise per student and per capita higher education expenditure for the time period from 2010 -11 and 2014 -15. The results shown in Table 6 reveal that there was wide variation in per capita and per student government expenditure on higher education across states. The top four states in terms of per student government expenditure are Goa, Mizoram, Assam, and Kerala.

(2) State - Wise Elasticity of Higher Education Expenditure : Here, we attempt to measure the relationship between the growth of public expenditure on higher education and gross state domestic product (GSDP) through

Table 7. Elasticities of State Government Expenditure on Higher Education to GSDP and State Wise Growth Rate of Higher Education Expenditure and GSDP at Current Price (2004 - 05 to 2014 - 15)

Region	States	Exponential Growth rate (2004-05 to 2014-15)		Income Elasticities of State Government Expenditure on Higher Education at Current Price (2004-05 to 2014-15)		
		Public Higher Education Expenditure	GSDP	Elasticity Coefficient	*t*- value	*p*- value
Central	Chhattisgarh	6.0	6.5	0.90	4.7	0.00
	Madhya Pradesh	6.3	6.6	0.95	12.9	0.00
Eastern	Bihar	8.2	7.5	1.09	10.4	0.00
	Jharkhand	7.6	5.5	1.34	9.1	0.00
	Orissa	8.4	6.2	1.35	10.6	0.00
	West Bengal	6.6	6.0	1.10	12.6	0.00

	Arunachal Pradesh	5.1	7.1	0.73	5.7	0.00
	Assam	9.0	5.5	1.64	20.3	0.00
	Manipur	3.6	4.8	0.80	3.7	0.01
	Meghalaya	6.3	5.9	1.07	10.5	0.00
	Mizoram	7.8	6.2	1.30	15.6	0.00
	Nagaland	7.5	5.4	1.40	13.8	0.00
	Sikkim	7.7	10.0	0.76	21.6	0.00
	Tripura	6.4	5.1	1.17	9.1	0.00
Northern	Haryana	7.8	6.7	1.15	14.4	0.00
	Himachal Pradesh	7.6	5.9	1.27	21.6	0.00
	Jammu & Kashmir	9.1	5.6	1.63	10.8	0.00
	Punjab	6.0	5.7	1.05	6.5	0.00
	Uttarakhand	4.8	7.7	0.62	7.2	0.00
	Uttar Pradesh	6.1	5.9	1.03	11.6	0.00
Southern	Andhra Pradesh	5.9	6.0	0.98	9.5	0.00
	Karnataka	8.2	6.2	1.33	11.4	0.00
	Kerala	6.9	5.6	1.13	12.5	0.00
	Tamil Nadu	6.8	6.5	1.04	17.3	0.00
Western	Goa	6.4	6.6	0.95	6.1	0.00
	Gujarat	6.4	6.1	1.07	12.7	0.00
	Maharashtra	7.5	6.1	1.23	11.8	0.00
	Rajasthan	7.0	7.0	1.01	11.8	0.00
All States		**7.2**	**6.2**	**1.16**	**18.5**	**0.00**

Source : Own Calculation, MHRD, RBI

elasticity. This has been done using the steps explained in the Methodology section (Equation 1). This would also help in estimating the likely increases in government expenditure consequent upon increases in GSDP in the future. Elasticity coefficient more than 1 suggests that with a 1% increase in GSDP, public higher education expenditure increases by more than 1%. Similarly, elasticity coefficient less than 1 suggests that when there is a 1% increase in GSDP, public higher education expenditure increases by less than 1%.

The results given in Table 7 reveal that income elasticities of state government expenditure on higher education are greater than 1 for all states except nine states, that is, Chhattisgarh, Madhya Pradesh, Arunachal Pradesh, Manipur, Sikkim, Uttarakhand, Andhra Pradesh, Goa, and Rajasthan.

Conclusion and Policy Implications

The proportionate public spending on the higher - education sector in India is relatively low as compared to the CABE recommendations of 1% of the GDP. The spending on higher education across major states is found much below the desired level. The results reveal that there is wide state - wise disparity in public higher - education expenditure in India by different parameters like per capita and per student higher education expenditure, plan and non expenditure, revenue and capital expenditure. The regression results also reveal that many states have elasticity of higher education expenditure to gross state domestic product (GSDP) less than 1 with the implication that it will be difficult to improve the share of higher - education expenditure.

The central and state governments should implement policies for more funding in the higher education sector. The policy implications of the study are as follows. First, one of the major problems in the Indian higher education system is lack of public funding. A substantial amount is required for achieving the promised level of expenditure of 1% of GDP for general higher education. Secondly, capital expenditure is needed more for infrastructure development. Thirdly, per capita higher - education expenditure being very low compared to global standards, the state and central governments should design and implement the required policies so that this expenditure increases up to a sustainable level.

Limitations of the Study and Scope for Further Research

The present study focuses only on state - wise disparity in public expenditure on higher education in India by different parameters. The relationship between GDP and public expenditure on higher education has not been analyzed. Also, no attempt has been made to compare the different sectors of education, that is, primary, secondary, and higher education. Hence, there is enough scope of potential research on this topic.

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