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Building and Managing a Knowledge-Based Society in India

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Abstract

One of the most important factors of human capital formation is higher education. When studied in the Indian context it is found that states with more colleges and professional institutes showed greater increase in per capita net state domestic product than states with fewer such colleges and institutes. This reinstates the new endogenous growth theory in the context of states implying that states with more emphasis on higher and professional education will have higher growth. Also poverty prone states can prosper if they give proper emphasis on higher and technical institutions. Given the financial implication we may not be able to rejuvenate the entire educational system but if we need to maintain and sustain our knowledge boom we should go for small changes like common entrance tests, common syllabus and common examinations.

1. Introduction:

India is changing at a very fast rate since the past decade. It may be that India is not in the league of developed nations but surely in terms of the rate of growth it is no less than many a big economies. The reforms since 1991 have led to the formation of a vibrant economy populated by a dynamic middle class mainly in towns and cities which include a brand new generation of executive, businessman and industrialists who have not only started excelling themselves but have also began to compete in global market. Whatever be the field, be it Science and Technology, be it Information Communication and Technology, be it Business Process Outsourcing, be it Knowledge Process Outsourcing, India now has a name of its own. India is no more a poor country of village people; rather it is now a brand of its own. This can be attributed to the policies of privatization, liberalization and globalization. And one of the main reasons behind India's reaping success from these ongoing changes. India's huge pool of educated and efficient human resource power which obviously in the direct result of the educational structure of our country.

The concept of higher education in India is not new fashioned rather it was found by the ancient *rishis* and *munis* in the Vedic age. The early gurukula system flourished in the *Vedic* and *Upanishads* periods, but a huge university came in to set up at *Taxila* in the sixth century B.C. Later we had two great centres of learning *Nalanda* and *Vikramshila* as early as fourth and fifth centuries A.D. As far as the modern history of higher education is concerned, higher education got a definite shape in 1857 when Universities were started in the three presidency towns of Calcutta, Mumbai and Madras. But till India got her independence the growth and spread of higher education was very restricted. Subsequently after Independence strong emphasis was given on education and its growth and diversification. In 1950, there were thirty universities, 750 colleges, 25000 teachers and 263000 students in all these institutions. After Independence number of institutions has increased significantly. Now, India has one of the largest systems of education with more than 450 universities, over 20,000 colleges and more than five million students. India's higher education system is the largest system of higher education in Commonwealth countries and the second largest in the world. But it covers hardly 12 percent of relevant age groups population. In order to compete with other developed countries having coverage of about 30-40 percent the relevant age group, India has enormous task of creating huge infrastructure excellence and quality in higher education which require financial resources which is not affordable to the government of India so it becomes need of the hour to evolve some alternative ways of balancing the higher education system.

2. Review of Literature:

One of the important predictions of the neoclassical growth model (Harrod-Domar, Kaldor, Solow-Swan) is that of convergence. Convergence is the process of catching up of one economy with other economy. The idea is that a country with low levels of capital per capita and income per capita will grow faster and eventually catch up or converge with the other country having high levels of capital per capita and income per capita.

The neoclassical models advocate that the growth rate of output in the steady state is exogenous and is independent of the saving rate and technical progress. Further if the saving rate increases, it increases the output per worker by increasing the capital per worker, but the growth rate of output is not affected. Another implication of the model is that growth in per capita income can either be achieved by increasing saving or reduced rate of population growth. Another prediction of the model is that in the absence of continuing improvements in technology, growth per worker must ultimately cease. This model predicts conditional convergence meaning that poor countries will reach the same steady state of growth in the long run.

The other school of thought propagates endogenous growth theory, a new theory which explains the long run growth of an economy on the basis of endogenous factors as against exogenous factors of the neoclassical growth theory. The endogenous growth models emphasize technical progress resulting from the rate of investment, the size of the capital stock and the stock of the human capital. Arrow(1962) first introduced the concept of learning by doing and regarded it as an endogenous growth process. His hypothesis was that at any moment of time new capital goods incorporate all the knowledge a available based on accumulated experience, but once built, their productive deficiencies cannot be changed by subsequent learning. Arrow's model was generalized and extended by Levhari and Sheshinski (1973). They emphasize the spillover effects of increased knowledge as the source of knowledge. They assume that the sources of knowledge or learning by doing are firm's investment. An increase in the firm's investment leads to parallel increase in its level of knowledge. Another assumption is that the knowledge of a firm is a public good which other firms can have at a zero cost. Thus, knowledge has a non-rival character which spillover across all the firms in the economy. Here endogenous technical progress in terms of knowledge or learning by doing is reflected in an upward raising of the production function. Romer (1986) presented a variant of Arrow's model which is known as learning by investment. Romer took three key elements in his model, namely externalities, increasing returns in the production of output and diminishing returns in the production of new knowledge. According to Romer, it is spillovers from research efforts by a firm that leads to the creation of new knowledge by other firms. In his model, new knowledge is the ultimate determinant of long run growth which is determined by investment in research technology will not double knowledge. Moreover, the firms investing in research technology will not be the exclusive beneficiary of the increase in knowledge. The other firms also make use of the new technology. Thus the production of goods from increased knowledge displays increasing returns and competitive equilibrium is consistent with increasing aggregate returns owing to externalities. Romer(1990) later identified research sector as specializing in the production of ideas. This research sector invokes human capital along with the existing stock of knowledge to produce ideas or new knowledge. Lucas assumes that investment on education of human capital which is the crucial determinant in the growth process. He makes a distinction between the internal effects of the human capital where the individual worker undergoing training becomes more productive, and external affects which spillover and increase the productivity of capital and of other workers in the economy. It is investment in the human capital rather than physical capital that has spillover effects that increase the level of technology. Thus, it is not the accumulated knowledge or experience of other firms but the average level of skills and knowledge in the economy that are crucial for economic growth.

The new endogenous growth theory suggests that convergence of growth rates per capita for developing and developed countries can no longer be expected to occur. The increasing returns to both physical and human capital imply that the rate of return to investment will not fall in developed countries relative to developing countries. Further investment on education, research and development of a firm has not only a positive effect on

the firm itself but also spillover effects on other firms and hence on the economy as a whole. In short the new growth theories suggest that the convergence of growth rates per capita of developing and developed countries can no longer be expected to occur. The increasing returns to both physical capital and human capital imply that the rate of return of investment will not fall in developed countries relative to developing countries.

2. Research Objective:

In India, it is generally accepted that higher education has not lived up to the expectation of the industry needs. Naturally, the higher education institution's future focus, then, will be to provide new ways of meeting the individual's learning needs amid the complexities of their social, economic, and political environments. It thus becomes imperative for colleges and universities, in general, and student affairs, in particular, to articulate and communicate what they can contribute to student learning and, therefore, to the larger society. In this paper entitled "Managing the Indian Knowledge Society", the objective is to find out whether there is any sort of relationship between higher education and economic inequality and to study the inter-state variances in higher and professional education. The parameters under study here are net state domestic product, poverty ratio, and enrollment in higher education, numbers of colleges for general education and professional educational institutions.

3. Methodology and Sources of Data:

In this paper Spearman's Rank Correlation has been used to study the relationship between economic growth and number of educational institutions and the sources of data are Economic Survey, Press Information Bureau of Government of India and Government of India Annual Report.
This present article tries to study the impact of higher education on development of a country. The objective of this article is to study the inter-state variances in higher and professional education. The economic theories discussed above pertain to different nations but here we have tried to test these theories taking the states of India as different entities. To some extent this is a strong assumption but if we see the constitutional powers, the provision of items under state list, the devolution of funds to different states, the plan allocations , freedom to intake FDI, each state's own budget we can take each state to be a separate entity. Still this analysis is important as inequality is as serious a problem in India as poverty and unemployment itself. Adding, this inequality is the root cause of social and political frictions and tensions. Some other assumptions have also been made. Like we have equated knowledge, research and development with institutes of higher and professional education.

4. Discussion:

Way back in 1950-51 there were only 27 universities in India, comprising of 370 colleges for general education and 208 colleges for private universities. This has now changes drastically and at the beginning of the academic year 2006-07, we had 269 universities, comprising of 20 central universities, 109 deemed universities and 222 state universities and some other institutions. In addition to this number of colleges stood at 18064.
After the reforms of 1991 the Indian economy has moved to a higher growth trajectory but as to whether all are included in this changing scenario, is an important question. While on one hand metros propound the virtues of emerging super power status of Indian state, the country-side on the other hand is suffering acutely from the withdrawal syndrome. No one doubts growth, but whether this growth is inclusive or not or whether this growth is devoid of equality. If the situation is so that neither everyone is participating, particularly the poor and disadvantaged groups, nor everyone is benefiting from the growth then this variance in the spread effects of the growth process is as serious as no growth altogether. This problematic phenomenon could be understood by studying the increase in per capita net state domestic product. Similarly, the growth of higher education also has

been uneven in India. In Table-1 we study the per capita net state domestic products and number of students enrolled in higher education.

Table 1:

State	Per Capita Net State Domestic Product (Rs.Crore)			Total Enrollment in Higher Education
i	ii	iii	iv	v
	2003-04	1993-94	ii - iii	2004-05
Andhra Pradesh	21372	7416	13956	1,056,719
Arunachal Pradesh	19029	8733	10296	6,745
Assam	12821	5715	7106	214,342
Bihar	5362	3037	2325	553,693
Jhakhand	11999	5897	6102	209,176
Goa	57369	16558	40811	21,643
Gujrat	26672	9796	16876	645,689
Haryana	29504	11079	18425	264,331
Himachal Pradesh	25059	7870	17189	103,628
Jammu & Kashmir	15318	6543	8775	80,405
Karnataka	21238	7838	13400	706,241
Kerela	24492	7983	16509	313,155
Madhya Pradesh	13722	6584	7138	758,418
Chattisgarh	14963	6539	8424	163,254
Maharashtra	28848	12183	16665	1,534,613
Manipur	13732	5846	7886	38,679
Meghalaya	18135	6893	11242	30,716
Orissa	12545	4896	7649	367,187
Punjab	28607	12710	15897	279,707
Rajasthan	15738	6182	9556	394,478
Sikkim	22062	8402	13660	6,596
Tamil Nadu	23358	8955	14403	809,366
Tripura	20357	5534	14823	22,447
Uttar Pradesh	10637	5066	5571	1,507,991
Uttranchal	16982	6896	10086	131,742
West Bengal	20548	6756	13792	746,509
Delhi	49494	18166	31328	709,169

Source: 1. Economic Survey, 2006-07, Ministry of Finance, Government of India.
2. Government of India Annual Report 2006-07, URL:www.education.nic.in.

The highest increase in per capita income had been in Goa followed by Delhi and the lowest increase was in Bihar followed by Uttar Pradesh and Jharkhand. The disparity is so high that the third best performing state of Haryana has an increase of less than half the amount of the top performer, that is, Goa. As far as enrollment in higher education is concerned, Maharashtra, Andhra Pradesh and Uttar Pradesh are the top performers with more

than a lakh enrollments and the lowest enrollment is in Sikkim, with less than seven thousand. This gives the picture that the range is quite high.

The above analysis gives an overall gloomy picture but theories would suggest an altogether different understanding. In the present scenario higher education could be very instrumental in achieving a higher growth. The relatively new models of endogenous growth assume that there are positive externalities associated with human capital formation. Human capital could very well constitute of education, training, research and development. Interpreting this in terms of the variations in the growth in different states, it can be hoped that poor states can grow faster than relatively richer states and there could be a convergence of the growth rates because of the externalities in human capital formation.

In order to find out what role would higher education play in achieving this convergence we study the correlation between the per capita net sate domestic product and respective states' number of colleges for higher education and professional educational institutions. As far as colleges are concerned, Andhra Pradesh has the highest number of colleges followed by Maharashtra and Uttar Pradesh. All these three states had more than a thousand colleges and the lowest numbers of colleges were in Sikkim, only 2. There are at least 10 states that have less than a hundred colleges. The best performer in terms of professional educational institutions was Maharashtra followed by Andhra Pradesh with more than 400 colleges while the worst performer was Meghalaya with only 2 professional institutes and there are at least 7 states that didn't cross even 10 institutes.

In the following Table-2 the number of Colleges for General Education &Professional Educational Institutions in 2003-04 have been first merged and then arranged in decreasing order. The state with the median value is Punjab. Then again a correlation analysis is done.

Table 2:

S.No	States	Increase in Per Capita Net State Domestic Product between 1993-94 and 2003-04 (Rs.Crore)	Total no of Colleges for General Education &Professional Educational Institutions in 2003-04
1	Andhra Pradesh	13956	1746
2	Maharashtra	16665	1658
3	Karnataka	13400	1290
4	Uttar Pradesh	5571	1233
5	Madhya Pradesh	7138	869
6	Tamil Nadu	14403	807
7	Bihar	2325	788
8	Orissa	7649	780
9	Rajasthan	9556	728
10	Gujrat	16876	723
11	West Bengal	13792	513
12	Assam	7106	367
13	Kerela	16509	313
14	Punjab	15897	312
15	Haryana	18425	279
16	Chattisgarh	8424	218
17	Jammu&Kashmir	8775	187
18	Jhakhand	6102	139
19	Himachal Pradesh	17189	122
20	Delhi	31328	104

21	Uttranchal	10086	90
22	Manipur	7886	63
23	Meghalaya	11242	56
24	Goa	40811	36
25	Tripura	14823	17
26	Arunachal Pradesh	10296	14
27	Sikkim	13660	6

Source: (i) Economic Survey, 2006-07, Ministry of Finance, Government of India.
(ii) Poverty Esimates for 2004-05, Press Information Bureau, Government of India, New Delhi, March, 2007.

The Spearman's rank correlation coefficient for the states above the median value, that is the states with more number of colleges and professional educational institutes is 0.15 and the correlation coefficient for the states below the median value, that is states with less than number of colleges than Punjab is -0.15.
Further, divide the Indian states into two categories, one who have a poverty ratio more than the national average of 27.5 percent and other category consists of states with a poverty ratio less than the national average. Table-3 given below deals with those states whose poverty ratios are less than the national average.

Table 3:

State	**Poverty Ratio in 2004-05 (percentage)**	**Increase in Per Capita Net State Domestic Product between 1993-94 and 2003-04 (Rs.Crore)**	**Colleges For General Education in 2003-04**	**Professional Educational Institutions in 2003-04**
Andhra Pradesh	15.8	13956	1340	406
Arunachal Pradesh	16.6	10296	10	4
Assam	19.7	7106	317	50
Goa	13.8	40811	23	13
Gujrat	16.8	16876	507	216
Haryana	14	18425	166	113
Himachal Pradesh	10	17189	89	33
Jammu&Kashmir	5.4	8775	50	137
Karnataka	25	13400	930	360
Kerela	15	16509	186	127
Mnaipur	17.3	7886	58	5
Meghalaya	18.5	11242	54	2
Punjab	8.4	15897	212	100
Rajasthan	22.1	9556	611	117
Sikkim	20.1	13660	2	4
Tamil Nadu	22.5	14403	445	362
Tripura	18.9	14823	14	3
West Bengal	24.7	13792	374	139
Delhi	14.7	31328	63	41

Source: Same as Table-2

The Spearman's rank correlation coefficient between the increase in per capita net state domestic product between 1993-94 and 2003-03 and colleges for general education, for states whose poverty ratios are less than the national average is (-ve) 0.88. The same statistic for professional educational institutions is (-ve) 0.130.

Table 4:

State	Poverty Ratio in 2004-05 (percentage)	Increase in Per Capita Net State Domestic Product between 1993-94 and 2003-04 (Rs.Crore)	Colleges for General Education in 2003-04	Professional Educational Institutions in 2003-04
Bihar	41.4	2325	743	45
Jhakhand	40.3	6102	117	22
Madhya Pradesh	38.3	7138	760	109
Chattisgarh	40.9	8424	213	5
Maharashtra	30.7	16665	1208	450
Orissa	46.4	7649	700	80
Uttar Pradesh	32.8	5571	1009	224
Uttranchal	39.6	10086	86	4

Source: Same as Table-2

The above analysis is then repeated for states with poverty ratios more than the national average in Table-4. The Spearman's rank correlation coefficient (r) between the increase in per capita net state domestic product between 1993-94 and 2003-04 and colleges for general education is (+ve) 0.24. The same statistics for professional educational institutions is (+ve) 0.66.

5. Conclusion:

This obviously implies that states with more colleges and professional institutes showed greater increase in per capita net state domestic product and states with fewer such colleges and institutes had a negative association between them. But, the above analysis gives another interesting dimension. In the states in which the poverty ratio was relatively higher there was a positive correlation between number of colleges or professional institutes and increase in per capita income as compared to the states with relatively lower poverty ratios where there was a negative correlation between increase in per capita income and colleges or professional institutes. Implying that there is a sign of hope as these poverty prone states can prosper if they give proper emphasis on higher and technical institutions. And also as the correlation coefficient shows, it would be more fruitful if emphasis shifts to professional institutes.

Although this reinstates the new endogenous growth theory in the context of states implying that states with more emphasis on higher and professional education will have higher growth. But this isn't the end of the story. There is a ray of hope, that too, in form of higher and professional education itself. As the second analysis shows that poverty prone states can prosper more if they give proper emphasis on higher and professional education. In lieu of the above analysis and the changing economic scenario of the country it can be fairly predicted that Indian economy will need more aptly educated and trained work force. Apparently if we need to sustain our supremacy in knowledge boom we are bound to open more universities and colleges and professional educational institutions.

Now, education is a very touchy subject, particularly in a value based culture which we Indians have. There are so called traditionalist, who want education in a very pious and saintly manner and education for them is a matter of value and culture. The other ideologists are pure professionals who take education as only a means to earn bread and butter. The first school of thought wants education to be within the welfare domain of the state whereas the next school of thought wants education to be privatized, liberalized, and globalised. Rationally speaking, this debate as to whether education is a private or public subject is an unnecessary and futile debate as the ground reality is that markets need more colleges and institutions and the larger problem is that states' are not in a financial position for new educational ventures, what ever may be the reason for this financial crunch. But the states' role should not be undermined. The states' role should be to the extent of a regulatory body. It obviously has to look after that the interests of parties, buyers and sellers are not harmed. Prominently there are two issues, fees structure and quality assurance. It's true that state could be good judge of these two issues, but markets are also good decision makers. Let private players charge as much as they wish. We profess this for two reasons. If the course is not worth of such a high fees the same market would not be giving any value to the course. Moreover who has stopped the government from providing the same course at a highly subsidized price? Second, if the quality of education is bad, again market would not accept the course and its students. Market's hiring and firing policies and standard will itself take care of the quality. Still we do not suggest that government has no role. As an example, why would a father send his ward to an English medium convent boarding school if the nearby municipal school has good teachers and a blackboard and holds regular classes?

Given the lack of resources and quality decision making, this paper recommends two points. First, if we need to maintain and sustain our knowledge boom , we need to go for major rejuvenation of the entire education system with small changes like common entrance tests, common syllabus and common examinations, which can do wonders. If we cannot open more IITs, IIMs, DUs and JNUs then why don't we strive to make a local college in a remote area of a backward state as good as an institute of excellence. It seems that there could be no other reason to have different syllabus and different exams for the same course across the country other than to perpetuate inequality. Secondly, faculty members should also be rotated and transferred, so that students irrespective of their locations could get wide exposure and teaching from varied resource persons. This decision could be harsh on peace loving teaching community but in lieu of the huge allowances as per the sixth pay commission, the pain is worth taking. Moreover, the future of the country is in our hands. Lest, if we don't do something or the other to maintain our edge in managing knowledge based society, via higher education, we will ourselves be seeing as how history repeats itself. Hope that nobody would like to see our modern day *Nalandas* and *Vikramshilas* meeting the same old fate. Obviously this would require some sacrifice. And we strongly believe that our society, our brotherhood and our nation as a whole is worthy of this sacrifice.

References:

- Thirwall, A. P. (1999): Growth and Development with Special Reference to Developing Economies, Mac-Millan Press, London.
- Todaro, Michael P (1997): Economic Development, Addison-Wesely, Masachusetts.
- Arrow, K.J. (1962). The Economic Implications of Learning-by-Doing. Review of Economic Studies, London, 29(1).
- Levhari, David and Eytan Aheshinski (1973): "Experience and Productivity in the Israel Diamond Industry", Econometrics, XLI
- Romer, P.M. (1986): Increasing Returns and long –run Growth. Journal of Political Economy,Chicago, 94.

- Romer, P.M. (1990): Endogeneous Technical Change. Journal of Political economy, Chicago, 98.
- Lucas,R.E (1998): On the Mechanics of Economic Development. Journal of Monetary Economics, Netherlands, 22.
- Powar, K.B (2002)" Indian Higher Education: A conglomerate of Concepts, Facts and Practices, Concept Publishing Company, N.Delhi
- Bhusan, Sudhanshu (2007): "The Higher Education Summit: Road Map for the Future", in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Farahani, Alireza Jalali (2007): "E-Learning: A New Paradigm In Education", in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- George, K.K and Raman, Reji (2007): "Changes in Indian Higher Education-An Insider's View: Road Map for the Future" in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Ghosh, Anupam and Gupta, Anil (2007): "Education Advertising", in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Hope, Andrea (2007): "Quality Assurance", in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Lahiri, Keka (2007): "Ensuring Customer Delight: A Quality Approach to Excellence in Management Education", in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Lahiri, Kela (2007): "Evolution of Higher Education in India- Pre Independence to Post Independence" in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Murty, G.R.K. (2007): "Higher Education: Challenges under New Economy, in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Naidoo, Vis (2007): "The Changing Venues for Learning", in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Nair, P. (2007): "Education and Private Sector", in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Prasad, V.S. (2007): "Value-Framework for Assessment of Higher education Institutions", in Higher Education: Emerging Trends, Icfai Books, Hyderabad.
- Hooda, R.C, Nivedita, Kumar, Rajendra (2009): "Higher Education in New World Trade Order in the Age of Globalization, A Conceptual Study", University News, A Weekly Journal of Higher Education, Vol 47, No. 1, January 05-11.