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Primary Education in India: Delivery and Outcome

– A district level analysis based on DISE data

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Abstract

Primary education is a key to the economic development of a country. Most of the studies emphasize the final output (such as literacy, enrolment etc) rather than the delivery of the entire primary education system. In this paper, we study the primary education system of India, using the district level DISE statistics. We used several indicators to capture the multi-dimensional aspect of primary education system in India. Our analysis reveals serious discrepancies in deprivation, social and policy indicators that greatly infringe upon the efficiency of the system. Western districts show the worst while Eastern districts show the best picture.

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Introduction

The principle institutional mechanism for developing human skills and knowledge is the formal educational system. Most developing nations have been led to believe or have wanted to believe that it is the rapid quantitative expansion of educational opportunities which holds the basic key to national development. The more education, the more rapid is the anticipated development. Education is one of the most important services provided by governments in almost every country. Bertrand Russell said ".... the educational system we must aim at producing in the future is one which gives to every boy and girl an opportunity for the best that exists." This is something very agreeable to most of us, and yet such a scenario seldom meets our eye when it comes to the state of education in India. The Indian constitution enshrines in the directive principle of state policy compulsory primary education to all citizens. However, inadequate attention is paid to the delivery mechanism of the primary education. This remains a basic Achilles' heel in the development process in India. In fact this inadequacy has added to injustice and inequality while stunting the prospect of development.

Mere assurance of physical access to education cannot guarantee quality education (Ramchandran, 2004; Sengupta, Sengupta and Ghosh, 2004). Although several attempts have been made in the past to assess the accessibility, enrolment and learners' achievement, little information is available on the internal efficiency of primary schools in the country. Very few studies have attempted to look into all the indicators of internal efficiency of primary education system from a comparative perspective, covering all states and UTs. Recently Arun C. Mehta (Mehta, 2005) has constructed the internal efficiency indicator of primary education system in his paper 'Student Flow at Primary Level: An Analysis Based on DISE Data'. The indicator emphasized on the completion of at least two years in the primary school by a child. However, this indicator is inadequate because its inability to capture social and gender issue.

Again Sengupta and Pal (2008) used the DISE data set to generate a host of indicators directly related with educational performance. However, their analysis was based on the state level data set. This was undoubtedly prompted by the inadequacy of comparable district level data sets for all the time periods they covered. Notwithstanding this logic, a district level analysis will shed much light on the performance of primary educational units at a more disaggregated level.

In this paper, we aim to provide a region-wise panoramic view of the primary education system in India at the district level with its frailties and inequalities that require immediate policy action. The publications of all India DISE data for three consecutive years have facilitated this type of analysis. However, consistent district level analysis is available only for the year 2005-06.

Our paper is divided as follows. In section 2 we discuss the data and methodology used. The next four sections discuss the aspects of the delivery system in primary education viz., the lack of resources, policy indicators, social stigma and efficiency of the system. In section 7, we try to find out some relation between these four aspects and the effect they have on the broader social phenomenon. Section 8 concludes the study. In the Appendix, we have presented zone-wise name of the districts in a table format (604 districts that we have covered in our study).

Data and Methodology

Data Description and Variables Used

In this study we have used data from secondary sources. It has been collected from "DISE Statistics (Elementary Education)" for the year 2005-06, which is based on DISE District raw data. Development of a sound information system is critical for a school monitoring and implementation of any programme, particularly in social sectors. Therefore, design of a school information system was accorded priority from the very beginning of the District Primary Education Programme (DPEP) in 1994, as a result of which National University of Educational Planning and Administration (NUEPA) developed the District Information System for Education (DISE). The DISE data gives various district-specific key indicators (pupil-teacher ratio, student-classroom ratio, GER, NER, school with boy's toilet, school with girl's toilet, proportion of female teachers, drop-out rate, retention rate, etc) for good quality primary education.

Based on the DISE data, the Flash Report attempts to develop an Educational Development Index (EDI) in deciding future course of investment on elementary education in the country. As argued by Sengupta and Pal (2008), EDI was basically flawed because of an invalid aggregation of input and output indicators.

However, the spirit of EDI is very novel. It tries to broaden educational performance from its emphasis on a few outcome indicators (literacy rate, enrolment rate etc.) to a broad spectrum of social, infrastructural and efficiency indicators that essentially constitute the multifaceted picture of education.

Following this spirit, Sengupta and Pal (2008) visualized education as a multi-dimensional entity. They identified five basic aspects of education:

- Deprivation aspect (poverty in the education system)
- Social aspects (social indicators)
- Policy aspects (policy indicators)
- Traditional performance indicators
- Farrell's non-parametric efficiency scores

Poverty in Educational Institutions

From the economic point of view two issues are important: (i) whether the input supplied meets the minimum requirement that makes production feasible, and (ii) the efficiency of use in inputs.

The first issue is closely related to the concept of poverty used in development economics. By poverty we mean here relative deprivation from an accepted minimum level. However, the definition of poverty in the education will obviously be different from the definition of income or economic poverty. The idea may be close to the concept of human poverty as developed by Anand and Sen (1997). In this definition Anand and Sen argued that Human Poverty Index (HPI) is an essentially multi-dimensional poverty index. HPI tries to capture deprivation in three basic dimensions of human welfare (health, education and income). Since it is a multidimensional concept, it is to be weighted and aggregated in order to generate unique index. The main argument by Anand and Sen (1997) is that "while these three components of human poverty are all important, it is not unreasonable to assume,

given their dissimilarity, that the relative impact of deprivation of each would increase as the level of deprivation becomes sharper. For example, as we consider higher and higher proportions of people who may perish before the age of 40, this deprivation will become more and more intense per unit, compared to other deprivations." Anand and Sen (1995) postulated a similar argument to derive the Gender Development Index (GDI). A simple way to generate this requirement is the following formula suggested by Anand and Sen (1997):

$$P(\alpha) = \left\{ \frac{\sum w_i P_i}{\sum P_i} \right\}^{\frac{1}{\alpha}} \qquad (1)$$

Where 'i' refers to the number of dimensions considered for constructing P while "Pi"s are the poverty associated with the ith dimension and "wi" s are their weights and 'α' a pre-specified parameter. In the case of equal weights, the specification of wi becomes unnecessary. However, segregating the data into various subgroups with equal intra-group weights generates unequal inter-group weights.

Anand and Sen (1995, 1997) prove that if $\alpha>1$ then the above criterion is specified by $P(\alpha)$. We use the same formula in our exercise for calculating poverty. In our exercise, we have taken $wi=wj \ \forall i, j$ with $i \neq j$. Following the suggestion of Anand and Sen (1997), we have taken $\alpha=1/3$.

Similarly, poverty in primary education is multi-dimensional. For example, a school without classroom is obviously suffering from some major deprivation – the access to minimum requirement of useful learning. We have estimated the proportion of such schools as a proportion of total schools. In a way this can be treated akin to the concept of headcount poverty in development economics. Similarly, we are defining poverty in other aspect also.

We have classified these poverty indicators on the following parts:

- Core poverty indicators (basic or essential deprivation)
- Input poverty indicators (deprivation in the supply and quality of inputs)
- Facility poverty indicators (deprivation in some basic facilities such as playground, toilets, drinking water, etc.)

Poverty under each category is measured as an (un-weighted) average deprivation under different heads constituting the category specified. Having derived poverty in three dimensions, we now calculate the Grand Poverty, using the Anand and Sen formula, i.e., equation (1).

Efficiency in Educational Institutions

The second issue is related to the efficiency. However, since education is a public good we cannot merely define it in terms of narrow economic efficiency. While it is true that wastage of resource is always harmful to welfare, but rationalization of resource used cannot be allowed at the cost of neglecting social dimension of the education system. Hence we have considered three additional indicators:

- Policy indicators (Pattern of government funding to schools)
- Efficiency indicators (Performance parameters)
- Social indicators (Issues relating to socially deprived sections (SC/ST/OBC) and gender issues)

These indices are constructed using UNDP formula, because it is unit free and easily comparable. After indexing, we have constructed grand indices for the various categories. These grand indices are un-weighted means of individual indices, and are constructed for only the year 2005-06. We have divided the states/UTs of India into five zones, viz., North, North-East, East, West and South, the districts in each state/UT coming under the respective zones.

However, the concept of economic efficiency cannot be totally neglected. Though economic efficiency has both a technical and cost component, we have to disregard the cost (or allocative component) due to the lack of reliable price data on various educational inputs. In the education sector, we have to deal with a multi-input; multi-output decision-making units which attempt to maximize their outputs for given inputs and technology. This is output-oriented approach. Here we measure decision-making unit's technical efficiency, that is, how well a decision-making unit converts its inputs into outputs, based on its available technology. For measuring technical efficiency, we use Data Envelopment Analysis (DEA) in which only factors under a decision-making unit's control are included as inputs in computing efficiency scores.

In this exercise, we use non-parametric DEA to estimate efficiency. Data Envelopment Analysis is a generalization of the non-parametric technique developed by Farrell (1957) to measure efficiency. Charnes, Cooper and Rhodes (1978, 1979, 1981) generalised the DEA framework to a multiple-output-multiple-input framework using the mathematical programming approach which is referred to as the Charnes, Cooper and Rhodes (CCR) model. The essential idea of the CCR model is to minimize the weighted input-output ratio subject to certain restrictions on the production technology. These are *constant returns to scale*, *strong disposability* and *convexity*. Convexity and returns to scale are obvious. Disposability generally refers "to the ability to stockpile or dispose of unwanted commodities" (Farell *et al,* 1994). With some algebraic manipulation, this boils down to:

$$\max_{E_f \lambda} E_f$$

subject to: $y_f \leq Y\lambda$,

$X\lambda \leq E_f x_f$,

$\lambda \geq 0$

The matrices X and Y are assumed to satisfy Karlin conditions that require strictly positive row and column sums. In the DEA, we judge the performance of a firm on the basis of its ability to increase output given the restrictions placed by the best-practiced firms. From this point of view, E_f denotes the Debreu-Farrell output efficiency measure.

The imposition of constraint on the intensity vector λ guarantees that E_i lies between zero and one. The above problem assumes Constant Returns to Scale (CRS).

Zonal Classification

India is a large country with wide variations in the socio-economic culture across its length and breadth. It is well known that education and its determinants are shaped by the socio-political culture of the respective communities. A casual look at our country will reveal various differences among the Northern and Southern, Western and Eastern parts of the

country. The North-East, with its largely tribal population, has some unique features of its own. We wish to capture the effects through zonal dummies.

In order to facilitate our analysis, we have segregated the districts into five zones: Northern districts, North-Eastern districts, Eastern districts, Western districts, Southern districts respectively. This zone-wise district segregation is incorporated into five state zones respectively. We describe the zonal classifications of the state in Table 1[1] and compare and contrast the zone-wise indicators in the following sections.

TABLE 1
Zonal Classification of the States/UTs

Zone	State/UT
Northern	Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab. Rajasthan, Uttar Pradesh, Uttarakhand
North-Eastern	Arunachal Pradesh, Mizoram, Meghalaya, Nagaland, Manipur, Tripura, Sikkim
Eastern	Assam, West Bengal, Orissa, Jharkhand , Bihar
Western	Chhattisgarh, Madhya Pradesh, Gujarat, Maharashtra, Daman & Diu , Dadra & Nagar Haveli
Southern	Karnataka, Kerala, Andhra Pradesh, Tamil Nadu, Puducherry, Goa, Lakshadweep, Andaman & Nicobar Islands

Estimating Poverty in Education

If we pay attention to the scenario of primary education in India, there are many ills plaguing educational scenario in India at primary level. In our analysis we have considered mainly indicators that are quantifiable in a definite form (such as proportion of schools without building, proportional distribution of schools having no pucca building etc). Specifically we note the factors as follows:

(i) Core Poverty Indicators

(a) proportion of schools without building[2]
(b) proportion of schools having no pucca building
(c) proportional distribution of schools without classrooms
(d) proportion of single classroom schools
(e) proportion of classrooms in "bad" condition
(f) proportion of classrooms requiring major repair

[1] For zonal classification of the districts, see Appendix.

[2] The above components of core poverty reflect various layers of poverty. The first component reflects schools that can be named as destitute – they are deprived from the minimum level of a dignified existence. The other components are less severe than this. However, they together constitute a basic deprivation – existence of decent classrooms. It is highly questionable if teaching can ever prosper in a situation where even classrooms are missing.

(ii) Input Poverty Indicator

(a) proportion of single-teacher schools[3]

(iii) Facility Poverty Indicators

(a) proportion of schools no drinking water facility
(b) proportion of schools having no common toilet
(c) proportion of schools having no girl's toilet
(d) proportion of schools without blackboard

The results are given in Table 2. Certain patterns follow from our analysis. First, comparing across different poverty indices, it is evident that core poverty and facility poverty are more dominating than input poverty. In other words, this indicates that inadequacy in infrastructure network is the most serious bottleneck of our educational system. Supply of teachers is less serious than this. Thus, we may find teachers with no classrooms or blackboards to teach. Hence, their efficiency is seriously constrained by the availability of adequate support system.

TABLE 2

Mean of the Core Poverty, Input Poverty and Facility Poverty Index (2005-06)

Zone	Poverty					
	Core Poverty		*Input Poverty*		*Facility Poverty*	
Northern	0.34	(0.26)	N=187	0.16 (0.16)	0.24	(0.16)
North-Eastern	0.39	(0.05)	N=55	0.26 (0.26)	0.50	(0.17)
Eastern	0.34	(0.04)	N=132	0.17 (0.13)	0.48	(0.11)
Western	0.34	(0.08)	N=127	0.21 (0.14)	0.40	(0.11)
Southern	0.78	(4.48)	N=103	0.10 (0.10)	0.27	(0.13)

Note: Figures in parentheses represent standard deviation

We have constructed indices comprising these three indices following Anand-Sen formula in Table 3. This table shows that mean of grand poverty is highest in North-Eastern districts and lowest in Northern districts. On the other hand, input poverty and facility poverty are maximum in North-Eastern districts. The bleak picture of our primary education system becomes very clear by these results.

[3] In the standard terminology, a school having a high pupil-teacher ratio is considered to be of low quality. Here, however, we are not concerned with quality per se, but the conditions of extreme deprivation. Hence, our focus is on the least privileged schools and not on the worse quality schools as such. In effect, we are considering only the worst among the worst in the analysis of poverty. The distinction is akin to the distinction between inequality and poverty in the development literature (Sen, 2006)

TABLE 3
Mean of Grand Poverty Index

Zone	2005-06	Number of Districts
Northern	0.28 (0.09)	187
North-Eastern	0.44 (0.11)	55
Eastern	0.38 (0.07)	132
Western	0.35 (0.08)	127
Southern	0.29 (0.05)	103

Note: Figures in parentheses represent standard deviation

Social Indicators

In our analysis, we have classified social indicators into three broad categories viz, vulnerable group, gender deprivation, and facility gap. Here under vulnerable group, we include proportion distribution of SC teachers to total teachers, proportion of ST teachers to total teachers, proportion of SC enrolment, and proportion of ST enrolment at primary level. Under gender deprivation, we also include proportion of female teachers to proportion of male teachers, proportion of girl's enrolment to proportion of boy's enrolment, proportion of trained female teachers to proportion of trained male teachers. And lastly, under facility gap we include proportion of schools having girl's toilet facility to proportion of schools having common toilet facility. These three dimensional social indicators are combined using an un-weighted mean to get the grand social indicator. After grand indexing the social indicators zone-wise, we compute mean and standard deviation of the respective zone for the year 2005-06 in Table 4.

TABLE 4
Mean of the Social Indicator Index

Zone Districts	2005-06	Number of Districts
Northern	0.17 (0.05)	187
North-Eastern	0.17 (0.08)	55
Eastern	0.25 (0.09)	132
Western	0.14 (0.06)	127
Southern	0.16 (0.06)	103

Note: Figures in parentheses represent standard deviation

From Table 4, we find a clear zonal dichotomy in the changes of social indicators. For two zones (Northern, North-Eastern) it is same. It is highest for the Eastern districts and lowest for the Western districts. For Southern districts it is very poor. This picture in social indicator is a sad commentary on our commitment to eradicating social ills within the purview of primary education.

Policy Indicators

In our analysis, policy indicators include proportion of schools that received school development grant and the proportion of schools received TLM grant, proportion of students getting free textbooks, proportion of girls receiving free textbooks to proportion of boys receiving free textbooks, proportion of students getting free stationary, proportion of girls receiving free stationary to proportion of boys receiving free stationary. After grand indexing the policy indicators zone-wise, we compute mean and standard deviation of the respective zone for the year 2005-06 only. Now we discuss mean of Policy Indicators Index from Table 5.

TABLE 5
Mean of the Policy Indicator Index

Zone Districts	2005-06	Number of Districts
Northern	0.44 (0.09)	187
North-Eastern	0.22 (0.09)	55
Eastern	0.39 (0.11)	132
Western	0.45 (0.08)	127
Southern	0.33 (0.08)	103

Note: Figures in parentheses represent standard deviation

From Table 5, it is seen that policy indicator is highest for Western districts, and Northern districts come close to Western districts. It is lowest for North-Eastern districts. For Eastern and Southern districts, it is moderate.

Efficiency Indicators and DEA Efficiency Scores

Efficiency indicators should be related to the performances of the schools. In our analysis, efficiency indicators include proportion of schools having PTR≥100, proportional distribution of schools having enrolment ≥50, proportion enrolment in schools with SCR above 60. After grand indexing the efficiency indicators zone-wise, we compute mean and standard deviation of the respective zone for the year 2005-06. The efficiency indicator index is presented in Table 6.

TABLE 6
Mean of Efficiency Indicators and DEA Efficiency Scores (2005-06)

Zone Districts	Efficiency Indicators	DEA Technical Efficiency Indicators
Northern	0.39 (0.23)	0.46 (0.19)
North-Eastern	0.25 (0.16)	0.37 (0.29)
Eastern	0.44 (0.20)	0.55 (0.21)
Western	0.17 (0.11)	0.47 (0.20)
Southern	0.27 (0.16)	0.39 (0.17)

Note: Figures in parentheses represent standard deviation

From Table 6, it is clear that the mean of efficiency indicator of the Eastern district zone is highest and lowest for Western district zone, in comparison with other district zones in 2005-06. For North-Eastern and Southern districts it is moderate but mean of the efficiency indicator of Northern districts is close to Eastern districts.

We also present the DEA technical efficiency scores in this table. Here we have attempted to restrict the total number of input and output variables in the analysis to ensure some degree of discretionary power remained. The model hence involved only four inputs, viz. (i) proportion of schools having drinking water facility in school, (ii) proportion of schools having girl's toilet in school, (iii) classroom-student ratio, and (iv) teacher-pupil ratio, and one output – Gross Enrolment Ratio. It may be argued that net enrolment ratio is more appropriate. However, the relevant data is not forthcoming for all the states for all the years. The specification of output is a challenging task. Schooling of children is a factor determined by demand side as well as supply side variables. There are many situations where children have access to schooling and homogeneous supply side factors. In spite of that we come across many children remain out of school. Children's participation in schools is the outcome of household's decision-making process in the absence of any compulsory education law of the state. So we have decided to include Gross Enrolment Ratio as our output variable.

From Table 6 we also see that for all the years, technical efficiency is much higher in Eastern districts than rest of the zone districts. In case of North-Eastern districts, technical efficiency is lowest. But in case of Northern, and Western districts, technical efficiency has more or less same. Technical efficiency of Southern districts is much better than North-Eastern districts.

Our DEA efficiency scores are much higher than the standard efficiency indicator for two zones – East and West. It also gives contradictory result for the South zone (except the last year). Efficiency indicators mainly point out to the performance of teaching institutions while DEA scores measure the degree of utilization of the available resources. This discrepancy may be a reflection of the fact that these zones are seriously constrained by the dearth of resources. However, whatever resources are available have been efficiently utilized.

Determinants of Efficiency

Having traced down the various indicators associated with the primary education system, it is now necessary to link them up. For this we argue that our ultimate aim is to explain the incidence of efficiency (both efficiency indicators and DEA scores). For this we link up all the other factors with these two factors separately through regression analysis. However a standard problem of such estimation lies in the fact that efficiency indicators are truncated variables (lying between zero and one). As such Ordinary Least Squares (OLS) might not be very suitable for this purpose (Maddala, 1983). It would be better to consider certain other forms of truncated estimation procedure. We have considered three types of estimation. The first is OLS with White's correction [OLS (HETCOV)]. Next is the Jackknife re-sampling technique that tests the sensitivity of the OLS parameters. Finally we measured a Tobit regression. All these regression results are shown in Tables 7 and 8.

TABLE 7
Determinants of DEA Efficiency Scores (2005-06)

Variables	Dependent Variable: DEA Technical Efficiency		
	OLS (HETCOV) N=604	*Jackknife N=604*	*Tobit N=604*
Poverty indicator	-0.034391** (0.02127)	-0.033897 (0.021718)	-0.034802* (0.20462)
Policy indicator	-0.27470** (0.04625)	-0.27516 (0.047472)	-0.27542** (0.52062)
Social indicator	-0.073979 (0.05903)	-0.072598 (0.060563)	-0.074345 (0.61381)
Northern districts dummy	0.10285** (0.01042)	0.10287 (0.010549)	0.10288** (0.12850)
North-Eastern districts dummy	-0.073820** (0.01711)	-0.073539 (0.017526)	-0.073710** (0.18699)
Eastern districts dummy	0.092231** (0.01450)	0.092324 (0.014763)	0.092403** (0.16357)
Western districts dummy	0.13790** (0.01047)	0.13792 (0.010633)	0.13782** (0.14369)
Constant	0.43895** (0.02309)	0.43855 (0.023635)	0.43938** (0.27113)
Log-likelihood	596.607	596.607	592.67901

Note: Figures in parentheses represent standard errors.
** Indicates level of significance at 1 percent.
* Indicates level of significance at 5 percent.

It is clear from Tables 7 and 8 that DEA scores and the standard efficiency indicators both are strongly related with the other indicators and roughly in a similar fashion. As expected poverty has a greater negative effect on technical efficiency. Lack of adequate resources will tend to have sufficient negative impact on technical efficiency scores. A particularly notable feature is the insignificant relation with social indicator. Normally, it is argued that more emphasis on social good may have an adverse impact sufficiently on efficiency. In education, more emphasis on equity does not result in a deterioration of overall efficiency. However, public policy indicator does not seem to affect efficiency in an adverse way. Among the various zones, Eastern districts have a significantly high efficiency both under DEA and standard efficiency indicators. As for DEA scores, the North-Eastern districts have a significantly low value compared to Western districts under the alternative measure.

TABLE 8
Determinants of Efficiency Indicator

Variables	Dependent Variable: Efficiency Indicator		
	OLS (HETCOV) N=604	*Jackknife N=604*	*Tobit N=604*
Poverty indicator	-0.071544** (0.02577)	-0.07115 (0.02625)	-0.072010** (0.24231)
Policy indicator	-0.33842** (0.05414)	-0.33813 (0.05559)	-0.33958** (0.56376)
Social indicator	-0.10370 (0.05995)	-0.10209 (0.06167)	-0.10415 (0.62540)
Northern districts dummy	0.10912** (0.01101)	0.10910 (0.011158)	0.10918** (0.13161)
North-Eastern districts dummy	-0.06502** (0.01739)	-0.064773 (0.017799)	-0.06485** (0.18867)
Eastern districts dummy	0.10745** (0.01754)	0.10733 (0.01059)	0.10768** (0.17596)
Western districts dummy	0.13135** (0.01044)	0.13143 (0.010592)	0.13121** (0.14321)
Constant	0.46810** (0.02600)	0.46759 (0.02667)	0.46863** (0.30103)
Log-likelihood	600.303	600.303	596.391

Note: Figures in parentheses represent standard errors.
** Indicates level of significance at 1 percent.
* Indicates level of significance at 5 percent.

Conclusion

Our analysis of the primary education system in India reveals certain disturbing features. First, the system is seriously jolted by the lack of adequate resources that are necessary to boost up a decent standard. There appear wide zonal discrepancies in this regard. Second, discrepancies with regard to social and policy indicators are more or less uniformly distributed. However, resource-use efficiency (as measured by DEA) and standard efficiency indicators indicate wide inter-zonal differences. The results from these two approaches are broadly similar with some minor deviations. Both of them show almost similar correlation with the other variables considered by us. Poverty infringes upon efficiency in a negative way sufficiently. Social indicators are not significantly related to efficiency improvement. Among the districts, Eastern districts show the best picture. Policy indicator fails to have any significant effect on the level of efficiency. In all, the picture is alarming and requires immediate policy action.

References

Charnes, A.; W.W. Cooper; A.Y. Lewin and L.M. Seiford (1995): Data Envelopment Analysis – Theory, Methodology and Applications, Kluwer.

Elementary Education in India, Progress Towards UEE. *DISE 2005-06 – Flash Statistics*: National University of Educational Planning and Administration New Delhi.

Fukuda Parr Sakiko; A.K. Shiva Kumar (ed.): *Readings in Human Development: Concepts, Measures, and Policies for a Development Paradigm*. Oxford University Press, Human Development Report Office, UNDP, New York. pp. 228-44,

Gujarati, Damodar N: *Basic Econometrics*, Third Edition; McGraw-Hill Inc.

Hanushek, Eric A. (1995): Interpreting Recent Research on Schooling in Developing Countries. *The World Bank Research Observer,* Vol. 12, No. 2. pp. 227-46.

Kumar, Niraj (2005): Primary Education in India, Initiatives and Prospects. *Kurukshetra,* Vol.53, No.9, pp 9-14.

Mehta, Arun C. (April 2007): *Student Flow at Primary Level an Analysis Based on DISE Data*. National University of Educational Planning and Administration, New Delhi.

Maddala, G.S. (1983): *Limited Dependent and Qualitative Variables in Econometrics*. Cambridge University Press, New York.

NIEPA & Government of India (2005): Elementary Education in India – Where Do We Stand? *Analytical Report,* 2004. New Delhi (forthcoming).

Rao, D.S.; Prasad-Battese George E. Coelli; Tim, Kluwer (1998): *An Introduction to Efficiency and Productivity Analysis*. Academic Publishers, London. pp. 133-60.

Vimala Ramachandran (2004): Backward and Forward Linkages that Strengthen Primary Education. *Kurukshetra,* Vol.52, No.11, pp 17-21.

Sengupta A. and Pal, N.P. (2009): Poverty and Efficiency in the Primary Education System of India – An Analysis Based on DISE Data. *Journal of Educational Planning and Administration,* Vol. XXIII, No. 1. New Delhi. pp. 33-47

Madhura Swaminathan and Vikas Rawal: Primary Education for All. *India Development Report, 1999-2000*. Oxford University Press.

Sen A (2006): Identity and Violence – The Illusion of Destiny. Penguin Books, New Delhi.

Sengupta, Atanu; Madhumita Sengupta; and Manas Ghosh (2004): *Economics of Learning – A Village Level Study Based on Midnapore (West) District, West Bengal*. Paper presented at a National Seminar in Vidyasagar University, West Bengal, March 30-31.