

Economics of Development / Paper 2

India: Public investments in primary education and inequality in society

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Introduction and statistics

“The 86th Amendment to the Constitution of India has made free and compulsory education to the children of 6-14 years age a Fundamental Right”. During the past three decades, apart from rising focus on technical institutions for higher education, the government of India has provisioned large portions of its GDP in annual budgets towards this vision of making primary education accessible to all. Unfortunately, irrespective of increasing provisioning for primary education, the country spends less than 3% of its GDP on education, despite increasingly moving towards becoming a knowledge-based economy. However, the allocation towards education has been directed towards the right problems – mostly improving educational attainment and access. For example, in 1987, the Operation Blackboard was launched “in pursuance of NPE-POA [National Policy on Education – Programme of Action] to provide minimum essential facilities to all primary schools in the country”. Apart from this, the District Primary Education Programme (DPEP) was launched in 1992 with the goals of reduction in “existing disparities in educational access, the provision of alternative systems of comparable standards to the disadvantaged groups, a substantial improvement in the quality of schooling facilities, obtaining a genuine community involvement in the running of schools, and building up local level capacity to ensure effective decentralization of educational planning”.

In terms of income inequality, India ranks 56th out of 134 countries in the world with a Gini coefficient of 36.8. Poverty and income inequality have been a core aspect and basis for much of the interventionist economic policy since the country's independence in 1947. Major market-oriented reforms in the economic policy introduced in the mid-1980s, with explicit adoption of neo-liberal programs being introduced since 1991, have spurred discussions and debate on whether income and consumption equality have increased since then. Some of the critique of this debate is revolved around its overwhelming focus on changes in the 'headcount ratio' – the proportion of the population below the poverty line. Irrespective of this critique, “inequality declined in the period 1987-1993 and increased in the post-reform period 1993-2004”. The decade of 1990s has seen poverty gap per at \$1.25 decline throughout the country from 16% in 1990 to 7% in the recent estimates of 2010, along with a rising increasing in per capita expenditure at 10%. Also, it is estimated that a whopping 37% of the population is below the national poverty line.

Considering specifically the inequality in access to education, we can gain some insight from the present gross primary enrollment being 110%, while the net enrollment being 98%. This is a fine improvement from the net enrollment of 85% just a decade ago, considering this is almost like a “last mile” problem. If we observe the figure 1, the educational attainment for all adults (age 20 and higher), we observe that over less than two decades, “the share of illiterate adults and adults with education below primary level has declined, especially between 1993 and 2004.” Also, “the share of adults with middle school, secondary and higher education increased in both periods.”

Educational Level	1987	1993	2004
1 Illiterate	50.50	44.75	35.87
2 Below primary	10.91	10.91	7.35
3 Primary	12.46	11.00	13.23
4 Middle	9.74	11.61	16.55
5 Secondary	11.21	14.81	18.04
6 Graduate and above	5.17	6.92	8.96
Total	100	100	100

Figure 1: Educational Attainment, percent distribution, by Pieters, 2009

This is clearly a very positive trend. One of the approaches in measuring inequality in education access is by considering the regional disparities in formal or informal schooling access. Literacy rates seem to be the best determinants of access to schooling. “There are significant inter-state inequalities in literacy rates” even today - while these clearly explain output and growth of people in the respective states, surprisingly, these inequalities do not explain unemployment rates or income inequality within the state. This means that a state like Bihar, with the lowest literacy rate below 50 percent – thus one of highest inequality in educational access, does not necessarily have high unemployment rates or high income inequality.

Another popular approach in considering inequality in education attainment in India, as discussed above briefly in the context of the DPEP, is by looking at the inequality across various social classes and gender inequality. In 2008, Breen and Vaid conducted several surveys and found that “as expected, the proportion of the population that is illiterate declines over birth-cohorts [baby boomers through generation x], while the proportion with high school and college degrees increases”. Also, “as expected, the backward classes and Muslims have higher illiteracy rates and lower levels of schooling, and this is much more evident for women from these communities”.

Pal and Ghosh (2007) suggest that a major factor contributing to increased inequality in education in India has been the rapid growth of private schools. They argue that the increased share of un-aided private primary, mid-primary and secondary schools magnify the inequalities between in urban and semi-urban areas. This is very well supportive of James Tooley's observations in his book “The Beautiful Tree” on affordable low-cost private schools in India and the significantly improved performance of their students as compared to those in public schools. While we consider inequality in bad light, could this increasing inequality be a sign of a likely renaissance of school models in the country?

Sarva Shiksha Abhiyan

As it turns out, the increasing the number of private schools causing inequality in access to “good quality” education in urban areas has not the biggest concern of the Ministry of Human Resource Development (MHRD). Rather, they are focusing on more fundamental developmental concerns in education. In the Ninth Five Year Plan, a program called *Sarva Shiksha Abhiyan* (SSA) was conceived

“to improve accessibility, reduce gender and social gaps and improve the quality of learning” until at least eighth grade - “a much tougher requirement by 2015 than called for by the Millennium Development Goals”. This was a cross-cutting agenda across the two themes of social and regional inequality. In its core essence, SSA is not new – it is merely a new stride, a program to bolster the long cherished goal of Universalization of Elementary Education (UEE), a constitutional mandate from 1950. SSA is the Indian movement to achieve Education For All (EFA), a international initiative first launched in Jomtien, Thailand, in 1990 to bring the benefits of education to “every citizen in every society” led by a coalition “of national governments, civil society groups, and development agencies such as UNESCO and the World Bank.”

The objectives¹ of Sarva Shiksha Abhiyan were:

1. To provide access to schooling facilities with reasonable reach of all children, through programs such as the Education Guarantee Scheme², through alternative schooling, and the creation of the 'Back-to-School' camp by 2003 [which was later extended to 2005].
2. To bridge all gender and social category gaps at primary stage by 2007 and at elementary education level by 2010
3. To achieve universal retention by 2010
4. To focus on elementary education of satisfactory quality with emphasis on education for life

As of May 2010, the Programme Evaluation Organization (PEO) of the Planning Commission reported that “more than 98% of the sampled rural inhabitants have access to elementary schools within 3kms, while 93% of sampled slum children have access to neighborhood schools within 1km”. And so, this makes makes SSA one of the most successful programs in primary education in Asia in all times.

SSA and Income inequality

We know that “higher average education in developing countries is often accompanied by increased inequality of education.” Given the massive success of SSA across the country, what has been its impact in reducing income and social inequality in the society today or showing prospective impact in future? This question looks far easier to answer than it actually is. “Unfortunately, there is no clear theoretical prediction of the effect of educational expansion on income distribution (Ram, 1989)”. And so, for the purpose of this paper, we can consider another simpler question: is improvement in educational access because of SSA related to an increase in income inequality across each state in the immediate short-run or has it reduced?

In this section, I will naively attempt to find causalities and relationships between improvement in primary education access and reduction in income inequalities across states over the period 2000-2005. Due to the noise of data available and inconsistent availability, the data used here is more or less like a 'hack', and some minimal manipulation has been done for making it meaningful and useful. To begin, let us consider comparing some raw facts from this decade; below are three tables that help us in the process. The first table (Table 2) is a listing of the change in Gini coefficients of income distribution across all states of India. The second table (Table 3) is a listing of absolute numbers of enrollment in

1 From a consolidation of several sources, due to lack to coherent and descriptive explanations in any single official or unofficial resource

2 “Under the scheme, the government guaranteed the provision of a teacher, teaching material and contingencies to start a school within 90 days wherever there was a demand from a community without a primary schooling facility within 1km, provided this demand came from at least 25 learners in case of tribal areas and 40 learner in case of non-tribal areas”

State-wise Enrolled and Out of School Children in India (2000-01)			
States/UTs	Child Population Project 6-14 years	Number of Children Enrolled	Number of Children Out of School
Andhra Pradesh	14207000	11729305	2477695
Arunachal Pradesh	219000	215761	3239
Assam	5625000	5546118	78882
Bihar	21578000	13124352	8453648
Goa	294000	195822	98178
Gujarat	8680000	8994985	0
Haryana	4079000	2942869	1136131
Himachal Pradesh	1231000	1107710	123290
Jammu & Kashmir	1819000	1487583	331417
Karnataka	9508000	9414495	93505
Kerala	4758000	4382897	375103
Madhya Pradesh	16085000	14595764	1489236
Maharashtra	16999000	17058253	0
Manipur	464000	406780	57220
Meghalaya	449000	419129	29871
Mizoram	175000	164633	10367
Nagaland	310000	278986	31014
Orissa	6817000	6175000	642000
Punjab	4226000	3102766	1123234
Rajasthan	11413000	11200285	212715
Sikkim	104000	116662	0
Tamil Nadu	9608000	9260935	347065
Tripura	697000	625635	71365
Uttar Pradesh	35071000	19130004	15940996
West Bengal	15204000	13069345	2134655
Andaman & Nicobar Island	71000	62294	8706
Chandigarh	162000	106894	55106

Dadra & Nagar Haveli	35000	36851	0
Daman & Diu	26000	23257	2743
Delhi	2594000	1471557	1122443
Lakshadweep	12000	12768	0
Pondicherry	205000	167288	37712
India	191997000	156636983	35360017

Source: Rajya Sabha Unstarred question No. 1908, dated 10.3.2003

Table 4

Sl. No.	State/UT	Enrolment					
		Classes I-IV			Classes VI-VIII		
		2004-05	2005-06	2006-07	2004-05	2005-06	2006-07
1	A & N Islands	-	29453	32328	-	18845	20098
2	Andhra Pradesh	7692411	7391922	7504991	3643030	3731018	3801828
3	Arunachal Pradesh	159290	194012	211348	49442	58290	65109
4	Assam	3329424	3188565	4195241	727572	763697	1227470
5	Bihar	10917135	11233588	12551689	1936213	2163453	2568858
6	Chandigarh	65276	76279	81146	38591	42777	43977
7	Chhattisgarh	2810050	3410558	3074250	1062310	1396952	1120972
8	D & N Haveli	-	31851	37508	-	7351	9191
9	Daman & Diu	-	15828	14849	-	8335	6009
10	Delhi	1280142	1399122	1514737	766723	819830	830177
11	Goa	-	95857	98895	-	42171	66068
12	Gujarat	5275337	5479659	5730173	1544569	1675341	1810688
13	Haryana	1490595	1442315	1685906	690852	642062	806103
14	Himachal Pradesh	670807	660960	676030	418802	410860	405569
15	Jammu & Kashmir	917085	1038360	1072411	434777	528777	566519
16	Jharkhand	3233271	4494753	5314783	588405	812381	1040233
17	Karnataka	5819740	5006382	5651879	2080389	1908074	2237627
18	Kerala	2075531	2057012	2108917	890849	1243534	1293070
19	Lakshadweep	-	6188	5125	-	3483	2957
20	Madhya Pradesh	9103583	10190213	11271321	3077249	3345216	3910988
21	Maharashtra	8698669	9926924	10249224	2938200	5031763	5093401
22	Manipur	-	335683	343441	-	102392	118749
23	Meghalaya	403079	361204	440575	78277	72320	98940
24	Mizoram	153168	162316	175470	43688	57770	51453
25	Nagaland	293650	310688	339394	106962	111191	132045
26	Orissa	4677237	4616412	3722154	1138416	1225781	1205673
27	Puducherry	77263	90479	110365	48076	50520	69374
28	Punjab	1806720	1545398	1695350	877255	854667	1006922
29	Rajasthan	7712167	8746946	9151462	2252234	2930530	3310769
30	Sikkim	85912	87527	90154	29377	30232	31841
31	Tamil Nadu	6216962	6186218	6156235	3567430	3568479	3620354
32	Tripura	488163	500491	493169	188673	197196	204356
33	Uttar Pradesh	22472205	24342931	25649289	4615361	5831921	6513225
34	Uttarakhand	976832	953477	887274	408112	394219	382629
35	West Bengal	9394836	9005975	9516554	3475656	3586358	3825938
	All States	118296540	124615546	131853637	37717490	43667786	47489180

Table 3

State	1999-2000		2004-05 (URP)*	
	Rural	Urban	Rural	Urban
India	0.26	0.34	0.30	0.37

Andhra Pradesh	0.24	0.31	0.29	0.37
Assam	0.20	0.31	0.19	0.32
Bihar	0.21	0.32	0.20	0.33
Jharkhand			0.22	0.35
Gujarat	0.23	0.29	0.27	0.31
Haryana	0.24	0.29	0.32	0.36
Himachal Pradesh	0.23	0.30	0.30	0.32
Jammu & Kashmir	0.17	0.22	0.24	0.24
Karnataka	0.24	0.32	0.26	0.36
Kerala	0.27	0.32	0.34	0.40
Madhya Pradesh	0.24	0.32	0.27	0.39
Chhattisgarh			0.29	0.43
Maharashtra	0.26	0.35	0.31	0.37
Orissa	0.24	0.29	0.28	0.35
Punjab	0.24	0.29	0.28	0.39
Rajasthan	0.21	0.28	0.25	0.37
Tamil Nadu	0.28	0.38	0.32	0.36
Uttar Pradesh	0.25	0.33	0.29	0.37
Uttarakhand			0.28	0.32
West Bengal	0.22	0.34	0.27	0.38
Delhi	0.29	0.34	0.26	0.33

Table 2

Primary school (class 1-5) across all states in India, while the third table (Table 4) is a listing of absolute numbers of enrollment between the age of 6-14. Because of the lack of data on the absolute numbers of enrollment in Primary school (class 1-5) in 2000-01, we will consider 5/9ths of each raw figure to convey this information.

Our purpose for this initial analysis is to understand if the income inequality levels of a sample subset of states has changed in correlation to its change in enrollment levels³. Using a random number generator, I selected the following 5 states: Rajasthan, Kerala, Haryana, Himachal Pradesh & Orissa. Here is a summarized table that explains the % change in enrollment as compared the % change in Gini coefficient:

	Gini / 1999-00	Gini / 2004-05	% Change in Gini	Enrollment / 00-01	Enrollment / 04-05	% Change in Enrollment
Rajasthan	0.21	0.28	33.33%	6,222,381	7,712,167	23.94%
Kerala	0.27	0.32	18.51%	2,434,943	2,075,531	(14.76%)
Haryana	0.24	0.29	20.83%	1,634,927	1,490,595	(8.82%)
Himachal Pradesh	0.23	0.30	30.44%	615,394	670,807	9.00%
Orissa	0.24	0.29	20.83%	3,430,556	4,677,237	36.34%

Clearly, this kind of analysis is full of limitations and errors (including not factoring in birth rate change), but it gives us an opportunity to make relative comparisons between states for this period. As we can see above, there is no clear trend emerging. For example, Rajasthan has seen a 33% improvement in its Gini coefficient while having an increase of about 24% in the enrollment in primary education. At the same time, Himachal Pradesh has experienced an almost similar improvement in its Gini coefficient but its improvement in enrollment hasn't increased above 10% and vice versa. Orissa, whose Gini coefficient increased by ~21% increased a surprisingly And so we cannot really conclude anything about the role of universal primary education access **in the short-run**. Clearly, it doesn't seem to very self-explanatory.

Let us now consider the results of the program is providing equal access to underprivileged social segments of the society and women during a later period of 2005-2010. You can find below two tables: The first table (Table 5) is a listing of the % of girls' enrollment (class 1-5) across all the states of the country between the period 2005-06 and 2009-10. The second table (Table 6) is a listing of the % of scheduled castes enrollment (class 1-7/8) across all the states of the country between the period 2005-06 and 2009-10.

3 Yes, this is indeed a pretty ridiculous claim however you think about it

Now, let us conduct a similar analysis to the one we performed earlier. Our purpose now is to understand if the income inequality levels of a sample subset of states has changed in correlation to their change in enrollment of girls in classes 1-7/8 and their change in enrollment of scheduled caste children in classes 1-7/8⁴. We will use the same random subset of states we used earlier. Here is a summarized table that explains the % change in enrollment of girls and % change in enrollment of scheduled castes as compared the % change in Gini coefficient:

	% Change in Gini	% Girl enrollment / 2005-06	% Girl enrollment / 2009-10	% Change in Enrollment	% SC enrollment / 2005-06	% SC enrollment / 2009-10	% Change in Enrollment
Rajasthan	33.33%	46.79%	46.57%	(0.47)%	19.53%	19.32%	(0.97%)
Kerala	18.51%	49.40%	49.60%	0.40%	11.01%	11.46%	4.08%
Haryana	20.83%	47.36%	47.10%	(0.54)%	31.39%	27.44%	(12.58%)
Himachal Pradesh	30.44%	47.62%	47.49%	(0.27)%	28.64%	28.24%	(1.39%)
Orissa	20.83%	48.17%	48.80%	1.30%	20.04%	19.64%	(1.99%)

Yet again, this raw analysis yields outcomes far from reality or acceptable empirical observations. Unlike the case with general enrollment in primary schooling, the variations over this period are way too insignificant to even come up with a reasonable relationship between any of the three variables. The only interesting observation states such as **Kerala** which have experienced a hike in enrollment in girls in primary schooling have experienced a proportionate hike in enrollment in schedule caste children, and has one of the highest Gini coefficients for a state in India at 0.32. This points to the nature of integrated efforts of some states in supporting the functions of the government in the thorough implementation of SSA.

Conclusion

Due to inability to explain any causality due to poor datasets and subsequent analysis, it is really hard to do justice to the hypothesis of this paper. Also, due to the multitude of factors that have played a role in reduction of inequality, it is very hard to identify the role improvement in educational access has played in the short-run. There is definitely a economic indicator/measure that can capture the returns of investment in access to education to income distribution. If there isn't one, I propose the need to create such an indicator that factors in elements like growth of population, GDP, birth and mortality rates, drop out rate, etc., despite its overwhelmingly complex nature.

4 Yet another ridiculous claim

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Appendix

Table 3.
Gini coefficients^a

	Rural		Urban	
	50th round	55th round	50th round	55th round
Andhra Pradesh	24.9	23.8	30.3	31.7
Assam	17.6	20.3	28.3	31.2
Bihar	20.9	20.8	29.7	32.3
Gujarat	22.3	23.8	26.9	29.1
Haryana	26.9	25.0	26.7	29.2
Karnataka	24.3	24.5	30.4	33.0
Kerala	27.2	29.0	32.3	32.7
Madhya Pradesh	25.0	24.2	29.7	32.2
Maharashtra	26.7	26.4	33.5	35.5
Orissa	22.4	24.7	29.4	29.8
Punjab	23.8	25.3	26.5	29.4
Rajasthan	23.5	21.3	26.8	28.7
Tamilnadu	28.2	28.4	32.8	39.1
Uttar Pradesh	25.2	25.0	30.2	33.3
West Bengal	23.8	22.6	32.7	34.3
All India	25.8	26.3	31.9	34.8

Source: Sen and Himanshu (2005).

^a Using comparable estimates for the 50th and 55th round NSS Surveys

Gini coefficients of states from the National Sample Surveys in 1994-95 and 1999-2000

Sl. No.	State/UT	Gender Parity Index (Enrolment)					
		Classes I-V			Classes VI-VIII		
		2004-05	2005-06	2006-07	2004-05	2005-06	2006-07
1	A & N Islands	-	0.97	0.96	-	0.88	0.91
2	Andhra Pradesh	0.98	0.98	0.97	0.90	0.91	0.93
3	Arunachal Pradesh	0.87	0.90	0.91	0.87	0.88	0.89
4	Assam	0.96	0.97	0.97	0.95	0.95	0.98
5	Bihar	0.78	0.80	0.85	0.61	0.64	0.71
6	Chandigarh	0.81	0.83	0.80	0.83	0.86	0.82
7	Chhattisgarh	0.94	0.95	0.96	0.81	0.85	0.90
8	D & N Haveli	-	0.89	0.91	-	0.69	0.71
9	Daman & Diu	-	0.86	0.92	-	0.86	0.91
10	Delhi	0.87	0.89	0.88	0.90	0.88	0.88
11	Goa	-	0.90	0.92	-	0.88	0.87
12	Gujarat	0.87	0.89	0.88	0.77	0.79	0.81
13	Haryana	0.91	0.90	0.90	0.95	0.93	0.93
14	Himachal Pradesh	0.91	0.91	0.90	0.91	0.90	0.89
15	Jammu & Kashmir	0.85	0.85	0.86	0.79	0.81	0.81
16	Jharkhand	0.86	0.90	0.95	0.72	0.79	0.83
17	Karnataka	0.94	0.95	0.94	0.91	0.93	0.92
18	Kerala	0.97	0.98	0.98	0.94	0.93	0.93
19	Lakshadweep	-	0.91	0.92	-	0.74	1.00
20	Madhya Pradesh	0.90	0.95	0.95	0.74	0.79	0.82
21	Maharashtra	0.90	0.90	0.90	0.89	0.88	0.89
22	Manipur	-	0.99	0.99	-	0.97	0.97
23	Meghalaya	1.01	1.02	1.01	1.08	1.08	1.10
24	Mizoram	0.94	0.94	0.93	0.97	0.96	0.95
25	Nagaland	0.95	0.96	0.96	0.97	0.98	0.95
26	Orissa	0.92	0.93	0.91	0.84	0.86	0.87
27	Puducherry	0.96	1.07	0.94	0.94	1.05	0.92
28	Punjab	0.85	0.86	0.85	0.88	0.88	0.85
29	Rajasthan	0.87	0.88	0.88	0.58	0.62	0.66
30	Sikkim	0.98	0.99	0.99	1.11	1.13	1.13
31	Tamil Nadu	0.93	0.93	0.94	0.92	0.92	0.93
32	Tripura	0.91	0.91	0.92	0.94	0.95	0.95
33	Uttar Pradesh	0.92	0.91	0.96	0.80	0.83	0.90
34	Uttarakhand	0.97	0.98	0.95	0.91	0.95	0.94
35	West Bengal	0.98	0.98	0.97	0.94	0.96	0.98
	All States	0.91	0.92	0.93	0.83	0.84	0.87

Gender parity index for three periods for primary and early secondary schooling