



ECONOMIC REFORM AND INTER-STATE EXPENDITURE ON MEDICAL AND PUBLIC HEALTH AND EDUCATION: CRITICAL SCENARIO

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Abstract

This paper attempts to examine the growth of inter state expenditure on education medical and public health for the period 1980-81 to 2001-02 with a view to emphasize the shift, if any in the expenditure which would have occurred due to introduction on structural Adjustment Programme in 1991 by Government of India. Empirical findings of the present paper reveal that in terms of expenditure on education, excepting Punjab, in the the category of rich states, other like Haryana, Gujarat and Maharashtra have shown poor performance during the post-economic reform period. Similarly, in the category of poor states like Bihar, M.P., Rajasthan and Orissa have also shown poor performance in terms of expenditure and education. The declining expenditure of states on medical & public health and education has adversely affected the level and structure of human development among Indian States.

I Introduction

The acute fiscal imbalance scenario, fragile balance of payment situation as well as mounting inflationary pressure were the most pertinent factors which led the introduction of Structural Adjustment Programmes (SAPs) by the Government of India July 1991. Among several comprehensive liberalization measures like (i) trade sector reform, (ii) disinvestment and public enterprise reform (iii) financial sector reform, and (iv) industrial sector reform, that have been undertaken under the canvas of SAPs (Vijay Joshi and I.M.D.Little, 1993), reform in the medical and public health and education, which are major ingredient of social sector (Economic Survey, 1991-92, 1992-93) also occupied the place in the wider gamut of reforms of 1991. It is significant to mention that medical and public health and education are vital organ of human development.

There has been a lively debate on issues related with quality of human life/ human priority after the introduction at Human Development Index (UNDP, 1990). In fact, expenditure on concerns of Human priority was 2.5 percent of GDP in India while it was 6.3 percent in Malaysia, 12.2 percent in Zimbabwe, 7.7 percent in Botswana and 5.5 percent in Jordan (Haq, 1992). In 1999, India figured among the list of countries with poor human development in UNDP's Human Development Report, its rank being 115 among a group of 162 countries so considered while small South Asian Countries like Mauritius, Sri Lanka, Vietnam and Indonesia occupied 63rd, 81st, 101st and 102nd and HDI rank respectively, a relatively better HDI than India (UNDP'S, 2001, PP. 145-148). The Scenario further deteriorated and in 2002, India occupied 127th rank in terms of Human Development index (HDI) among 177 countries (UNDP, 2004). Regarding commitment of the government towards health facilities in terms of population using adequate sanitation facilities, population using improved water sources and population with access to essential drugs, for period 1999, India not only lagged behind some small South Asian nations like nations like Malaysia, Mauritius, Vietnam and Indonesia, its position was very poor among SAARC Countries like Sri Lanka, Pakistan, Nepal and Bhutan (UNDP, 2001, pp.158-160). It is interesting to note that India's expenditure on public education, as a percentage of GNP remained 3.2 percent during 1986-97 to 1996-97 while this figure was 3.7 percent and 4.1 percent respectively for the period 1986-87 and 1996-97 in case of poor SAARC country like Bhutan (UNESCO, 2000b).

It is against this backdrop, the present paper attempts to examine the trend and pattern of inter-state expenditure on medical and public health and education. For this task, expenditure data (in total as well as per capita terms) on medical and public health education for twenty major states of Indian federation have been taken for the period 1980-81 to 2001-02. Section II presents data structure and Research Methodology. Section III deals with trends and issues related with inter-state expenditure on medical and public health while pattern of inter-state expenditure on education is contained in section IV. Section V presents major findings and suggestions.

II. Data Structure And Methodology

For the present analysis, expenditure data, (in total as well as per capita terms) on medical and public health and education (Revenue account) for twenty major states like, A.P., Assam, Bihar, Gujarat, Haryana, H.P., J&K, Karnataka, Kerala, M.P., Maharashtra, Manipur, Nagaland, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, U.P. & West Bengal of Indian federation have been taken for the period 1980-81 to 2001-02.

Data on inter-state expenditure have been obtained from various issues of RBI Bulletins, Report on Currency and Finance and State Budgets. In the present paper, average annual growth in inter-state expenditure on medical and public health and education has been estimated with the help of dummy variables for pre-economic reform (1980-90) period as well as post

economic reform (1991-2002) period. Similarly, attainments indices based on inter-state expenditure related to aforesaid parameters, have been calculated on the basis of UNDP methodology (Sudhir Anand and Amartya K. Sen, 1994). Per annum growth of inter-state expenditure and public health and education have been estimated for the period 1980-81 to 2001-02 with a view to emphasize any shift in expenditure trend, if any, which would have happened due to introduction of Structural Adjustment Programmes (SAPs) in 1991 introduced by government of India. For this purpose, Dummy variables [Gujarati, D. (1970, 1995, 1999), Johnston J. and Dinardo J. (1997), suits (1997), Upender, M (2002, 2004)] have been employed. More specifically, in order to estimate inter-state per annum growth in expenditure of states on medical and public health and education, following type of regression equation has been estimated in the present analysis.

$$\ln(Y_i) = \beta_0 + \beta_1 t + \beta_2 D_1 + \beta_3 (t \cdot D_2) + u_i$$

Where,

$\ln(Y_i)$ = i^{th} Dependent variable under study in nature log form,

t = time trend:

D_1 = first dummy for the period 1980-81 to 1990-91,

D_2 = second dummy for the period 1991-92 to 2001-02.

$t_1 D_2$ = An interaction variable to Capture the interaction effect of the presence of the attribute in the second period (1991-2002) and the time trend on dependent variable i.e. Y_i .

β_0 = intercept in the first period (1981-91)

β_2 = differential intercept in the second period (1991-2002)

β_1 = regression coefficient of time-trend in the first period (1981-91) which shows the magnitude of rate of response of Y_i w.r.t time;

β_3 = differential coefficient of time trend in the second period (1992-02) to allow a shift/break/structural change in the magnitude of rate of response of Y_i w.r.t. time;

u_i = error term

In equation 2.1, (i) $(\beta_1 + \beta_3)$, (*shows statistically significant) shows an upward shift in Y_i *

w.r.t. time in the second period (1991-02); (ii) $(\beta_1 - \beta_3)$ Shows a downward shift in Y_i w.r.t. time

in the second period (1991-02) while (iii) $(\beta_1 + \beta_3)$ (where **_shows statistically insignificant) shows no shift/ no structural change in Y_i w.r.t. time in the second period (1991-2002).

The attainment level based on inter-state expenditure related to medical and public health and education has been estimated as per UNDP methodology.

The HDI/ Quality of human life has been formulated in terms of a country's deprivation or shortfall in each of three separate dimensions: life expectancy (X_1), education (X_2), and adjusted income (X_3).

The 1990 report defined I_{ij} as the deprivation index for country I with respect to variable X_i as:

By construction; each deprivation index for country j, $i = 1, 2, 3$ lies in between 0 and 1, An averaged deprivation index I_j for country j defined as a simple unweighted average of the I_{ij} i.e.

The shortfall in the HDI for country j was then defined to be just this average deprivation. Thus, if H_j is the human development index for country j, we have, by definition:

H_j can directly be expressed in terms of attainment level X_{ij} . From the above,

is the i^{th} variable's contribution to the Human development index for country.



III. Inter State Expenditure Of States On Medical And Public Health (1980-2002)

Medical & public Health is an important ingredient in the construction of Human Development Index (HDI). In fact, the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, Religion, political belief, social or economic condition. 'Health for All by the year 2000' was a national goal set by Indian policy-makers over 20 years ago in Amla Ata. The quality of medical & public health facilities is essence guided by the volume of public expenditure of these facilities.

This section deals with expenditure (in total as well as in per capita terms) of twenty major states of Indian federation on medical and public health for the period 1980-2002. Total expenditure (R/A) of 20 major Indian states on medical and public health is shown in table 1 while relevant statistics like mean, standard deviation, skewness, JerqueBeraect. Are shown in Table 2. Average total expenditure during the period 1980-2002 was highest in case of U.P. (Rs. 73394. 14 lakhs) while it was found lowest in case of Manipur (Rs.2824.46 lakhs).

Per annum growth in total expenditure on medical & public health for twenty state has been estimated as per equation 2.1 and results for twenty regression equations have been shown in the Table 3. Based on regression results as shown in Table 3, per annum growth in expenditure (total) on medical & public health for twenty states during per-reform and post-reform periods has been presented in table 4. Facts show that fourteen states as A.P., Gujarat, Haryana, H.P., J&K, Kerala, M.P., Maharashtra, Nagaland, Orissa, Punjab, Rajasthan, Tamil Nadu & W.B. have experienced marginal increase in per-annum growth in total expenditure on medical & public health during post-reform period than pre-form period. However, remaining six states like Assam, Bihar, Karnataka, Manipur, Tripura and U.P have shown declining per annum growth in expenditure (total) on medical & public health during post-reform period than pre-form period. It is significant to observe that U.P and Bihar are the two poor states of Indian federation who have shown poor performance in this regard.

In the light of per capita expenditure of 20 states on medical and public health, human development indices have been estimated as per equation 2.10, and they are presented in table 10. Facts shows that average per capita medical and public health attainment (HDI) index was noted at 0.1706 in 1980-81 which declined later on and stood at 0.1244 in the year 2001-02. Similarly, out of 20 states, Bihar occupied 20th attainment index in this regard throughout the period 1980-2002.

IV. Inter-State Expenditure Of States On Education (1980-2002)

Major Trends

The directive principles of the Indian Constitution, under Article 45, urges the state to ensure free and compulsory education for all the children until they complete fourteen years of age. In this direction, the National policy on Education, 1968 was a farther milestone which stressed the need for strenuous efforts for early fulfillment of the goal laid down in the constitution. The constitutional amendment of 1976 included included education in the concurrent list(the official list of subjects for which the centre and the states assume joint responsibility). This was an important step which called for a new sharing of responsibility between the union government and the states in this vital area of national importance. The National policy on Education, 1986 emphasized that new thrust in elementary education will focus on (i) Universal access and enrolment (ii) universal retention of children upto fourteen years of age and (iii) a substantial improvements in the quality of education to enable all children to attain essential level of literacy.

In modern society, education and literacy are reasonably good indicators of economic development. Spread and diffusion of literacy is generally associated with trails of today's civilization such as modernization, urbanization, industrialization, communication and commerce. It forms an important input in the overall development of individuals enabling them to comprehend their social, political and cultural environment better and respond to it appropriately. Higher levels of education and literacy lead to a greater awareness and also contributes in improvement of economic conditions. It acts as a catalyst for social upliftment enhancing the returns on investment made in almost every aspects of development effort, be it population control, health, hygiene, environmental degradation control, empowerment of women and weaker sections of society.

HDI scores based on per capita expenditure of states on education have been estimated as per equation 2.10 and results are shown in table 20. Facts show that HDI scores registered only margined gain in case of poor states like Bihar and U.P. during the period 1980-2002.

V. Concluding Observations And Future Outlook

The empirical findings of the present paper in terms of per annum growth of states (total and per capita, both) on education, medical and public health especially during post reform period

Table 1, Total Expenditure of States on Medical & Public Health Revenue Account

States	1980-81	1981-	1982-	1983-	1984-85	1985-86	1986-87	1987-88	1988-	1989-	1990-91
A.P.	11198	12801	15137	19632	21515	26235	28721	36092	37049	30128	32680
Assam	3563	4027	4875	3988	8370	9940	8401	14763	12335	9239	11031
Continued	6659	8173	9515	11305	14861	16112	19781	20925	23177	22649	31039
Gujrat	7364	9499	10916	12845	14891	17219	22805	25818	28819	23751	25108
Harayana	3670	4775	5432	6984	8974	9583	8974	10820	10656	7527	8193
H.P.	2406	2870	2793	2894	3886	4920	5241	6674	7436	6025	7072
J&K	2691	2918	3121	4124	4919	6343	7082	8217	6610	7316	8858
Karnata	7043	8717	10932	11095	15266	19491	21847	25100	27629	22673	24302
Kerala	6443	7505	7535	6672	11069	12055	14375	16652	19400	18096	21277
M.P.	11751	13298	15725	18822	20119	26007	28757	36971	37744	24623	27454
Maharastra	16155	22179	27124	33007	35844	47100	51320	52237	55779	43872	47742
Meghalaya	599	515	291	716	759	1020	2136	1391	2143	1868	1811
Nagaland	1067	1122	1153	1609	1455	2051	2728	3603	3417	2453	2308
Orissa	5491	6362	8394	9816	10778	10965	12773	14756	17350	12012	13503
Punjab	4891	5646	5898	7860	10130	10975	12020	14071	19434	15688	16629
Rajasthan	7965	8394	12267	13387	16133	18960	21724	25114	27098	21454	25067
Tamil Nadu	10481	14773	18293	26501	22357	26314	28303	34098	32895	31795	37901
Tripura	408	578	629	804	977	1247	1496	1956	2651	2312	2771
U.P.	14931	17462	22007	28865	29640	28525	41707	49488	55448	53932	62143
W.B.	13441	15448	17611	20034	20458	24257	27313	29510	32678	31810	43301

Continued											
States	1991-92	1992-93	1993-94	1994"95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-2001	2001-2020
A.P.	37526	42174	51616	56019	58540	65342	74804	103885	109763	123780	137027
Assam	14203	13644	17241	19215	19641	21907	25268	23118	30702	39979	40879
Bihar	41323	38564	45704	50531	37594	49367	54730	58546	101620	99643	71294
Gujrat	28372	31373	35605	41320	39175	39257	62564	84059	91313	89946	91875
Harayana	9525	10832	9829	14276	14681	15613	22308	29168	28393	32898	36110
H.g,	7675	8855	1882	11637	12572	14059	17536	23618	24782	25835	27272
J&K	9697	12236	13631	16325	17658	17328	23211	28236	33525	40498	40963
Karnata	29537	36020	39124	45775	43809	62157	62437	70841	86829	99158	115921
Kerala	22266	23013	28422	34324	37218	48635	48906	54522	68804	68160	672129
M.P.	30658	33718	40351	44733	38502	40768	58498	82008	83652	84393	75398
Maharastra	52738	61582	69816	75804	79739	86281	109671	115992	135477	160467	166600

Meghalaya	2165	2392	2647	2841	3069	3124	4311	4805	7534	8860	7141
Nagaland	2038	2278	3666	3523	4367	4071	5035	5474	6263	7606	8278
Orissa	15660	17151	18744	21572	23271	25773	29698	40121	42567	48608	49921
Punjab	18119	19795	22291	22617	21888	27265	38323	51609	54456	78719	78749
Rajasthan	27951	33191	38457	46087	46437	49789	62540	81948	85803	91965	99015
Tamil Nadu	42321	48942	54912	61001	67294	74416	89956	109978	114148	119554	129787
Tripura	2751	2698	3426	3583	3159	3954	5797	5961	41034	8669	9759
U.P.	62423	73788	92283	89813	78711	104928	142187	123394	127020	140088	175888
W.B.	38944	42787	50688	52624	60211	69436	76348	113271	122750	141471	146601
<i>Source: Various issues of RBI Bulletins, Currency and Finance (Vol. II) and State</i>											

Finances -A Study of Budgets of 2001-02, RBI, Jan -2002

Table 2,
Inter-state Growth in Total Expenditure of States on Medical & Public Health (1980-81-2001-02): Regression Results

States	Inter-cept	t	D ₁	D ₂ t	R ²	Adj R ²	RSS	SER
A.P.	4.7514	0.1148	-0.4228	0.0173				
		(10.1174)	(-2.0067)	(1.0771)	0.9760	0.9722	0.2548	0.1190
Assam	3.5191	0.1307	0.0590	-0.0222				
		(6.8330)	(0.1662)	(-0.8198)	0.9330	0.9217	0.7246	0.2006
Bihar	4.1481	0.1451	0.6910	-0.0579				
		(9.6442)	(2.4726)	(-2.7216)	0.9050	0.9596	0.4482	0.1578
Gujrat	4.3160	0.1321	-0.3442	0.0024				
		(9.3169)	(-1.3068)	(0.1217)	0.9660	0.9599	0.3982	0.1487
Harayana	3.8278	0.0794	-1.1174	0.0673				
		(4.4522)	(-3.3737)	(2.6691)	0.923	0.9098	0.6296	0.1870
H.P.	3.0596	0.1206	-0.3739	0.0169				
		(11.5892)	(1.9344)	(1.1512)	0.9830	0.9798	0.2144	0.1091
J&K	3.2119	0.1239	-0.3628	0.0221				
		(11.0006)	(-1.3741)	(1.3886)	0.9830	0.9801	0.2511	0.1181
Karnatak	4.2731	0.1344	-0.1598	-0.0026				
		(10.8010)	(0.6913)	(-0.1460)	0.9770	0.9728	0.3068	0.1306
Kerala	3.9788	0.1310	-1.6233	0.0984				
		(3.3087)	(2.2074)	(1.7570)	0.8650	0.8425	3.1037	0.4152
M.P.	4.8019	0.1004	-0.4011	0.0086				
		(5.6651)	(1.2188)	(0.3431)	0.9110	0.8964	0.6216	0.1858
Maharastra	5.2772	0.1053	-0.3937	0.0105				
		(7.3534)	(1.4796)	(0.5179)	0.9490	0.9407	0.4063	0.1502
Manipur	1.2704	0.1731	1.2516	-0.0928				
		(3.1825)	(1.2390)	(-1.2069)	0.7510	0.7089	5.8561	0.5704
Nagaland	2.2705	0.1135	-0.7241	-0.0179				
		(6.3272)	(-2.1729)	(0.7072)	0.9180	0.9040	0.6373	0.1882
Orissa	4.1022	0.0928	-0.6201	0.0337				
		(7.4687)	(-2.6877)	(1.9172)	0.9630	0.9566	0.3055	0.1303
Punjab	3.7986	0.1374	-0.7118	0.0240				

			(9.8563)	(-2.7479)	(1.2166)	0.9710	0.9664	0.3851	0.1463
Rajasthan	4.3811		0.1220	-0.2666	0.0076				
			(10.1026)	(-1.1884)	(0.4461)	0.9750	0.9714	0.2887	0.1266
Tamilnadu	4.8359		0.1090	-0.1670	0.0077				
			(9.2913)	(-0.7661)	(0.4636)	0.9740	0.9698	0.2727	0.1231
Tripura	1.3018		0.1968	-0.3987	-0.0143				

Table 3, Per capita expenditure on Medical and Public Health (Rev. Account) (1981-2002)

Year	A.P.	Assam	Bihar	Gujrat	Haryana	H.P.	J&K	Kerala	Karnataka	M.P.	Maharashtra	Nagaland	Nagya	Orissa	Punjab	Rajasthan	Tamil Nadu	Tripura	U.P.	W.B.
1981	22	17	9	21	28	55	44	18	25	22	25	41	135	29	28	23	21	19	13	24
1982	23	19	11	27	35	58	47	21	28	24	34	51	135	32	32	29	29	26	15	27
1983	27	23	12	30	39	62	49	27	28	28	41	15	135	30	33	33	36	28	18	30
1984	34	18	15	35	49	63	63	27	24	33	48	46	180	35	43	35	51	35	24	34
1985	36	38	19	39	61	83	74	37	40	35	52	47	158	52	55	41	42	42	24	34
1986	44	44	20	45	64	104	93	46	43	44	67	52	213	57	58	47	49	53	23	40
1987	47	36	24	58	58	108	102	51	50	48	71	128	272	43	63	53	52	62	52	44
1988	58	62	25	65	69	136	*116	58	57	60	72	51	349	49	73	60	52	79	38	46
1989	59	51	27	72	66	149	91	62	66	60	75	113	319	56	100	63	59	106	42	51
1990	47	37	26	58	46	119	99	50	60	38	58	105	220	38	79	48	56	90	40	48
1991	48	48	35	60	49	135	113	53	72	41	50	97	189	42	51	56	57	99	44	53
1992	55	61	46	67	56	144	121	64	75	45	55	114	151	48	57	61	73	96	45	55
1993	60	57	42	72	62	163	150	77	75	48	74	123	175	51	94	71	85	92	50	60
1994	73	71	49	81	55	179	163	82	76	57	82	133	173	55	104	81	92	114	62	70
1995	78	78	53	92	79	207	191	95	93	62	88	139	253	62	104	95	104	117	59	71
1996	80	78	40	85	78	208	196	88	111	51	91	138	297	67	97	92	112	94	49	80
1997	89	86	51	84	82	225	187	123	119	53	97	135	306	73	119	97	123	114	63	91
1998	100	98	56	132	115	273	243	122	154	75	122	180	316	84	165	120	147	161	86	98
1999	139	87	57	183	157	410	316	140	153	108	130	227	345	112	233	154	179	187	75	148
2000	145	114	97	197	151	425	370	170	158	109	150	350	384	117	243	158	184	1270	76	158
2001	163	150	120	177	156	425	402	188	210	139	165	384	382	132	324	162	192	271	84	176
2002	173	151	70	185	176	450	415	216	214	96	174	300	461	133	328	175	204	274	102	179

Note: 1. Figures relating to expenditure of states on Medical & Public Health have been taken from various issues of Report on Currency and Finance (vol. II) and various issues of Monthly Bulletins of RBI.
2. Per capita expenditure of states on Medical & Public Health has been derived by the author on the basis of mid year population estimates of the respective states.

Table 4, Average Annual Growth in Per Capita Expenditure of States on Medical & Public Health (1980-81-2001-02)

Growth rate (in percentage) during

States	Pre-economic reform era (1980-81-1990-91)	Post-economic reform era (1991-92 -2001-2002)
A.P.	9.49	11.91
Assam	11.51	9.33
Bihar	12.65	8.02
Gujrat	11.44	11.96
Harayana	5.55	12.92
H.P.	10.31	12.31
J&K	10.09	12.51
Karnatak	11.84	11.04
Kerala	11.69	21.95
M.P.	7.95	10.43
Maharashtra	8.59	10.02
Manipur	14.94	6.02
Nagaland	7.35	9.20
Orissa	7.65	11.43

Punjab	12.22	14.79
Rajasthan	9.70	10.76
Tamilnadu	9.56	10.61
Tripura	17.48	16.61
V.P.	12.26	7.18
W.B.	8.71	13.02

Note: Growth rates for Pre-economic and Post-economic reform period have been calculated on the basis of coefficients of t and D_2tas given in Table 8.

Table 5										
Total Expenditure of States on Education (Rev. Acc.) (1981-2002): Some Relevant Statistics										
States	Mean	Median	Maximum Value	Minimum Value	Standard Dev.	Skewness	Kurtosis	Jerque-Hera	Probability	No. of Obs.
A.P.	145972.0	108557.00	419433.00	23026.00	115604.6	0.9945	2.9371	3.6298	3.6298	22
Assam	77224.36	50487.00	261346.00	9579.00	72173.24	1.2957	3.8632	6.8383	6.8383	22
Bihar	148010.10	124108.5	420508.0	23548.00	118656.10	0.9446	2.9218	3.2773	3.2773	22
Gujrat	138711.60	98996.0	388806.00	18035.00	118205.00	0.9106	2.5336	3.2399	3.2399	22
Harayana	51011.23	34423.50	148267.00	7158.00	44993.37	1.0068	2.6922	3.8034	3.8034	22
H.P.	29478.0	19229.50	87345.00	4403.00	27047.71	1.0512	2.7408	4.1131	4.1131	22
J&K	31819.09	21574.00	90249.00	4160.00	27368.04	0.8925	2.5976	3.0690	3.0690	22
Karnatak	127999.70	85924.00	359916.00	17204.00	109102.30	0.9069	2.6029	3.1605	3.1605	22
Kerala	111174.90	80570.50	298859.00	21325.0	87163.17	0.8917	2.5924	3.0683	3.0683	22
M.P.	114125.20	96118.50	302265.00	17077.0	85779.30	0.6736	2.3259	2.0803	2.0803	22
Maharastra	281221.9	191556.00	868419.00	38058.00	256554.30	1.1 101	3.0783	4.5244	4.5244	22
Manipur	11780.36	9084.50	33516.00	1856.00	9725.26	0.9991	2.9277	3.6647	3.6647	22
Nagaland	7700.09	5175.00	22246.00	1210.00	6179.96	0.9144	2.831 I	3.0916	3.0916	22
Orissa	70087.27	50011.00	193037.00	10711.00	57152.31	0.7833	2.3530	2.6335	2.6335	22
Punjab	77650.36	55040.00	228163.00	13767.00	67558.60	1.1097	3.0164	4.5154	4.5154	22
Rajasthan	124271.90	84463.50	354757.00	14552.00	110311.90	0.8810	2.4467	3.1268	3.1268	22
Tamil	175977.20	136901.50	495082.00	23816.00	150287.60	0.9212	2.5916	3.2646	3.2646	22
Tripura	14924.32	11163.50	50048.00	1612.00	13604.09	1.2498	3.6968	6.1728	6.1728	22
U.P.	252716.00	205749.0	652260.00	34859.00	204964.0	0.7469	2.2417	2.5728	2.5728	22
W.B.	167863.80	1348795.0	494879.50	24540.00	141257.3	1.1020	3.1451	4.4724	4.4724	22

Table 6, Inter-state Growth in Total Expenditure of States on Education (1980-81-2001-02): Regression Results									
States	Inter-cept	t	D_i	D_{it}	R^2	Adj R^2	RSS	SER	
A.P.	5.3757	6.1476	0.1134	-0.6191	0.995	0.994	0.075	0.065	
		(23.9497)	(0.9906)	-(2.1970)					
Assam	4.398	0.160q	0.2185	-0.0169	0.990	0.988	0.222	0.111	
		(15.1642)	(1.1106)	(-1.1260)					
Bihar	5.344	0.1466	0.3331	-0.0276	0.976	0.972	0.384	0.146	
		(10.5186)	(1.2870)	(-1.4026)					
Gujrat	5.054	0.1652	0.2123	-0.0254	0.995	0.995	0.091	0.071	
		(24.3358)	(1.6841)	(-2.6506)					
Harayana	4.0899	0.1586	-0.0088	-0.0088					

		(24.4798)	(-0.0735)	(-0.9613)	0.996	0.995	0.083.	0.068
H.P.	3.512	0.1570	-0.2027	0.0053				
		(18.9856)	(-1.3200)	(.4546)	0.993	0.992	0.135	0.087
J&K	3.556	0.1602	0.3796	-0.0277				
		(24.3182)	(3.0929)	(-2.9624)	0.996	0.995	0.087	0.069
Karnatak	4.996	0.1592	0.7737	-0.0655				
		(3.2896)	(0.8606)	(-0.9564)	0.760	0.721	4.639	0.508
Kerala	5.237	0.1259	0.0056	0.0016				
		(26.3107)	(0.0630)	(0.2383)	0.997	0.994	0.045	0.050
M.P.	4.977	0.1642	0.8570	-0.0386				
		(14.1433)	(3.9741)	(-4.1766)	0.984	0.981	0.267	0.122
Maharastra	5.733	0.1590	0.0779	-0.0099				
		(27.1745)	(0.7169)	(-1.216)	0.997	0.996	0.068	0.061
Manipur	2.727	0.1550	0.3121	-0.0297				
		(14.9058)	(1.6158)	(-2.0178)	0.988	0.986	0.214	0.109
Nagaland	2.340	0.1532	0.2179	-0.0247				
		(15.2164)	(1.1657)	(-1.7330)	0.988	0.986	0.201	0.106
Orissa	4.469	0.1527	0.4575	0.0321				
		(17.1091)	(2.7604)	(-2.5409)	0.991	0.990	0.158	0.094
Punjab	4.661	0.1465	-0.2107	0.0046				
		(16.2997)	(-1.2621)	(0.3586)	0.991	0.989	0.160	0.094
Rajasthan	4.836	0.1652	0.2427	-0.0201				
		(36.6750)	(2.9003)	(-3.1485)	0.998	0.998	0.042	0.047
Tarnilnadu	5.299	0.1625	0.2901	-0.0274				
		(27.3848)	(2.6327)	(-3.2682)	0.996	0.996	0.070	0.062
Tripura	2.583	0.1960	0.2988	-0.0483				
		(26.2978)	(2.1584)	(-4.5850)	0.995	0.994	0.110	0.078
U.P.	5.624	0.1748	-0.0483	-0.0463				
		(20.5650)	(2.7479)	(3.8500)	0.992	0.991	0.143	0.089
W.B.	5.429	6.1515	0.0950	-0.0171				
		(14.7841)	(0.4989)	(-1.1780)	0.987	0.985	0.208	0.108
<i>Note: (i) Figures in the Parenthesis are t values.</i>								

Table 7, Average Annual Growth in Total Expenditure of States on Education (1980-81-2001-02)

States	Pre-economic reform era (1980-81-1990-91)	Post-economic reform era (1991-92 -2001-2002)
A.P.	14.76	12.85
Assam	16.06	14.37
Bihar	14.66	11.90
Gujrat	16.52	13.98
Harayana	15.86	14.98
H.P.	15.70	16.23
J&K	16.02	13.25
Karnatak	15.92	9.37
Kerala	12.59	12.75
M.P.	16.42	9.56
Maharastra	15.90	14.91
Manipur	15.50	12.53
Nagaland	15.32	12.85
Orissa	15.27	12.06

Punjab	14.65	15.11
Rajasthan	16.52	14.51
Tamilnadu	16.25	13.51
Tripura	19.60	14.77
U.P.	17.48	12.85
W.B.	15.15	13.44

Growth rate (in percentage) during

Note: Growth rates for Pre-economic and Post-economic reform period have" been calculated on the basis of coefficients of t and D_2t as given in Table 13.

Table 8
Per capita Expenditure of States on Education (Rev. Ace.) (1981-2002) ; Some Relevant

States	Mean	Median	Maximu		Standard Dev.	Skewnes	Kurtosis	Statistic		No. of Obs.
			Value	Value				erque-	Probabi	
A.P.	204.91	164.00	532.00	42.00	144.10	0.9253	2.7960	3.1773	0.2042	22
Assam	305.14	220.50	969.00	47.00	264.94	1.2146	3.7079	5.8884	0.0532	22
Bihar	160.77	141.00	483.00	33.00	121.83	1.1298	3.6426	5.0593	0.0796	22
Gujrat	306.90	235.50	785.00	52.00	236.58	0.8337	2.4028	2.8755	0.2375	22
Harayana	277.77	204.50	724.00	54.00	218.10	0.9369	2.5510	3.4037	0.1823	22
H.P.	513.18	364.50	1410.00	102.00	431.58	1.0594	2.7859	4.1573	0.1250	22
J&K	364.41	273.00	896.00	69.00	270.85	0.7624	2.3669	2.4991	0.2866	22
Karnatak	240.50	168.50	673.00	45.00	199.19	1.0258	2.9117	3.8659	0.1447	22
Kerala	358.04	273.00	902.00	83.00	261.44	0.8505	2.5253	2.8588	0.2394	22
M.P.	162.95	142.00	411.00	32.00	114.28	0.7946	2.6592	2.4216	0.2980	22
Maharashtra	324.50	238.00	897.00	60.00	263.65	1.0058	2.8332	3.7347	0.1545	22
Manipur	567.77	494.50	1558.00	129.00	405.99	1.0186	3.2163	3.8472	0.1460	22
Nagaland	537.90	417.50	1244.00	153.00	312.2	0.5924	2.3062	1.7278	0.4215	22
Orissa	204.05	154.50	534.00	40.00	151.91	0.7339	2.3264	2.3911	0.3025	22
Punjab	353.59	272.00	951.00	81.00	278.03	1.0331	2.8096	3.9467	0.1389	22
Rajasthan	247.59	188.00	631.00	42.00	192.44	0.7454	2.2238	2.9895	0.2739	22
Tamil	295.72	242.00	781.00	48.00	236.17	0.8613	2.4913	2.9554	0.2281	22
Tripura	483.00	396.00	1409.00	77.00	386.36	1.2067	3.5886	5.6574	0.9590	22
U.P.	163.91	145.00	392.00	31.00	117.28	0.6520	2.1681	2.1931	0.3340	22
W.B.	227.77	194.50	644.00	44.00	171.09	1.0807	3.2126	4.3245	0.1150	22

Note: Relevant Statistics have been computed on the basis of data as given in Table 16

Table 9, Inter-state Growth in Per Capita Expenditure of States on Education (1980-81-2001.02): Regression Results									
States	Inter-cept	t	D,	D_2t	R^2	Adj R^2	RSS	SER	
A.P.	3.703	0.1285		-0.0122					
		(21.1582)		(-2.7776)	0.992	0.991	0.086	0.069	
Assam	3.691	0.1440	0.2676	-0.0161					
		(13.1553)	(1.3155)	(-1.0423)	0.987	0.985	0.237	0.115	
Bihar	3.398	0.1266	0.1502	-0.0147					

			(8.2950)	(0.5299)	(-0.6825)	0.964	0.958	0.461	0.160
Gujrat	3.827	0.1471	0.1708	-0.0225					
		(19.8348)	(1.2397)	(-2.1460)	0.993	0.992	0.109		0.078
Harayana	3.832	0.1350	-0.0758	-0.0030					
		(17.3025)	(-0.5228)	(-0.2694)	0.992	0.990	0.121		0.082
H.P.	4.366	0.1389	-0.2709	0.0086					
		(14.0064)	(-1.4707)	(0.6126)	0.987	0.985	0.195		0.104
J&K	4.087	0.1364	0.3230	-0.0253					
		(18.8676)	(2.4049)	(-2.4733)	0.993	0.992	0.104		0.076
Karnatak	3.674	0.1414	0.7407	-0.0623					
		(2.9226)	(0.8241)	(-0.911)	0.709	0.661	4.636		0.508
Kerala	4.299	0.1109	-0.0358	0.0068					
		(22.1233)	(-0.3844)	(0.9581)	0.996	0.995	0.050		0.053
M.P.	3.325	0.1432	0.5987	-0.0517					
		(11.7349)	(2.6420)	(-2.9974)	0.977	0.973	0.295		0.128
Maharashtra	3.903	0.1391		-0.0058					
		(2S.1531)		(-1.4518)	0.995	0.995	0.071		0.063
Manipur	4.6876	0.1309	0.2347	-0.0259					
		(11.4383)	(1.1045)	(-1.5986)	0.978	0.974	0.259		
Nagaland	4.920	0.1131	0.1956	-0.0243					
		(10.8334)	(1.0083)	(-1.6446)	0.974	0.970	0.216		0.110
Orissa	3.503	0.1351	0.3911	-0.0274					
		(14.8319)	(2.3120)	(-2.1251)	0.989	0.987	0.164		0.096
Punjab	4.149	0.1296	-0.2608	0.0077					
		(13.2148)	(-1.4304)	(0.5554)	0.986	0.983	0.190		0.103
Rajasthan	3.604	0.1405	0.2361	-0.0182					
		(31.1098)	(2.8132)	(-2.8432)	0.997	0.997	0.040		0.047
Tamilnadu	3.715	0.1487	0.2663	-0.0244					
		(24.1568)	(2.3296)	(-2.8077)	0.995	0.995	0.075		
Tripura	4.173	0.1715	0.1364	-0.0409					
		(17.3212)	(0.7415)	(-2.9178)	0.987	0.985	0.194		0.104
U.P.	3.222	0.1538	0.3883	-0.0436					
		(18.3595)	(2.4951)	(-3.6820)	0.990	0.988	0.139		0.088
W.B.	3.736	0.1322	0.0100	-0.0121					
		(12.6193)	(0.0514)	(-0.8164)	0.983	0.980	0.217		0.110
Note: (i) Figures in the Parenthesis are t values.									

(1992-2002) are shocking and gloomy. Facts show that per annum growth in expenditure (in total as well as in per capita terms) on medical and public health and education in case of poor states has fallen during post economic reform period. For instance, expenditure on education excepting Punjab, in the category of rich states, other states like Harayana, Gujarat and Maharashtra have shown poor performance during the post-economic reform (1992-2002) period. Similarly, in the category of poor states like Bihar, M.P., Rajasthan and Orissa have also shown poor performance in terms of expenditure on education during post-economic reform period i.e. 1992-2002.

Conclusion

The declining expenditure of states on medical & public health and education especially during the post-economic reform period (1992-2002) has adversely affected the level and structure of human development among Indian states. Needless to mention, medical & public health and education are the major determinants of human development in any state/region. This precarious trend has happened mainly due to reason that the effective role of state is shrinking unabated since economic reforms were introduced in 1991. But major question which arises here is that whether vital ingredients of social-sector like education, medical and public health should be left for free market forces/ private sector. The answer is certainly not since



the interaction of free market forces have always been guided by augmented profit motive which has ultimately resulted in accentuation of income/ wealth in the system. Thus, there is an urgent need to expedite the pace of inter-state expenditure on social sector in order to ensure better life standard for the Citizen of Indian federation in the 21 st century.

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