Does Human Development Policy Matter for Economic Growth? Evidence from Indian States

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For explaining growth differentials across the countries, recent growth literature is increasingly relying on the process of human capital accumulation along with the traditional factors like labour and non-human capital. This study has investigated the role of human development policy on the economic growth of Indian states for the period 1980–97. Evidences suggest that the human development position of the states is strongly determined by the human development policy pursued. Panel data evidence investigating the growth impact of human development policy found that economic growth significantly depends upon the human development policy. It confirmed that the government allocation for education is critical for economic development. However, per capita health expenditure does not posses any significant growth impact.

In the past few decades of research, the link between human development and economic growth has received increasing attention from economists (see Barro and Salai-i-Martin 1995; Benhabib and Spiegel 1994; Romer 1989; Schultz 1961; UNDP 1991, 1996, among others). The motivating force behind this emerging literature is the fact that modern economic growth is accompanied by a much faster rate at which 'investment in man' has grown, than investment in non-human capital. Consequently, modern economic growth largely emanates from the accumulation of knowledge, skill, competencies and similar useful attributes embodied in the human population that enhance the quality of

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human activities and its productivity. Although economic growth can result from the accumulation of conventional factors, viz., capital and labour, the quality as well as quantity of such growth will be seriously limited.

In growth literature, the criticality of human capital formation for economic growth rests on two important explanations that it offers. For some, the process of human capital accumulation can largely explain that part of measured economic growth that cannot be accounted for by increases in the inputs of labour and capital conventionally measured (Denison 1962; Schultz 1961). For others, it is an explanation for cross-country differentials in growth performance and living standards. For example, it can explain why developing countries are lagging behind developed countries. In developing countries, economic growth largely results from the accumulation of non-human capital in contrast to the developed countries, where growth increasingly is dependent upon human capital accumulation. Therefore, developing countries are held back in the 'catching up' process, due to a relatively sluggish accumulation of knowledge rather than slow non-human capital formation. Recently, the UNDP (1996) found human development to be central to economic growth, both as the means as well as the end. Thus, growth emphasis has now shifted from investment in physical capital to investment in human capital.

The endogenous growth model that emerged during the late eighties also heavily depended upon human capital formation, either directly or indirectly in endogenising the 'growth engine' (Lucas 1988; Rebelo 1991; Romer 1986). One approach proceeds in terms of a broader concept of capital, which also includes human capital (the AK model). The other approaches are formulated in terms of R&D models or learning-by-doing models, both indirectly dependent upon the knowledge and skill presence in human capital.

In the backdrop of the above criticality of human capital, this article seeks to empirically verify the role of social investments in human development, and consequently on economic growth. Does the human development policy, measured by the government investment in education, health, water supply and sanitation, housing, social security and welfare, and other components of human development, contribute to economic growth? Moreover, how is it related to the ultimate goal of human development? What policy should a developing country like India follow in order to accelerate its growth performance, and is there any trade off between growth impact and human development impact of the human development policy?

I. Linking Human Development Policy and Human Development

Developing countries, in general, have a limited endowment of human capital. Their initial stages of development are marked by a low level equilibrium trap where rates of return to human capital are very low as compared to rates of

return on children, and hence such societies choose large families and invest little in each member (Backer, Murphy and Tamura 1990). Little investment in human capital in turn perpetuates their chronicle of underdevelopment characterized by a large population, poverty, low productivity, and yet again a scarce human capital.

The role of the government in human capital formation is critical in this context. There are two important channels by which social spending can lead to a steady state of having small families and growing human and physical capital. One channel is that of social expenditures on education, health, sanitation, housing, and a direct attack on poverty. These sets of public expenditure affect the incentives of households to invest in human capital by raising rates of return on human capital.

Apart from the above intervention, another frequently emphasized route is that of government provision of productive services. It is argued that due to the lumpiness of capital and long gestation period, private initiatives do not come forth in the case of infrastructural services including transportation, power, water, irrigation, etc. When the government invests in these services, this will crowd in private investments and hence stimulate economic growth. An encouraged private sector demands skilled labour, thus raising the rates of return on human capital. It may also provide on-the-job training. This emerging business environment increases migration of individuals and families in an effort to adjust to changing job opportunities. As a result, government provision of productive services can indirectly affect human capital formation by accelerating economic growth.

There is yet another important way by which the government can contribute to human capital formation. This includes the government intervention to rectify market failures in the capital market, and in the flow of information that tends to inhibit investment in human development. Governments can encourage private investment in human development by making loans accessible and improving information about future returns (VNDP, HDR 1996).

2. Human Development Policy: Can Growth and Human Development Diverge?

The focus of the development paradigm has travelled a long way from the commodity-oriented conception of development in the 1940s to 1960s towards the goalpost of human development in the 1990s. Development is now conceived as a process of enlarging people's choices (Griffin and Knight 1990; Qizilbash 1996; Sen 1983, 1985; UNDP 1990). Apart from the basic human choices such as to live a long and healthy life, to be educated and to have access to resources needed for a decent standard of living, development encompasses political freedom and guaranteed human rights and personal self-respect. Therefore,

the basic difference between development as economic growth and as human development is that the latter has to do with more than just the per capita GNP growth, which is at the heart of economic growth. Mere possession of commodities does not reflect the pattern of its use and more importantly, it is not the sum total of life that a human being seeks. Thus, the human development approach places human beings at the centre of all development efforts—not as a means, but as the end of all means.

As mentioned earlier, government policies can affect human development directly by investing in social services, and indirectly by investing in economic services affecting economic growth. Social investment, in turn, is expected to lead to economic growth. However, several dimensions of human development have social benefits that are not directly compensated for monetarily (HDR 1996). For example, the education of the populace helps contain infectious diseases, and the education of mothers contributes to the health and well-being of their children. Hence, there is a possibility that government investment in social services may not be directly correlated with economic growth. Should the government still invest in social services irrespective of its measured economic benefits?

Human Development Report 1996 argued that human development has great intrinsic value and thus in itself warrants supportive government action. Economic growth is essential in so far as it enlarges the range of human choice, rather than serving as a goal in itself. There are many other basic human capabilities such as the desire to be knowledgeable, healthy, and others which are developmental goals in themselves. Accordingly, this approach calls for government intervention for the sake of human development irrespective of its growth impact.

3. The Patterns of Government Expenditure Across Indian States

It has been observed by recent studies on interstate disparity in India that there has been a widening developmental gap among states during the post-reforms period (Ahluwalia 2000; Dasgupta et al. 2000; Shand and Bhide 2000). However, there is little analysis of the pattern of government expenditure in the regional context. A recent study at the aggregate level had provided evidence that the allocation for development expenditure, particularly on health and education, has declined following the initiation of economic reforms in India (Panchamukhi 2000). The present study also clearly shows that the impact of economic reforms has been to significantly reduce the developmental expenditure, which includes economic as well social allocations like health and education, even while the total public expenditure relative to the Net State Domestic Product (NSDP) has increased in the 1990s. The major trend in the government spending on human development across major Indian states has been discussed in the following

section. For this purpose, the study has constructed different government expenditure ratios similar to those suggested by the UNDP for major Indian States (HDR 1991).

TABLE 1
Average Government Expenditure Ratios Across Major Indian States, 1980–97, 1980–90, 1991–97 (at 1980–81 Prices)

State	Period	Government Expenditure Ratio	Development Expenditure Ratio	Social Allocation Ratio	Social Priority Ratio
Andhra Pradesh	1980–97	25.5	67.1	50.9	61.7
	1980–90	24.9	69.7	50.2	63.5
	1991–97	26.3	62.9	52.0	59.0
Assam	1980–97	33.3	60.3	52.0	74.8
	1980–90	30.5	60.0	50.8	73.7
	1991–97	37.8	60.6	53.9	76.4
Bihar	1980–97	28.4	59.5	52.8	75.2
	1980–90	25.9	60.6	50.3	75.0
	1991–97	32.3	57.8	56.8	75.7
Gujarat	1980–97	22.4	65.1	46.9	70.5
	1980–90	22.1	64.5	48.3	71.1
	1991–97	23.0	66.1	44.7	69.4
Haryana	1980–97	24.0	57.9	42.9	67.1
	1980–90	21.4	61.8	40.9	72.3
	1991–97	28.0	51.8	46.0	59.0
Himachal	1980–97	45.9	67.2	51.0	71.4
	1980–90	43.8	68.4	50.6	74.1
	1991–97	49.1	65.3	51.6	67.0
Jammu & Kashmir	1980–97	59.5	65.8	45.7	66.5
	1980–90	54.4	67.9	42.9	71.1
	1991–97	67.5	62.4	50.2	59.2
Karnataka	1980–97	24.9	65.0	48.1	70.0
	1980–90	23.7	64.5	47.5	71.9
	1991–97	26.8	65.9	49.2	67.2
Kerala	1980–97	30.2	61.5	62.3	78.5
	1980–90	28.2	63.3	63.5	78.6
	1991–97	33.2	58.7	60.4	78.3
Madhya Pradesh	1980–97	26.6	65.8	46.6	65.5
	1980–90	26.3	65.4	44.8	68.4
	1991–97	27.0	66.5	49.4	61.0
Maharashtra	1980–97	18.6	63.6	45.9	72.9
	1980–90	19.1	62.3	45.6	74.9
	1991–97	17.9	65.6	46.5	69.8
Orissa	1980–97	30.2	67.7	49.1	66.4
	1980–90	27.5	69.0	47.7	67.5
	1991–97	34.4	65.7	51.4	64.7

Table 1 continued

State	Period	Government Expenditure Ratio	Development Expenditure Ratio	Social Allocation Ratio	Social Priority Ratio
Punjab	1980–97	22.5	51.4	51.1	74.4
	1980–90	20.7	51.7	53.3	74.2
	1991–97	25.2	50.8	47.7	74.8
Rajasthan	1980–97	28.7	62.9	52.2	72.7
	1980–90	27.1	62.6	52.2	76.4
	1991–97	31.3	63.4	52.3	66.9
Tamil Nadu	1980–97	23.2	63.4	55.8	69.2
	1980–90	22.4	62.9	54.4	71.9
	1991–97	24.4	64.2	58.1	65.1
Uttar Pradesh	1980–97	23.1	57.2	48.0	76.4
	1980–90	20.3	60.3	45.6	76.4
	1991–97	27.4	52.2	51.6	76.3
West Bengal	1980–97	19.2	60.0	60.0	71.9
	1980–90	19.8	60.6	61.0	70.2
	1991–97	18.1	59.2	58.4	74.7
Coefficient of	1980–97	35.66	6.89	10.07	6.21
variation	1980–90	33.77	6.80	11.81	5.11
	1991–97	38.19	8.67	8.88	9.78

Note: For data source see Appendix.

3.1 Government Expenditure Ratio (GER)

It is defined as the percentage share of government expenditure in NSDP. It is found that over the period 1980–97, the average GER across major Indian states ranges from as high as 59.5 per cent in case of Jammu and Kashmir to as low as 18.6 for Maharashtra. What is more important is that for the majority of states, this ratio has reportedly increased in 1991–97 as compared to the earlier period of 1980–90. The maximum increase is noted in the case of Jammu and Kashmir. Only two states, Maharashtra and West Bengal, have seen their ratio decline marginally. The coefficient of variation was found to increase by 4.4 per cent to reach 38.2 per cent in 1991–97. This suggests that during the nineties, the vari-ability in the share of government in the economy across Indian states has increased. Economic theory provides an explanation for this general tendency of government expenditure relative to GDP to rise with economic development. This is because development of the modern industrial society demands govern-ments to constantly undertake new functions, while they perform both old and new functions more efficiently and completely (Wagner hypothesis). Increasing 'monetization' of the household sector also increases the demand on the provi-sion of public services (Rosen and Weinberg 1997).

3.2 Development Expenditure Ratio (DER)

It is the percentage of public expenditure incurred on both social and economic services. This ratio will provide the allocation of public expenditure between development and non-development categories. The latter category of public expenditure includes expenditure heads like organs of state, fiscal and adminis-trative services, interest payments, and servicing of debt. For development pur-poses, the development category of public expenditure is more important from a theoretical perspective. For the period 1980–97, the average share of develop-ment expenditures in the total public expenditure for Indian states vary within 51–68 per cent. The majority of states have a development ratio that is higher than 60 per cent. The average ratio for all states is estimated to be 62 per cent. That means nearly a quarter of the government expenditure has gone into the non-development category. What is of greater concern is that the DER seems to have declined for as many as ten states in the 1990s as compared to the 1980s. A significant decline has been observed in the case of Haryana (10 per cent), fol-lowed by Uttar Pradesh (8 per cent), Andhra Pradesh (7 per cent), Jammu and Kashmir (6 per cent) and Kerala (5 per cent). The little increase that has been noted in the ratio for few states has been marginal, at a maximum of 3 per cent. As a result, the coefficient of variation of the ratio across Indian states has also increased to reach 9 per cent in 1991–97.

3.3 Social Allocation Ratio (SAR)

This is the share of social services in the total development expenditure of the governments. It includes expenditure heads like education, health, water supply and sanitation, housing, social security and welfare, nutrition, etc. The ratio will capture the distribution of development expenditure into social services and economic services. The latter includes expenditures on agriculture and allied services, rural development, irrigation, energy, industry and minerals, transport and communication, science, technology and environment, and general eco-nomic services. Considering the period between 1980–97, the average ratio was found to be the maximum for Kerala at 62.3 per cent, and the minimum for Haryana at 43 per cent. In terms of the magnitude of SAR, Kerala is followed by West Bengal (60 per cent), Tamil Nadu (56 per cent). The rest of the states have a ratio that is less than 55 per cent. Comparing the picture of eighties (1980–90), with that of nineties (1991–97) it is revealed that as many as 13 states have reported an increase in the ratio. Five per cent or a larger increase was noted for Jammu and Kashmir (7.3 per cent), Bihar (6.4 per cent), Uttar Pradesh (6 per cent), Haryana (5.1 per cent) and Madhya Pradesh (4.6 per cent). Among the four states that experienced a decline in the ratio, the maximum decline was reported for Punjab at 5.6 per cent. The coefficient of variation, however, indi-cates that the SAR series is more consistent for the nineties as compared to the eighties.

3.4 Social Priority Ratio (SPR)

This is the share of basic social services like health and education in the total social services expenditure. Over the period 1980–97, the average ratio for Indian states was 71 per cent. That means only around one-third of the social spending has gone into areas other than the core human development services. The ratio ranges from 79 per cent for Kerala to 62 per cent for Andhra Pradesh. The coefficient of variation for SPR series is found to be the least across different ratios. However, it is alarming that the 1990s witnessed a sharp fall in the ratio for the majority of Indian states. The ratio has declined by 13.3 per cent in the case of Haryana. A percentage decline of at least 5 per cent was observed for Jammu and Kashmir (11.9 per cent), Rajasthan (9.5 per cent), Madhya Pradesh (7.4 per cent), Himachal Pradesh (7.1 per cent), Tamil Nadu (6.8 per cent), Maharashtra (5.1 per cent), Karnataka (4.7 per cent) and Andhra Pradesh (4.5 per cent). Given the fact that illiteracy and poverty remain the two formidable development challenges for the country, this fall in the social allocation for basic human services like education and health is surely a matter for concern for all. Further, the coefficient of variation was observed to increase by 5 per cent to reach 10 per cent in the 1990s from 5 per cent in the 1980s.

Another way of assessing the developmental importance of public expenditure is to consider it in relation to the population of the state. This information is provided in Table 2. It is obvious from the table that there are considerable inter-state disparities in per capita government expenditure across different heads of expenditure. Consider the period 1980–97. It is observed that Jammu and Kashmir is by far the largest spender in terms of total per capita and development expenditure. Relatively higher growth performing states like Himachal Pradesh, Haryana, Punjab, Maharashtra, and Gujarat also spend a larger amount as compared to low growth performing states like Bihar, West Bengal, Uttar Pradesh, Orissa, Assam and Andhra Pradesh.

TABLE 2
Average per Capita Government Expenditure (Rs), 1980–97, 1980–90, 1991–97
(at 1980–81 Prices)

State	Period	Total Expenditure	Development Expenditure	Economic Services	Social Services	Education Expenditure	Health Expenditure
Andhra Pradesh	1980–97	477.4	318.3	155.8	162.5	72.6	26.0
	1980–90	430.8	301.1	149.7	151.3	68.3	26.6
	1991–97	550.5	345.4	165.4	180.0	79.5	25.2
Assam	1980–97	519.2	312.4	148.8	163.6	94.4	27.0
	1980–90	459.3	274.8	134.9	139.9	75.1	26.8
	1991–97	613.4	371.4	170.6	200.7	124.8	27.3

Table 2 continued

Table 2 continued

Bihar	1980–97	312.2	185.3	86.9	98.3	56.5	17.4
	1980–90	291.6	176.3	87.2	89.0	50.1	16.5
	1991–97	344.6	199.4	86.4	113.0	66.5	18.9
Gujarat	1980–97	630.3	412.3	220.0	192.3	104.2	31.3
	1980–90	557.5	361.2	186.7	174.5	93.6	31.0
	1991–97	744.7	492.7	272.4	220.3	120.9	31.9
Haryana	1980–97	793.0	441.3	249.5	191.9	90.9	33.2
	1980–90	642.4	395.0	231.3	163.7	79.9	35.2
	1991–97	1,029.5	514.1	278.0	236.1	108.0	30.1
Himachal	1980–97	992.1	662.9	324.2	338.7	159.1	77.1
	1980–90	883.2	601.1	295.7	305.4	140.9	79.0
	1991–97	1,163.2	760.0	369.1	391.0	187.8	74.1
Jammu &	1980–97	1,078.9	701.8	377.6	324.2	128.8	78.3
Kashmir	1980–90	964.3	648.5	368.5	280.0	107.3	83.4
	1991–97	1,258.9	785.6	392.0	393.6	162.5	70.3
Karnataka	1980–97	543.8	346.6	177.9	168.6	85.5	30.8
	1980–90	469.8	290.2	150.6	139.6	70.8	28.0
	1991–97	660.0	435.1	221.0	214.2	108.5	35.1
Kerala	1980–97	569.7	346.0	131.4	214.7	126.8	41.2
	1980–90	474.6	297.2	107.6	189.6	109.0	39.4
	1991–97	704.3	416.3	164.7	251.6	152.2	44.4
Madhya Pradesh	1980–97	417.0	275.5	145.8	129.7	58.9	24.3
	1980–90	380.2	249.8	136.8	113.0	50.9	24.9
	1991–97	475.0	315.8	159.9	155.9	71.4	23.5
Maharashtra	1980–97	647.4	414.2	223.2	191.0	102.9	34.5
	1980–90	570.7	356.9	193.3	163.6	85.4	35.7
	1991–97	767.8	504.1	270.1	234.1	130.2	32.6
Orissa	1980–97	454.3	306.4	154.8	151.5	73.0	26.5
	1980–90	399.5	275.6	143.6	132.0	61.2	26.8
	1991–97	540.2	354.7	172.5	182.2	91.6	26.1
Punjab	1980–97	847.7	434.5	216.4	218.1	117.3	42.9
	1980–90	726.1	374.9	172.0	202.9	105.2	41.9
	1991–97	1,038.8	528.3	286.2	242.1	136.4	44.4
Rajasthan	1980–97	500.2	315.3	150.4	164.9	81.7	35.5 .
	1980–90	425.7	267.0	127.5	139.5	67.7	36.8
	1991–97	617.3	391.1	186.4	204.8	103.6	33.4
Tamil Nadu	1980–97	520.0	330.7	144.6	186.1	91.4	35.0
	1980–90	438.9	277.3	126.0	151.3	73.5	33.6
	1991–97	647.4	414.5	173.7	240.8	119.5	37.3
Uttar Pradesh	1980–97	368.3	208.6	107.7	100.9	56.7	20.3
	1980–90	317.9	192.6	104.6	88.0	48.4	19.1
	1991–97	447.5	233.7	112.6	121.1	69.7	22.3
West Bengal	1980–97	416.0	249.4	100.1	149.3	79.9	27.8
	1980–90	383.5	232.8	90.8	141.9	72.0	27.7
	1991–97	467.1	275.6	114.7	161.0	92.2	27.9
Coefficient of	1980–97	36.52	37.68	42.57	34.90	30.22	47.73
variation	1980–90	36.33	38.71	45.00	35.47	30.89	50.80
	1991–97	37.21	37.00	41.23	34.84	30.11	43.57

Note: For data source see Appendix.

When the ranking of states in other expenditure heads, i.e., economic services vis-à-vis social services are compared, it is not surprising to find that higher human development states are finding large variations in their relative position. As indicated in Table 3 Kerala, which stood in the ranking as the fourth lowest spender in terms of per capita economic expenditure, ranked fourteenth in terms of per capita social service expenditure. For Tamil Nadu, this shift in rank is five to ten and in the case of West Bengal and Punjab, it is two to four and 12 to 15 respectively. On the other hand, states that have witnessed a deterioration in the shift in rank from economic to social expenditure includes Orissa (9 to 5), Madhya Pradesh (6 to 3), Uttar Pradesh (3 to 2), Andhra Pradesh (10 to 6), Haryana (15 to 12), Karnataka (11 to 9), Maharashtra (14 to 11) and Jammu & Kashmir (17 to 16).

TABLE 3
Ranking of Indian States According to the Average per Capita Government Expenditure over 1980–97 (at 1980–81 Prices)

State	Total Expenditure	Development Expenditure	Economic Expenditure	Social Expenditure	Education	Health
Andhra Pradesh	6	8	10	6	4	4
Assam	8	6	7	7	11	6
Bihar	1	1	1	1	1	1
Gujarat	12	12	13	13	13	9
Haryana	14	15	15	12	9	10
Himachal Pradesh	16	16	16	17	17	16
Jammu & Kashmir	17	17	17	16	16	17
Karnataka	10	11	11	9	8	8
Kerala	11	10	4	14	15	14
Madhya Pradesh	4	4	6	3	3	3
Maharashtra	13	13	14	11	12	11
Orissa	5	5	9	5	5	5
Punjab	15	14	12	15	14	15
Rajasthan	7	7	8	8	7	13
Tamil Nadu	9	9	5	10	10	12
Uttar Pradesh	2	2	3	2	2	2
West Bengal	3	3	2	4	6	7

Note: Obtained from Table 2.

As suggested by the coefficient of variation, the largest inter-state variation is found in the case of per capita health expenditure, followed by per capita economic expenditure. Per capita education expenditure exhibits relatively less inter-state disparities. On comparison, the coefficient of variation for the 1990s with the 1980s reveal that barring the per capita total expenditure, all other expenditures indicate a fall in inter-state disparities. This fall is largest for per capita health expenditure, where the coefficient of variation falls by over 7 per

cent from 50.8 per cent in the 1980s to reach 43.57 per cent in the 1990s. The second largest decline is noted in the case of per capita economic expenditure (4 per cent) (Table 2).

4. The Impact of Human Development Policy on Human Development: Evidence from Indian States

In developing countries where investment in human development by the household sector is limited for reasons discussed earlier, the investment by the public sector is crucial in this case. To empirically verify how social expenditure affects human development, the study has constructed human development index (HDI) for 1991 across Indian states following the UNDP methodology. The HDI is then related to log per capita social expenditure. For further disaggregation the two components of HDI, namely, education index (EDI) and life expectancy index (LEI) are regressed on log per capita education expenditure and log per capita health expenditure respectively. These are average expenditures over the period 1980–90 at constant prices.

Table 4 provides different indicators of human development and the constructed HDI with its ranking. It can be seen that Kerala is the highest human developed state in India while Bihar stood as the last in the HDI series. BIMARU states, along with Orissa, Andhra Pradesh and Assam, belong to the category of low human development (less than 0.5) group. States having a moderate human development (0.5 to 0.6) includes Haryana, West Bengal, Tamil Nadu, Himachal Pradesh, Gujarat and Karnataka. There are only three states, Maharashtra, Punjab and Kerala, which comprise a high human development category (over 0.6).

Regression results linking human development policy and human development have been provided in Table 5. Regression 1.1 relates HDI for 1991 to the average per capita social expenditure over 1980–90. As indicated by the *F*-statistic, the model is highly significant and the high *t*-value suggests that the impact of human development policy as measured by the per capita social expenditure is both positive as well as significant. The slope coefficient 1.277 states that for an increase in the per capita social expenditure of 1 per cent by Indian states, the HDI on the average increases by about 0.013. For a further disaggregated analysis to investigate the link between human development policy and human development, the LEI and EDI were regressed on per capita health and education expenditure respectively. Results in regression 1.2 and 1.3 suggest that per capita health and education expenditures have a significant positive impact on the life expectancy index and education index in that order. Therefore, empirical findings strongly support that government policies with respect to human development significantly enhance the human development of the states.

TABLE 4
Human Development Index and Human Development Indicators for Indian States

State	Literacy (1991)	ENR (1991–92)	LEB (1991–95)	Real Per Capita NSDP (1991)	Index				HDI Ranking
					NSDP	LEB	Education	HDI	
Andhra Pradesh	44.09	81.5	61.8	1791	0.386	0.419	0.205	0.337	7
Assam	52.89	87.6	55.7	1576	0.283	0.099	0.353	0.245	6
Bihar	38.48	57.6	59.3	1111	0.000	0.288	0.000	0.096	1
Gujarat	61.29	92.6	61	2379	0.616	0.377	0.490	0.494	9
Haryana	55.85	75.3	63.4	3495	0.927	0.503	0.323	0.584	13
Himachal Pradesh	63.86	95.6	64.5	2183	0.546	0.560	0.540	0.549	11
Karnataka	56.04	89.2	62.5	2257	0.573	0.455	0.403	0.477	8
Kerala	89.81	107.1	72.9	1831	0.404	1.000	0.941	0.782	16
Madhya Pradesh	44.2	78.2	54.7	1536	0.262	0.047	0.188	0.166	3
Maharashtra	64.87	97.7	64.8	3401	0.905	0.576	0.565	0.682	14
Orissa	49.09	79.7	56.5	1530	0.259	0.141	0.260	0.220	4
Punjab	58.51	81.1	67.2	3827	1.000	0.702	0.390	0.697	15
Rajasthan	38.55	64.3	59.1	1754	0.369	0.277	0.038	0.228	5
Tamil Nadu	62.66	117.8	63.3	2266	0.576	0.497	0.647	0.574	12
Uttar Pradesh	41.6	58.2	53.8	1621	0.306	0.000	0.044	0.116	2
West Bengal	57.7	115.4	62.1	2266	0.576	0.435	0.570	0.527	10

Note: ENR is the combined enrollment ratio for primary and middle school. In constructing index, actual maximum and minimum values of the indicators have been used. Per capita net state domestic product (NSDP) has been expressed in logarithm. Education index has been obtained by providing one-third weight to enrollment index and two-third weight to literacy index. Jammu & Kashmir has not been included as data on literacy and life expectancy was not available. For data source refer to appendix.

TABLE 5
The Empirical Link between Human Development Policy and Human Development

Regressions	(t-value)		Adjusted R-square	F-statistic	Prob (F-statistic)	N
	Constant	Coefficient				
1.1. HDI on log real per capita social expenditure	−2.3508* (−3.610)	1.2771* (4.267)	0.5343	18.21	0.0008	16
1.2. LEI on log real per capita health expenditure	−1.1132 (−2.058)	1.0135* (2.808)	0.3146	7.89	0.0140	16
1.3. EDI on log real per capita education expenditure	−2.2844* (−3.294)	1.4166* (3.839)	0.4781	14.74	0.0018	16

Note: * denotes the coefficients are significant at 1 per cent level.

5. The Impact of Human Development Policy on Economic Growth: Panel Data Evidence

To investigate the growth impact of human development policy, the study has estimated the following equation:

$$\log y_{i,t} = \beta_{i,0} + \beta_1 \log HDP_{i,t} + \beta_2 \log y_{i,t} - 1 + \varepsilon_{i,t} \quad\quad (A)$$

Where $y_{i,t}$ is the per capita net state domestic product of the ith state in the year t. $HDP_{i,t}$ is the human development policy measured by per capita social expenditure by the government, including both capital and revenue account. $\beta_{i,0}$ is a time-invariant individual state effect term. $\varepsilon_{i,t}$ is usual random error. There is a likely correlation between the regressors and the disturbance terms in the dynamic panel data model (A). This renders the OLS estimators biased and inconsistent. To avoid such inconsistency, the model has been estimated by instrumental variable (IV). These variables are: (i) lagged dependent variable as the main instrument for different measures of human development policy, and (ii) for instrumenting the lagged growth, per capita NSDP as a share of national per capita NDP along one period lag logy has been used.

'The results of the estimation are reported in Table 6. In the regression 2.1, log per capita development expenditure has been included in the model along with lagged growth. The coefficient of the log per capita development expenditure is observed to be positive and statistically significant. The result is suggestive of a substantial positive impact of development expenditure on economic growth. As the development expenditure is composed of social services and economic services expenditure heads, it is relevant to include these two expenditures separately in the model. This is precisely what regression 2.2 reports. It can be seen that the per capita social expenditure has a significantly positive impact on economic growth. The coefficient of the per capita economic services turn out to be

negative but not significant. The result is indicative of the fact that the social expenditure by the government has played a significant growth-enhancing role over 1980–97, whereas the impact of economic services is not clear. Explanation for this finding is not hard to find. As Barro (1990) had shown, for low tax rates, the return from additional government investment in productively useful infrastructure more than offsets the distortionary cost of higher taxes. Therefore, it is only up to a limit that increased taxes financing government economic services will raise the rate of economic growth. Further, this limit inversely depends upon the level of development of the private sector based on market forces. This is because the dead weight losses associated with tax rates and government finances now increase with the development of an efficient market system (Rosen and Weinberg 1997). It appears that Indian states have already crossed this limit with respect to economic services. In contrast, the expenditure on social services is much below this point, given the large-scale underdevelopment with respect to human development in the country. Moreover, externality associated with human capital resulting in under investment by the private sector, in turn provides an effective role for government investment.

TABLE 6
Fixed-Effects Estimation of the Real per Capita Growth Relation for Major Indian States: Panel Data over 1980–81 to 1997–98

Independent Variables	Regression 2.1	Regression 2.2	Regression 2.3
	Coefficients (t-values)	Coefficients (t-values)	Coefficients (t-values)
$\log y_{i,t-1}$	1.2402*** (11.125)	1.3572*** (11.564)	1.3929*** (11.418)
DEVE	0.1175*** (5.825)		
ESE		−0.0183 (−0.555)	−0.0262 (−0.756)
SSE		0.1285*** (4.845)	
EDE			0.1176*** (4.747)
HLE			−0.0741 (−1.808)
Constant	−0.3014*** (−5.821)	−0.2485*** (−4.936)	−0.0631 (−0.784)
R-square	0.320	0.340	0.343
Observations	289	289	289
Number of groups	17	17	17

Notes: DEVE, ESE, SSE, EDE, and HLE respectively are the per capita development, economic, social, education and health expenditures. *** denotes the coefficients are significant at 1 per cent level. Software used for estimation was 'INTERCOOLED STATA 6.0'.

In regression 2.3, the study has further disaggregated the per capita social expenditure into two basic allocations for human development, namely, per capita education expenditure and per capita health expenditure. The model as usual incorporates lagged one period growth and economic services as additional explanatory variables in the growth relation. The estimated model supports that among all included expenditure categories, the per capita education expenditure has the strongest positive impact on economic growth. The coefficients of per capita economic services and health expenditure both appear to be negative but statistically not significant. The role of education in economic development has already received intense attention in.the literature. These findings corroborate earlier findings that education is in fact one of the critical factors in economic development and to the extent that government expenditure determines educational development, it affects economic development positively.

6. Conclusions

For explaining growth differentials across countries, recent growth literature is increasingly relying on the process of human capital accumulation along with traditional factors like labour and non-human capital. This study has investigated the role of human development policy on the economic growth of Indian states for the period 1980–97. The study has distinguished between growth and the human development impact of the policy, although an interface between these impacts is widely acknowledged. Cross-section evidence strongly suggests that the human development position of the states is strongly determined by the human development policy pursued. The achievements in education and life expectancy at birth in the states are positively correlated with the per capita education and health expenditure respectively. Panel data evidence investigating the growth impact of human development policy indicates that economic growth significantly depends upon the human development policy measured as the per capita social expenditure. Further disaggregating of the social expenditure confirmed that the government allocation for education is more critical for economic development. However, per capita health expenditure does not possess any significant growth impact. This last finding, along with the cross-section finding that suggests that the per capita health expenditure significantly affects the index of life expectancy at birth, makes for a case of classic policy dilemma. What should be the government policy—should they continue to invest on health services even if it has no impact on growth? As argued by the HDR 1996, the states should invest in human development irrespective of its growth impact, because the ultimate development rests with human development only. However, what is of concern in this context is that the 1990s had witnessed a decline of public expenditure on the core areas of human development namely, education and health across Indian states. It is time that Indian states woke up; and if

they want to achieve a higher level of human development along with economic growth, there is no escape from the twin route of investing in both education and health.

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Appendix

The data on government expenditures includes both revenue and capital account and has been collected from various issues of the RBI bulletin of the Reserve Bank of India. Expenditure on education includes education, sports, art and culture and that on health includes medical and public health, and family welfare. The data on real per capita NSDP was obtained from the Handbook of Statistics on Indian Economy, RBI. The mid-year estimated population figures were collected from Statistical Abstracts, CSO. Data on literacy rate and life expectancy at birth were obtained from the 1991 census and SRS analytical studies 1998 respectively. Enrollment ratio was collected from Ministry of HRD, Annual reports.