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AND HUMAN DEVELOPMENT IN INDIA**

Satyaki Roy

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CONTENTS

1. Introduction	1
2. Human Development and Growth	3
3. Growth in Income across States	6
4. Human Development Indicators	11
5. Computing Human Development Index	18
6. Concluding Remarks	21
References	23

List of Tables

<i>Table 1</i> Per capita SDP at Constant Prices	6
<i>Table 2</i> Share of Non-agriculture in GSDP	8
<i>Table 3</i> Median household income and per capita income by states and rural urban disparities	10
<i>Table 4</i> Incidence of Poverty	11
<i>Table 5</i> Literacy Rate over the years	12
<i>Table 6</i> Rural-Urban Disparities in Literacy rates over the years	13
<i>Table 7</i> Gross Enrolment Ratio	14
<i>Table 8</i> Life Expectancy at Birth	15
<i>Table 9</i> Infant Mortality Rate	16
<i>Table 10</i> Human Development Index Values and Rankings	17
<i>Table 11</i> Goalposts for Computing HDI	19
<i>Table 12</i> Income Health and Education Data	20
<i>Table 13</i> Dimension Indexes and Human Development Index, 2009-10	21

List of Figures

<i>Figure 1</i> Relation between initial growth in per capita income and average growth over the years	7
<i>Figure 2</i> Relation between per capita income and share of non-agriculture across states	9
<i>Figure 3</i> Relation between Per Capita Income and Literacy Rate	13
<i>Figure 4</i> Per capita Income and Infant Mortality Rate	16
<i>Figure 5</i> Relation between HDI and PCI	18

REGIONAL DISPARITIES IN GROWTH AND HUMAN DEVELOPMENT IN INDIA

*Satyaki Roy**

[Abstract: This paper argues that that per capita income in all states in India increased in the past four decades but in fact no sign of convergence could be visible as it was expected in the context of liberalizing markets. The paper shows that disparities in terms of income were higher within the rural areas across states compared to their urban counterparts. This might be a reflection of a converging trend in terms of opportunities available in the cities and towns across states. The paper identifies a declining gap in terms of various human development indices such as literacy rate, general enrolment ratio and life expectancy at birth across states and shows that gaps also declined between the rural and urban segments within states. The paper however argues that performance in terms of various dimensions of human development increases with income but at a declining rate which is indicative of the fact that per capita income at higher levels becomes less important in generating gains in terms of basic human development indices. Finally, the paper compares the performance of the states in terms of human development over the years including that computed from the latest available data and shows that the relative positions of the states didn't undergo much change over the years.]

1. Introduction

The redefining of the goals of development of human society by bringing in human capabilities at the centre is a major shift from the traditional welfare economics that conflate human welfare with either opulence or utility (Sen, 1999). Conceiving rational behaviour as something governed by the unilateral purpose of utility maximization fails to capture the more direct human desires of agency and freedom. The defining shift of Sen's capability approach however is to focus on the direct achievements of individuals in terms of entitlements, capabilities and freedom in place of the standard parameters related to growth in per capita income, utility and food availability. Human capabilities are in any case not independent of income growth, nevertheless countries differ in terms of human

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development although having similar levels of per capita income. And this perhaps drives us toward the larger question of interdependence between growth and human development. Human development has been defined as enlarging people's choices in a way which enables them to lead longer, healthier and fuller lives. But enlarging choices involves a complex process ranging from increased provisioning of inputs to the more diffused issues related to the institutional arrangements that are supposed to translate the inputs into real available choices. However a wide range of empirical studies have underlined the close association of higher levels of human capabilities to indicators related to health and education entitlements. This undoubtedly constricts the notion of human development but provides an entry point for both assessing the primary status of human capabilities and hence the required levels of policy interventions.

India experienced more or less high average growth in per capita income in the past two decades and that perhaps glossed over its slow progress in human development. Moreover with increased commercialization of health and education inputs, in other words with more market instruments put in place as a result of reforms, it is likely that different regions, rural and urban or various states converge in terms of their achievements in income and human development. This paper primarily focuses on the emerging trends in growth and human development across states over the past two decades. The empirical literature on human development identifies several dimensions of capabilities that reveal strong association with higher growth, the causalities however run both ways. The broad agreement precisely being the acknowledgment of the fact that higher growth creates resources for human development inputs but enhancement of human capabilities does not automatically follow from higher growth. In other words there has to be human development goals put in the policy agenda at the first place instead of waiting for a later stage until a certain level of growth being achieved. This notion is perhaps instructive of the fact that human development outcomes are not independent of the growth process, in the sense, the nature of growth with a given level of income might lead to differing human development outcomes and hence the 'process' matters not only the outcomes in growth. The growth process that does not necessarily give rise to higher employment and especially rural incomes, output compositions that are not conducive to redistribution and heavily depend on profit inflation are likely to be detrimental to human development. And deprivations in that case are not only manifested across incomes but also across regions.

The following section briefly discusses the relationship between growth and human development. The next section elaborately discusses the trends in income and inequality across the states. Section 4 discusses the various dimensions of human development related to education and health in the states over the last two decades. In section 5 we

construct a human development index for the states using the latest available data and finally we make some concluding remarks.

2. Human Development and Growth

The discourse on human development signifies a shift away from the growth-centric notions of development to a more human-centric approach towards social goals. Indexes that evolved to measure various levels of deprivation attracted policy issues for obvious reasons. However the shift in the approach is not limited to just adding new parameters of development but since public policies involve normative positions, deeper issues related to philosophical reasoning are involved in such changes. The focus on human development and assigning intrinsic values to various dimensions related to command over goods and services, health and education redefines the social good very different from the way of thinking that such goods follow from increased command over goods and services captured in the growth of per capita income. It brings the issue once again at the centre of economic goals and constitutes the crux of Sen's argument much in the tradition of Aristotle that wealth is not the good people actually seek after rather it is useful for the sake of achieving something else that the individual values as good (Clerk, 2006). And hence defining social goods and formulating policies to achieve such social goals became important in itself. It has been shown empirically that economic growth is neither sufficient nor necessary for improvements in quality of life. Various countries have achieved higher quality of life without fast or any economic growth (Gasper, 2004). Haq (1998) also argued that faster economic growth does not raise the quality of life beyond a point. However the point was made that growth contributes in sustaining the higher achievements in quality of life. The underlying fact being different people and societies translate the command over commodities and services into valuable achievements in different ways and the transmission mechanism involves a wide range of issues related to distribution, public provisioning and institutional efficiency as well as how different societies value such achievements.

Sen's critique to the traditional notions of welfare economics is that it relies on revealed preference and conceives such preferences as the ultimate choice made by individuals among options and hardly considers the processes through which the choices emerge. The focus on human development primarily arises because of Sen's capability approach that establishes the objectivity of the well-being. The critique of welfarism is primarily a critique of the contractarian or libertarian thought where it is assumed that the primary role of the government is not to maximize the social good rather maintain a framework of rules within which individuals are left free to pursue their own ends (Sen, 1992). Sen's position was on the contrary that social good can be defined with intrinsic values and one can arrive to some operational definition of such good and policies need to be formulated to promote

the social good. The core argument however is that the information base of traditional welfare theory is too thin to arrive into some acceptable or coherent account of social good. The capability approach defines a person's state of being as a vector of functionings (Sugden, 1993). The set of feasible vectors for any person defines the person's capabilities, that is, the opportunities to achieve the well being. Functionings are different from commodities, in the sense people use commodities while functionings are specific aspects of life and they constitute a person's well being. Sen argued that functioning and capabilities provide the most appropriate 'information base' for normative economics. The novelty of defining objectively the individual or social good on the basis of functionings and capabilities is that it does not automatically assert that what is chosen is good for the individual. In Sen's framework value of a functioning is a matter of intrinsic value and not of individual preference or choice and this is precisely the reason why the notion of poverty advocated by Sen is different from the relative concept of poverty. In the process of moving away from the space of income to the space of capabilities Sen's framework translates relative deprivation into absolute deprivation. The objectivity of well being is neither beyond limit nor can an exhaustive list of functionings be made. What is perhaps more important is to identify crucial dimensions and functionings and assign relative weights according to their contribution to well being.

The choice of functionings in deriving a summary measure of human development was based on two criterions; a) it should be universally valued by the people across the world; b) They must be basic meaning their lack would foreclose many other capabilities (Fukuda-Parr, 2007). In this context HDI measure considers three capabilities: to be knowledgeable; to survive and to enjoy decent standard of living. And the three indicators used to capture these capabilities are literacy and schooling, life expectancy and adjusted income. Human development index in that sense provides a very basic measure of human well being. The notion of human development includes an 'evaluative aspect' and an 'agency aspect'. The former aspect is concerned about evaluating improvements in human lives defined in terms of explicit development objectives using human achievements as key indicators of progress. The second aspect however is concerned with the way human beings contribute both individually and collectively to achieve improvements in well being. This involves issues related to policies and political changes that extend positive freedom in terms of human capabilities. Hence human development emphasizes pluralist informational framework that take account of both well-being aspect of the person captured in terms of physical and mental well-being and the agency aspect that refers to goals that a person values and desires that are sensitive to processes as well as outcomes.

The shift in focus from growth in per capita income to human development however does not deny the crucial relationship between the two. Empirical evidence on several

countries put forward how variables related to both sides interact and influence each other. Economic growth provides resources to allocate in human development inputs while enhanced quality of labour force contribute to the growth process through higher vitality, skills and productivity. The output influences the human development through household, public institutions and non-governmental organizations. The structure of these institutions can largely be held responsible for variations in human development outcomes with a given level of resources. After-tax household expenditure on human development however depends on several factors, viz., distribution of growth and the relative position of the household in the income classes, control structure of resources within the family and public provisioning of human development inputs. The control structure includes gender dimension of decision making within the family. Generally poor households spend proportionately more on human development inputs and female control enhances human development expenditure. The nature of the growth process also influences human development outcomes. This is of course related to how inclusive is the growth process, how the gains of growth are distributed and finally the way it impacts upon the command over goods and services of the people at the margin. Empirical evidence shows that growth in per capita income is positively associated to child schooling and higher demands for health services. Public provisioning of human development inputs however depends on several factors such as the amount of revenue or the tax capacity of the system and the way such provisions are prioritized in the specific policy regime. In neoliberal pursuits well being is defined in terms of utility maximization and it hardly recognizes the role of government in promoting the social good rather believes in the contractarian notion of maintaining an arrangement that is conducive to pursue individual goals. This framework at best recognizes 'human capital' drawing in from new growth theory that increased levels of education result in higher innovative capacity and expenditures on research activities generate increasing returns through spillover effects. The denial of the intrinsic value of functionings and the objectivity of the social good is implicit in neoliberal framework. The human development improvement function is a concept analogous to production function that maps the vector of human development inputs to a vector of achievements. This function defines the way variations of inputs result in various human development outcomes and how the translation process varies with changes in the stage of economic development. The causality on the other direction works through enhanced capabilities that result in greater creativity and productivity of the labour force and positively contributes to growth. Higher earnings are often associated to additional years of education and improved health and nutrition enhances labour productivity. Introduction of higher levels of technology also depends on the quality of workforce and availability of skilled labour reinforces the process of introducing new technology. These interactions imply that growth and human development mutually reinforces each other but one does not necessarily follow from the other. Furthermore Ranis et al, 2000 has shown that in the

course of development countries having higher attainments in human development may succeed in mending the gaps in economic growth but those who did not pay attention to human development from the beginning and solely relied on reforms related to economic growth seem to have higher chances to slip back to a vicious circle of low human capabilities and slow growth. In the next section we see how growth in per capita income and related variables changed over time across states.

3. Growth in Income across States

The growth in per capita income in India had been quite impressive over the years. At a more disaggregated level we find the per capita state domestic product of fifteen major states for a longer period of time, 1980/81 to 2009/10. The primary focus of this analysis is to see whether disparities or gaps in per capita income across states have decreased over time or not. In the course of liberalizing markets, the interactions within states and that between individual states and the external world is expected to rise resulting in greater convergence in terms of economic gains. *Table 1* shows that per capita income increased consistently for all the states. In 2009-10 Maharashtra had the highest per capita income and the lowest figured in case of Bihar.

Table 1
Per capita SDP at Constant Prices

	1980-81	1990-91	2000-01	2009-10
Andhra Pradesh	1380	2060	2994	4993
Assam	1284	1544	1635	2786
Bihar	917	1197	1205	1621
Gujarat	1940	2641	3905	6736
Haryana	2370	3509	4385	7585
Karnataka	1520	2039	3564	5167
Kerala	1508	1815	2673	6390
Madhya Pradesh	1358	1693	1965	2711
Maharashtra	2435	3483	5026	7893
Orissa	1314	1383	1778	3311
Punjab	2674	3730	4788	5935
Rajasthan	1222	1942	2233	3249
Tamil Nadu	1498	2237	3597	6414
Uttar Pradesh	1278	1652	1796	2255
West Bengal	1773	2145	3524	4130
India	1630	2223	3234	4634
CV %	31.09	36.00	40.55	42.78

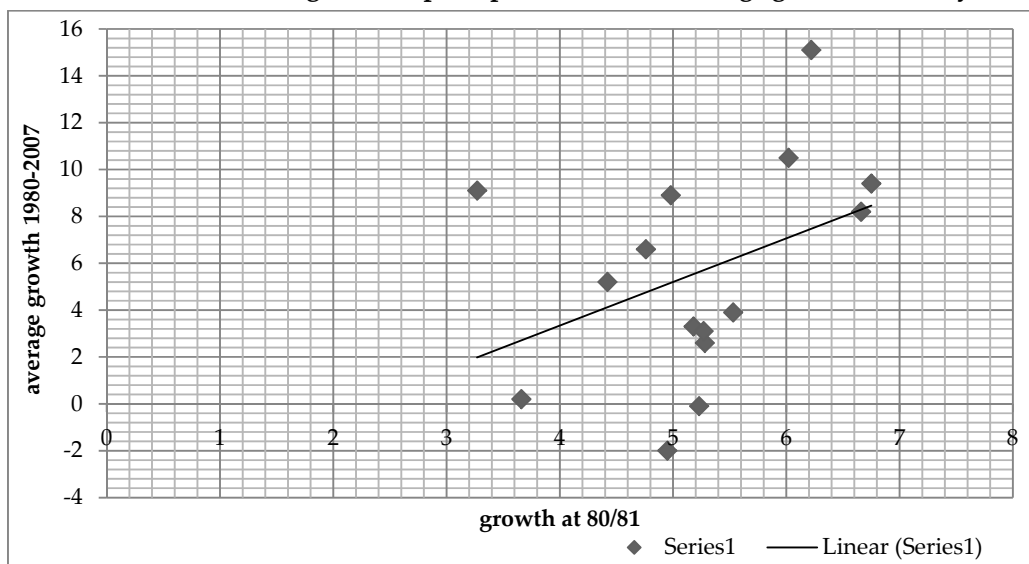
Source: EPW CD

In 1980/81 the states having highest and lowest per capita income are Punjab and Bihar respectively. However if we compute the ratio of the highest and the lowest in the two

reference years, which in some sense captures the difference between the two extremes we see that for 1980/81 it was 2.91 and that increased to 4.87 in 2009-10. There were eight states of the fifteen considered that had per capita income higher than the all India average. The table also shows that coefficient of variation across states increased consistently over the past three decades. This perhaps show that contrary to the presumption of convergence, in fact, the divergence increased in terms of per capita income.

Figure 1 shows a strong positive correlation between growth of per capita income in 1980/81 and the average growth of respective states during the period 1980 to 2007. The regression line says higher the initial growth rate the higher had been the average growth rate over the years. This implies that the gaps in per capita income would increase over time and there seems to be no trend of reversing this rising disparity. In the initial year Andhra Pradesh, Tamil Nadu and Gujarat had higher growth rates and the highest average growth for the period 1980-2007 is recorded in the case of Gujarat.

Figure 1
Relation between initial growth in per capita income and average growth over the years



Source: Computed from EPW CD

One of the major reasons of income disparity across states is often attributable to the share of non-agriculture in GSDP. It is generally held that shifting economic activities from decreasing returns activities to manufacture and services that are assumed to have increasing returns would necessarily lead to higher income growth. Table 3 shows the share of non-agriculture across states over time. The share of non-agriculture increased for all the states over time. Haryana shows the highest shift in terms of percentage points

followed by Karnataka and Orissa. Although Orissa and Uttar Pradesh were the states that recorded relatively low share in non-agriculture, viz. 49.8 and 49.6 respectively during the initial reference years. *Table 2* shows that the mean share for all the states increased over time but the coefficient of variation declined consistently over the years.

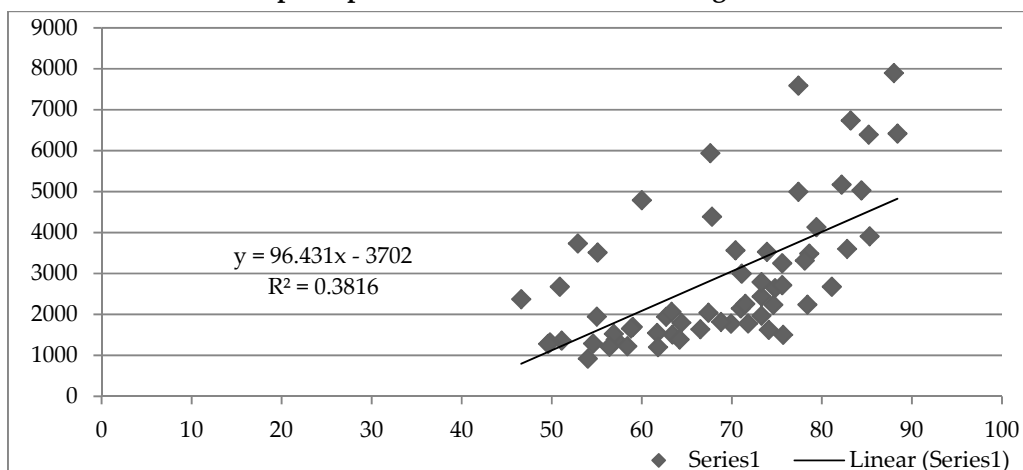
In *Figure 2* we show the pooled regression between the share of non-agriculture and per capita income of states and find a positive relation between the two. However the low R-squared in the regression of course implies that the per capita income can only be partially explained by the share of non-agriculture of respective states. Taking the results of *Table 1, 2 and Figure 2* together, one can argue that the disparities in per capita income increased across states over time, although the disparity in terms of share of non-agriculture declined over time and these two can be reconciled by the fact that share of non-agriculture does not explain the difference in the per capita income in its entirety.

Table 2
Share of Non-agriculture in GSDP

	1980/81	1990/91	2000/01	2005/06	Average
Andhra Pradesh	57.1	63.3	71.1	77.4	67.2
Assam	54.6	61.7	66.5	73.3	64.0
Bihar	54	61.8	56.4	74.1	61.6
Gujarat	62.7	74.8	85.3	83.2	76.5
Haryana	46.6	55.1	67.8	77.4	61.7
Karnataka	56.9	67.4	70.4	82.2	69.2
Kerala	63.4	68.8	81.1	85.2	74.6
Madhya Pradesh	51.1	59	73.3	75.6	64.8
Maharashtra	73.3	78.6	84.4	88	81.1
Orissa	49.8	64.2	71.8	78.1	66.0
Punjab	50.9	52.9	60	67.6	57.9
Rajasthan	58.4	55	74.6	75.6	65.9
Tamil Nadu	75.7	78.4	82.8	88.4	81.3
Uttar Pradesh	49.6	58.8	64.4	71.5	61.1
West Bengal	69.9	71	73.9	79.4	73.6
Mean	58.27	64.72	72.25	78.47	68.43
CV %	15.5	12.8	11.9	7.6	10.8

Source: same as Table 1

Figure 2
Relation between per capita income and share of non-agriculture across states



Source: Computed from EPW CD

Table 3 shows the household income and per capita income for rural and urban areas across states during the year 2010. On the average the rural household income or the per capita income is close to half of the urban segment for the respective states. The rural to urban ratio is highest in Kerala for both household income and per capita income. The ratios are comparatively higher in the cases of Punjab, Rajasthan and Jammu and Kashmir. This implies that these states record a lower rural-urban gap in terms of household income and per capita income. Rural-urban ratio is lowest in the case of Jharkhand implying the highest gap between rural and urban segments in terms of per capita income.

The other important fact to note is that if we see the coefficient of variation, it is much higher in the rural segment than the urban both in the case of household income and per capita income. This implies that disparities in reference to both the parameters are much higher in the rural segments across states compared to the urban segments. The urban India might be converging in terms of income while rural India is left with larger disparities within themselves.

Finally in this section we look into the incidence of poverty across states (see Table 4). The incidence of poverty declined for all the states during the reference period. The sharpest decline in percentage points during the period 1983 to 2004/05 has been recorded in the case of West Bengal followed by Tamil Nadu and Kerala. Punjab shows the lowest incidence of poverty in the three reference years and the highest incidence in 2004/05 has been recorded in the case of Orissa followed by Bihar and Chhattisgarh. The next section would be looking into the changes in health and education parameters and composite human development and the way they are linked with the per capita income across states.

Table 3
Median household income and per capita income by states and rural urban disparities

	<i>Household Income</i>			<i>Per capita Income</i>			<i>R/U (H)</i>	<i>R/U (I)</i>
	<i>Rural</i>	<i>Urban</i>	<i>Total</i>	<i>Rural</i>	<i>Urban</i>	<i>Total</i>		
A. P.	20642	48000	25600	5250	11250	6241	0.430	0.467
Assam	22750	48000	25000	5567	10342	6000	0.474	0.538
Bihar	19235	39600	20185	3339	6857	3530	0.486	0.487
Chhattisgarh	21900	59000	23848	4800	12000	5306	0.371	0.400
Delhi	88350	66400	68250	NA	15000	15000	1.331	NA
Gujarat	21000	56500	30000	4494	12240	6300	0.372	0.367
Haryana	44000	72000	49942	8000	14647	9443	0.611	0.546
H. P.	43124	72000	46684	9440	15662	9942	0.599	0.603
J&K	47325	75000	51458	7407	13460	8699	0.631	0.550
Jharkhand	20700	70000	24000	4175	13654	4833	0.296	0.306
Karnataka	18900	54000	25600	4333	12000	5964	0.350	0.361
Kerala	40500	48000	43494	9563	10413	9987	0.844	0.918
M. P.	18025	33700	20649	3530	6328	4125	0.535	0.558
Maharashtra	24700	64600	38300	5337	14000	7975	0.382	0.381
North-East	49000	90000	60000	11153	22700	13352	0.544	0.491
Orissa	15000	42000	16500	3096	9000	3450	0.357	0.344
Punjab	42021	60000	48150	7622	12120	9125	0.700	0.629
Rajasthan	29084	45600	32131	5732	9000	6260	0.638	0.637
Tamilnadu	20081	35000	26000	5297	9000	7000	0.574	0.589
Uttarakhand	28896	60000	48150	7622	12120	9125	0.482	0.629
Uttar Pradesh	20544	46000	24000	3605	8285	4300	0.447	0.435
West Bengal	21600	59700	28051	4928	14571	6250	0.362	0.338
India	22400	51200	27857	4712	11444	5999	0.438	0.412
Mean	30789.9	56595.5	35272.4	5918.6	12029.5	7373.0	0.537	0.504
CV%	54.64	25.17	40.86	38.20	29.51	40.77	41.53	28.42

Source: Human Development in India, 2010

Table 4
Incidence of Poverty

	1983	1993-94	2004-05	Rank(04-05)
Andhra Pradesh	28.9	22.2	15.8	15
Assam	40.5	40.9	19.7	13
Bihar	62.2	55	41.4	2
Chhattisgarh			40.9	3
Delhi	26.2	14.7	14.7	17
Gujarat	18.9	14.9	13.8	19
Haryana	21.4	25.1	14	18
Himachal Pradesh	40.9	39.4	17.6	14
J&K	16.4	28.4	10	20
Jharkhand			40.3	4
Karnataka	38.2	33.2	25	9
Kerala	40.4	25.4	15	16
Madhya Pradesh	49.8	42.5	38.3	6
Maharashtra	43.4	36.9	30.7	8
Orissa	65.3	48.6	46.4	1
Punjab	16.2	11.8	8.4	21
Rajasthan	34.5	27.4	22.1	12
Tamil Nadu	51.7	35	22.5	11
Uttarakhand			39.6	5
Uttar Pradesh	47.1	40.9	32.8	7
West Bengal	54.9	35.7	24.7	10

Source: Planning Commission data book, 2012

4. Human Development Indicators

The performance of the states in terms of human development indicators provides a different aspect of inter-regional disparity apart from differences in per capita income. Considering elementary education indicators such as literacy rate, gross enrolment ratio and health indicators as life expectancy at birth and infant mortality rate we see the trends related to human development over the years. *Table 5* shows the literacy rates across states over the years.

Mean literacy rates for the fifteen states considered as well as that of India increased consistently over the years for both rural and urban segments. The coefficient of variation also declined over the years indicating some convergence in terms of education entitlements. In the year 2007-08 for both the rural and urban areas Kerala had the

Table 5
Literacy Rate over the years

	Rural 81	Rural 91	Rural 2001	Rural 07/08	Urban 81	Urban 91	Urban 2001	Urban 07/08
AndhraPradesh	27.85	35.74	55.33	57.5	61	66.35	76.39	79.5
Assam	34.39	49.32	60.92	82.7	75.09	79.39	85.76	93.3
Bihar	27.7	33.83	44.42	56.1	61.77	67.89	72.71	76
Gujarat	43.57	53.09	58.53	68.1	71	76.54	79.24	86.5
Haryana	37.26	49.85	63.82	69.5	66.83	73.66	79.89	84
Karnataka	37.63	47.69	59.68	64.9	66.91	74.2	81.05	84.7
Kerala	80.31	88.92	90.05	93.2	86.91	92.25	93.38	96.1
MadhyaPradesh	29.33	35.87	58.1	65.1	64.55	70.81	79.67	83.3
Maharashtra	45.65	55.52	70.84	75.1	74.29	79.2	85.76	89.3
Orissa	37.77	45.46	60.44	65.6	64.81	71.99	80.95	85.6
Punjab	41.73	52.77	65.16	72.1	64.96	72.08	79.13	83.9
Rajasthan	22.47	30.37	55.92	56.4	58.05	65.33	76.89	79.7
Tamil Nadu	45	54.59	66.66	74.4	73.25	77.99	82.07	87.4
Uttar Pradesh	28.53	36.66	53.68	63.6	54.87	61	70.61	75.8
West Bengal	40.18	50.5	64.06	72.1	70.68	75.27	81.63	86.6
India	36.01	44.69	59.21	67	67.3	73.1	80.06	84.3
Mean	38.62	48.01	61.84	69.09	67.66	73.60	80.34	84.78
CV%	35.08	29.34	16.17	14.42	11.73	10.07	6.80	6.69

Source: Planning Commission (2002) and IHDR (2011)

highest literacy rate followed by Assam and Maharashtra. *Table 6* shows the literacy rate for the rural as proportion to the urban over the reference years. The higher the ratio, the less would be the rural-urban gap in terms of literacy. The figures show that rural urban gap for literacy had declined for all the states over the years. In 2007-08 states showing highest and lowest difference are Rajasthan and Kerala respectively. Nine states out of fifteen shown record a gap less than that for all India.

This is further reflected in the fact that the difference in percentage points between the states showing highest and lowest literacy rates declined both for rural and urban areas. In the rural segment for both the years 1981 and 2007-08 Kerala and Rajasthan recorded the highest and lowest literacy rates respectively and their difference was by 57.84 percentage points in 1981 that declined to 36.8 in 2007-08. In the urban segment the highest and lowest literacy rates were recorded for the two reference years were Kerala and Uttar Pradesh. The difference in their rates declined from 32.04 in 1981 to 20.3 in 2007-08.

Figure 3 shows the relation between per capita income and literacy rate. The table shows a regression using pooled data for four decades. It is found that literacy rates increases with rise in per capita income but at a decreasing rate. This is quite obvious since the

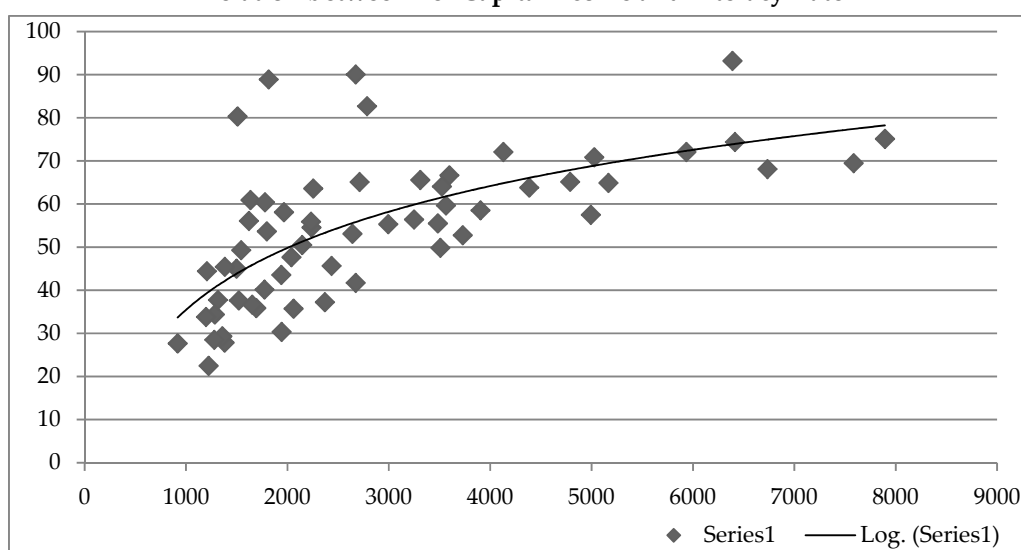
growth in per capita income necessitates higher literacy rates in the initial periods and as per capita income keeps growing it would not have similar impacts on literacy similar to the initial periods.

Table 6
Rural-Urban Disparities in Literacy Rates over the years

	R/U81	R/U91	R/U01	R/U07/08
Andhra Pradesh	0.457	0.539	0.724	0.723
Assam	0.458	0.621	0.710	0.886
Bihar	0.448	0.498	0.611	0.738
Gujarat	0.614	0.694	0.739	0.787
Haryana	0.558	0.677	0.799	0.827
Karnataka	0.562	0.643	0.736	0.766
Kerala	0.924	0.964	0.964	0.970
Madhya Pradesh	0.454	0.507	0.729	0.782
Maharashtra	0.614	0.701	0.826	0.841
Orissa	0.583	0.631	0.747	0.766
Punjab	0.642	0.732	0.823	0.859
Rajasthan	0.387	0.465	0.727	0.708
Tamil Nadu	0.614	0.700	0.812	0.851
Uttar Pradesh	0.520	0.601	0.760	0.839
West Bengal	0.568	0.671	0.785	0.833
Mean	0.560	0.643	0.766	0.812
India	0.535	0.611	0.740	0.795

Source: Computed from Table 5

Figure 3
Relation between Per Capita Income and Literacy Rate



Source: Computed from EPQ CD and IHDR (2011)

The second measure we use to capture education entitlement is gross enrollment ratio. The ratio shows the enrollment of students as a proportion of population within the age group considered to be relevant for the specific grade.

Table 7 shows the gross enrollment ratio for primary and upper primary grades across the fifteen states over the years. We find that gross enrollment ratio increased for India as well as for the states considered during the reference period for both primary and upper primary sections. The coefficient of variation between states also declined over the years, implying that the differences across states in terms of gross enrollment ratio have declined. In the upper primary segment we see some fluctuations in coefficient of variation but the trend of course shows a decline. We find some figures in the table greater than 100 implying that some students enrolled in the specific segment would not belong to the age cohort specified for the segment.

Table 7
Gross Enrolment ratio

	<i>Primary</i>				<i>Upper primary</i>			
	1981	1991	2005/06	2007/08	1981	1991	2005/06	2007/08
Andhra Pradesh	46.3	53	94.87	95.5	39.9	55.9	73.91	77.3
Assam	NA	46	107.11	129.7	NA	63.4	72.83	75.1
Bihar	33.6	34.3	87.2	104.4	42.1	51.1	34.27	46.2
Gujrat	56.5	62.3	119.44	123	59.6	68.1	74.24	78.2
Haryana	50	62.2	79.61	90.4	53.8	73.1	74.83	75.7
Karnataka	51.7	61.9	106.19	106.1	46.3	63.2	84.64	90.2
Kerala	89.7	91.2	93.85	92.3	84	93.1	97.94	100.1
Madhya Pradesh	37.4	47.4	143.67	153.4	40.9	57.3	91.67	100
Maharashtra	63.4	69.1	112.34	101.8	60.7	75.7	100.64	86.8
Orissa	48.7	54.3	118.15	117	41.7	56.7	64.55	80.1
Punjab	64.4	65.9	77.46	92.8	61.2	73.4	67.53	69.1
Rajasthan	33.7	38.9	121.69	118.3	40.2	52.2	74.12	81.4
Tamil Nadu	67.4	77.4	120.07	116.1	52.8	72.1	106.81	112.7
Uttar Pradesh	33.9	36.7	110.57	113.7	43.8	51.3	53.02	67.8
West Bengal	45.9	45.9	119.89	112.9	52.8	61.1	66.71	71.2
India	47.2	51.2	109.4	114.6	50	62.1	71.15	77.5
Mean	51.61	56.43	107.47	111.16	51.41	64.51	75.85	80.79
CV%	30.68	28.02	16.77	15.04	23.85	17.93	24.76	19.73

Source: Ghosh (2011)

Table 8 shows life expectancy at birth for male and female across states over the years. The figure shows that life expectancy increased for both male and female over the years and the coefficient of variation across states declined in the reference period.

Table 8
Life Expectancy at Birth

	1998-2002		1999-2003		2000-04		2001-05		2002-06	
	M	F	M	F	M	F	M	F	M	F
AndhraPradesh	62	64.6	62.2	64.8	62.4	65	62.7	65.2	62.9	65.5
Assam	57.7	58.1	57.8	58.3	58	58.6	58.3	59	58.6	59.3
Bihar	61.4	59.5	61.6	59.7	61.8	59.9	62	60.1	62.2	60.4
Gujarat	62.4	64.4	62.5	64.6	62.7	64.8	62.8	65	62.9	65.2
Haryana	64.7	65.4	65	65.6	65.3	65.8	65.6	66	65.9	66.3
Karnataka	62.8	66.2	62.9	66.4	63.1	66.7	63.4	66.9	63.6	67.1
Kerala	70.8	75.9	70.9	76	71	76.1	71.3	76.3	71.4	76.3
MadhyaPradesh	57	56.7	57.2	56.9	57.5	57.2	57.8	57.5	58.1	57.9
Maharashtra	65	67.4	65.2	67.6	65.5	67.8	65.8	68.1	66	68.4
Orissa	58.4	58.5	58.6	58.7	58.9	58.9	59.2	59.2	59.5	59.6
Punjab	67.4	69.5	67.6	69.6	67.8	69.8	68.1	70.1	68.4	70.4
Rajasthan	60.5	61.6	60.7	61.8	60.9	62	61.2	62.2	61.5	62.3
Tamil Nadu	64.2	66.3	64.3	66.5	64.6	66.8	64.8	67.1	65	67.4
Uttar Pradesh	59.4	58.5	59.6	58.7	59.9	59	60.1	59.3	60.3	59.5
West Bengal	63.3	64.8	63.5	65	63.7	65.2	63.9	65.5	64.1	65.8
India	61.6	63.3	61.8	63.5	62.1	63.7	62.3	63.9	62.6	64.2
Mean	62.47	63.83	62.64	64.01	62.87	64.24	63.13	64.50	63.36	64.76
CV%	5.94	8.06	5.91	8.00	5.85	7.92	5.83	7.85	5.76	7.73

Source: Planning Commission, http://planningcommission.nic.in/data/datatable/0904/tab_150.pdf

In 2002-06 for both males and females highest life expectancy at birth was recorded for Kerala and the lowest being Maharashtra. It is evident from the table that female life expectancy was higher than that of male for India and for 12 out of 15 states considered. The second measure we take note in the context of health is infant mortality rate. *Table 9* shows that infant mortality rate declined in both rural and urban areas across states. Considering IMR for the year 2009 we find that in the rural segment it was lowest in Kerala and highest in Orissa and for the urban segment the lowest being recorded is again Kerala while highest being Uttar Pradesh. Combining rural and urban IMR has been lowest in Kerala and highest in the case of Madhya Pradesh.

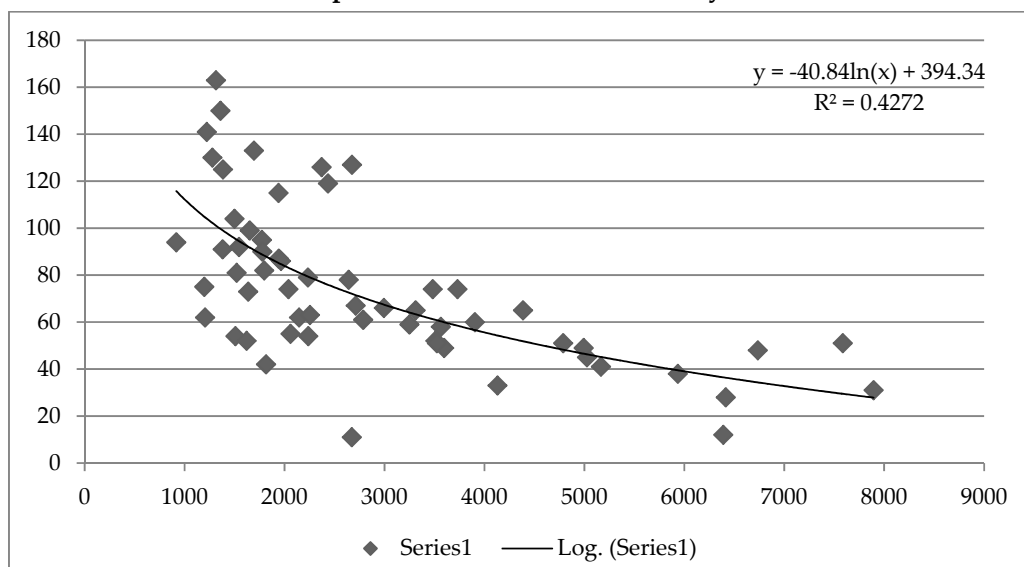
The difference between rural and urban IMR shows the rural urban gap in this regard. In the year 2009 the state that recorded the highest gap between the rural and urban figures had been Rajasthan and lowest being Kerala. States showing relatively low gaps apart from Kerala are Tamil Nadu and West Bengal. The difference had been relatively higher for Assam and Madhya Pradesh. We plot the IMR and per capita income for the states in the vertical and horizontal axis and using pooled data for four decades we find a negative relation between the two represented in the *Figure 4*.

Table 9
Infant Mortality Rate

	R-81	R-91	R-01	R-09	U-81	U-91	U-01	U-09	C-81	C-91	C-01	C-09
AP	95	58	74	54	72	42	39	35	91	55	66	49
Assam		94	76	64		48	33	37		92	73	61
Bihar	98	77	63	53	62	50	52	40	94	75	62	52
Gujarat	129	83	67	55	85	64	42	33	115	78	60	48
Haryana	132	56	68	54	94	37	54	41	126	52	65	51
Karnataka	87	84	69	47	62	45	27	31	81	74	58	41
Kerala	56	45	12	12	49	42	9	11	54	42	11	12
MP	158	142	92	72	105	84	53	45	150	133	86	67
Mhrst	131	85	55	37	67	47	27	22	119	74	45	31
Orissa	171	130	94	68	111	72	60	46	163	125	90	65
Punjab	135	81	55	42	104	56	37	31	127	74	51	38
Rajasthan	153	93	83	65	97	55	57	35	141	87	79	59
TN	116	62	54	30	78	40	35	26	104	54	49	28
UP	139	104	86	66	81	76	62	47	130	99	82	63
WB	103	66	53	34	59	41	38	27	95	62	51	33
India	123	84	72	55	67	51	42	34	115	77	66	50

Source: SRS Bulletin, various years

Figure 4
Per capita Income and Infant Mortality Rate



Source: Computed from EPW CD and SRS Bulletin

The logarithmic trend line shows a greater fit with a larger value of R-squared than the linear trend line implying that IMR declines faster as per capita income grows in the initial period and once the income grows beyond a point improvement in IMR takes place at a declining rate.

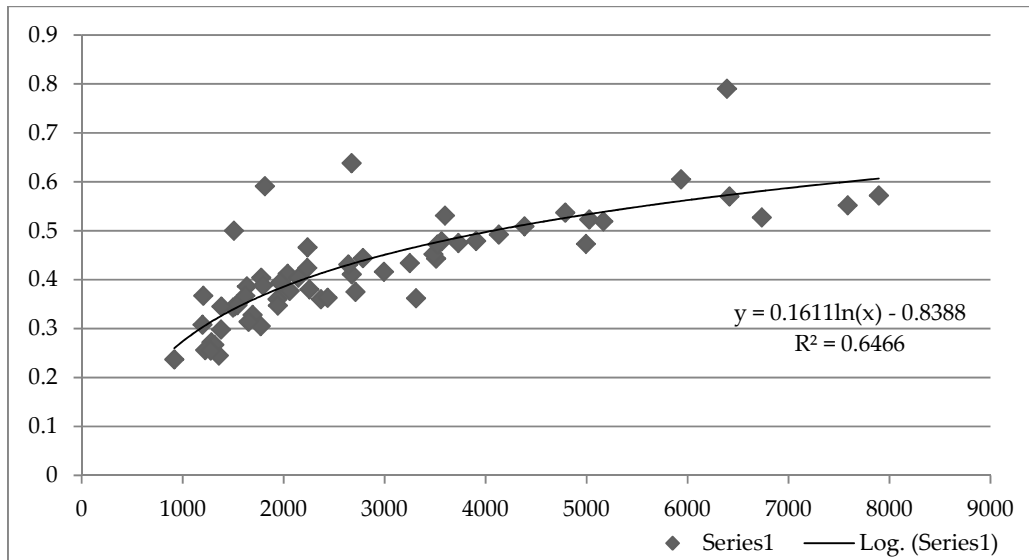
Finally we take note of the Human Development Index across states for the four reference years and see the ranking of the states. Human Development Index values increased for almost all the states over the years (*Table 10*). In case of Madhya Pradesh and Orissa it declined during the period 2001 and 2007/08. In 2007/08 the highest rank in terms of HDI was Kerala followed by Punjab and Maharashtra. Orissa recorded the lowest HDI in 2007/08 followed by Bihar and Madhya Pradesh. Comparing the HDI rankings over the years we do not find any remarkable change in terms states' positions in the tally. The rank correlation coefficient between rankings for the year 1981 and 2007/08 is 0.938. The states who improved in terms of rankings comparing 1981 and 2007/08 are Bihar, Madhya Pradesh, Rajasthan, Tamil Nadu and U.P.; the states in which case ranking remained same are Andhra Pradesh, Assam, Maharashtra, Punjab Kerala and West Bengal; the HDI rankings deteriorated in the cases of Gujarat, Haryana, Karnataka and Orissa. Using HDI indicators for four decades and respective per capita income pooled together we get the regression between the two expressed in *Figure 5*.

Table 10
Human Development Index Values and Rankings

	HDI Values				HDI Ranking			
	1981	1991	2001	2007/08	1981	1991	2001	2007/08
Andhra Pradesh	0.298	0.377	0.416	0.473	9	9	10	9
Assam	0.272	0.348	0.386	0.444	10	10	14	10
Bihar	0.237	0.308	0.367	0.367	15	15	15	14
Gujarat	0.36	0.431	0.479	0.527	4	6	6	6
Haryana	0.36	0.443	0.509	0.552	4	5	5	5
Karnataka	0.346	0.412	0.478	0.519	6	7	7	7
Kerala	0.5	0.591	0.638	0.79	1	1	1	1
MadhyaPradesh	0.245	0.328	0.394	0.375	14	13	12	13
Maharashtra	0.363	0.452	0.523	0.572	3	4	4	3
Orissa	0.267	0.345	0.404	0.362	11	12	11	15
Punjab	0.411	0.475	0.537	0.605	2	2	2	2
Rajasthan	0.256	0.347	0.424	0.434	12	11	9	11
Tamil Nadu	0.343	0.466	0.531	0.57	7	3	3	4
Uttar Pradesh	0.255	0.314	0.388	0.38	13	14	13	12
West Bengal	0.305	0.404	0.472	0.492	8	8	8	8
India	0.302	0.381	0.472	0.467				

Source: Planning Commission (2002) and India Human Development Report (2011)

Figure 5
Relation between HDI and PCI



Source: Computed from Table 1 & 10

The relationship found shows that HDI increases as per capita income increases but at a decreasing rate implying that starting from a low initial per capita income level as income grows the rise in HDI values would be more than that resulting from increments of incomes at higher levels.

5. Computing Human Development Index

The human development index (HDI) as defined by the UNDP captures three basic indices related to long and healthy life, access to knowledge and decent standard of living. These three dimension indices are computed on some basic parameters such as life expectancy at birth, access to knowledge measured in terms of adult literacy rates and gross enrolment ratios and finally income dimension that is assumed to capture the state of life other than health and education is measured in terms of per capita income. The geometric mean of the three indices gives the value of HDI. Using geometric mean reduces the substitutability between dimensions and at the same time ensures that 1 per cent decline in any of the dimensions has the same impact on HDI. The methodology of computing HDI as defined by UNDP is primarily to construct the dimension index such that the capabilities captured in such indices could be represented in a zero-one scale. This of course requires identifying the maximum values for each dimension usually expressed as goal posts. In measuring HDI of the country generally the goal posts set by UNDP in the reference year is used so that HDI computed on the basis of common goal posts would be comparable. However we can define the goal posts in a different way

such that achievements and failures could be represented in terms of the best and the worst for our country in each of the dimensions.

We define the observed maximum and the minimum values of each parameter in *Table 11*. The maximum life expectancy recorded in case of India is 74 in Kerala for the period 2002 to 2008, while the observed minimum is 51.6 recorded for Madhya Pradesh during the period 1981-85. Similarly we define the observed maximum for mean years of schooling and expected years of schooling as stated by UNDP (2011) and the minimum value for these variables would be taken to be zero. The scale on which achievements of per capita income is measured is defined by the maximum observed per capita income of Rs. 91598 recorded for Chandigarh in the year 2009/10, and the minimum being Rs.5786 observed for Bihar in 1999-00. On the basis of these goal posts we compute the dimension indices using the data for each state given in *Table 12*.

Table 11
Goalposts for Computing HDI

<i>Description</i>	<i>Observed maximum</i>	<i>Minimum</i>
Life Expectancy	74.0 (Kerala, 2002-2008); UNDP 2011	51.6 (Madhya Pradesh, 1981-85); Planning Commission 2002
Mean years of Schooling	6.19 (Kerala, 2002-2008); UNDP 2011	0
Expected years of schooling	11.33 (Kerala, 2002-2008); UNDP 2011	0
Combined education Index	1 (Kerala, computed)	0
Per capita income	91598 (Chandigarh, 2009-10); Planning Commission 2002	5786 (Bihar, 1999-00); Planning Commission 2002

Note: Respective sources are mentioned within the table.

The dimension index for each parameter is computed using the formulae (Actual-Minimum) / (Maximum-Minimum). In the case of per capita income we take natural logarithm of actual values so as to capture the fact of diminishing importance of income in human development with increasing per capita income. The education dimension index is a composite index computed as the geometric mean of indices computed on the basis of mean years of schooling and expected years of schooling. *Table 13* shows the dimension indices and the HDI computed for the states and the corresponding ranks on the basis of HDI values. The state that records highest indices value in terms of income dimension index is Maharashtra followed by Haryana and Gujarat. Kerala that recorded highest indices in terms of life expectancy and education assumes fifth rank in terms of income dimension.

Table 12
Income Health and Education Data

	<i>Per capita NSDP 2009-10</i>	<i>LEB (02-06)</i>	<i>Mean years of schooling (04-05)</i>	<i>School LE (07-08)</i>
Andhra Pradesh	36345	64.4	3.06	9.660
Assam	20279	58.9	3.96	9.540
Bihar	11799	61.6	2.97	9.580
Chhattisgarh	25835	58	3.39	9.310
Gujarat	49030	64.1	4.54	8.790
Haryana	55215	66.2	4.74	9.680
Himachal Pradesh	40690	67	4.88	11.050
Jharkhand	20646	58	3.32	9.680
Karnataka	37609	65.3	3.95	9.750
Kerala	46511	74	6.19	11.330
Madhya Pradesh	19736	58	3.47	8.950
Maharashtra	57458	67.2	5.12	9.860
Orissa	24098	59.6	3.34	8.740
Punjab	43199	69.4	5.12	9.800
Rajasthan	23653	62	2.96	9.190
Tamil Nadu	46692	66.2	4.79	10.570
Uttar Pradesh	16411	60	3.56	9.190
Uttarakhand	42486	60	4.97	10.230
West Bengal	30065	64.9	4.36	8.870

Source: UNDP, 2011

The table shows the rankings of HDI for 19 states in India for the year 2009-10. It is evident that Kerala ranks the highest in terms of HDI and the lowest being Bihar. Comparing with the ranks shown in *Table 10* which shows ranks of 15 states we find that the top three states having high HDI retains the first three positions in 2009-10 as well and these are Kerala, Maharashtra and Punjab. The states that recorded the lowest three positions in *Table 10* that is those were lowest in terms of HDI values computed for the year 2007/08 and considering 15 states are Orissa, Bihar and Madhya Pradesh. In *Table 13* showing HDI rankings for 19 states in the year 2009/10 the three lowest ranks are recorded for Bihar, Madhya Pradesh and Jharkhand. Comparing the ranks of the states in terms of HDI values and income indices we identify opposing trends. Seven out of 19 states shown performed relatively better in terms of HDI than their ranks in income, three others record the same ranking on both counts and nine performed relatively worse in terms of HDI compared to their ranking in income. The ranking of Kerala in HDI was much higher than that its position in income indices and on the other hand in the case of Gujrat the difference in ranking in terms of HDI and that of income scores same but on the other way, implying the performance in HDI lagged much behind the performance in income.

Table 13
Dimension Indexes and Human Development Index, 2009-10

	<i>Income Dimension Index</i>	<i>Life Expectancy Index</i>	<i>Education Index</i>	<i>HDI</i>	<i>Rank</i>
Andhra Pradesh	0.665	0.571	0.649	0.627	10
Assam	0.454	0.326	0.734	0.477	14
Bihar	0.258	0.446	0.637	0.419	19
Chhattisgarh	0.542	0.286	0.671	0.470	15
Gujarat	0.774	0.558	0.754	0.688	7
Haryana	0.817	0.652	0.809	0.755	4
Himachal Pradesh	0.706	0.688	0.877	0.752	5
Jharkhand	0.461	0.286	0.677	0.447	17
Karnataka	0.678	0.612	0.741	0.675	8
Kerala	0.755	1.000	1.000	0.910	1
Madhya Pradesh	0.444	0.286	0.665	0.439	18
Maharashtra	0.831	0.696	0.848	0.789	2
Orissa	0.517	0.357	0.645	0.492	13
Punjab	0.728	0.795	0.846	0.788	3
Rajasthan	0.510	0.464	0.623	0.528	12
Tamil Nadu	0.756	0.652	0.850	0.748	6
Uttar Pradesh	0.377	0.375	0.683	0.459	16
Uttarakhand	0.722	0.375	0.851	0.613	11
West Bengal	0.597	0.594	0.743	0.641	9

Source: Computed from Table 11 & 12

6. Concluding Remarks

The paper shows that per capita income increased for all the states in the past four decades but as it was expected that liberalizing markets would bring down the gaps between states did not come to be true. In fact no sign of convergence could be visible in this regard. Furthermore considering the share of non-agriculture across states and over the reference period we see a decline in the difference between states. In other words, the share of agriculture in state domestic product declined for all the states but it did not result in a decline in income gap across states. This perhaps implies that declining dependence on agriculture does not necessarily lead to similar kind of non-agriculture and hence similar value-added. The distribution of industry and services that grew over the years need to be looked into in order to explain divergence in income. The paper also shows that disparities in terms of income were higher within the rural areas across states compared to their urban counterparts. This might be a reflection of a converging trend in terms of opportunities available in the cities and towns across states.

We find a converging trend in terms of various human development indices across states over the same reference period. In other words gaps between states declined in terms of

literacy rate, general enrolment ratio and life expectancy at birth. The gaps also declined between the rural and urban segments within states. This is perhaps indicative of the fact that beyond a threshold income certain basic capabilities or entitlements are available at more or less similar levels despite divergence in per capita income. We also see that performance in terms of various dimensions of human development increases with income but at a declining rate. This shows that per capita income at higher levels become less important in generating gains in terms of basic human development indices. Finally the paper compares the performance of the states in terms of human development over the years including that computed from the latest available data and shows that the relative positions of the states didn't undergo much change over the years.

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* Most of the working papers are downloadable from the institute's website: <http://isidev.nic.in/> or <http://isid.org.in/>

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