

SOCIO-ECONOMIC DEVELOPMENT IN INDIA: A REGIONAL ANALYSIS

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Development is a multi-dimensional phenomenon. Some of its major dimensions include: the level of economic growth, level of education, level of health services, degree of modernization, status of women, level of nutrition, quality of housing, distribution of goods and services, and access to communication. In India, the progress of socio-economic development among major states is not uniform. This study examines the existing variability of inter-state development and thereby identifying the indicators responsible for the diversity in development. Instead of studying the variability of a particular variable across states, a composite index based on several indicators has been developed using principal component analysis and states are arranged according to the indices derived using four broadly accepted components: (a) economic production and economic condition or in other words level of economic development; (b) common minimum needs; (c) health and health-related services and (d) communication. The findings of the analysis support the general perception about the states. The states in India are marked with wide disparity in socio-economic development. The factors, which are found out to be more important for the overall development process, relate to basic needs like education, availability of food, minimum purchasing power and facilities like safe drinking water, health care infrastructure, etc. It is also found that enrollment ratio cannot be raised unless minimum needs of the common people are satisfied. Therefore, true development requires government action to improve elementary education, safe drinking water facilities and health care, and to remove barriers against social minorities, especially women. The role of social development such as literacy (and particularly of female literacy) in promoting basic capabilities emerges as the prerequisite to overall development. These results clearly emphasize the role of well-functioning public actions in improving the overall living conditions of the people. Although economic growth in the sense of expanding gross national product and other related variables is one of the most fundamental input to the overall development process, the basic objective of development should focus on the expansion of human capabilities which has been neglected for long in India.

INTRODUCTION

Since Independence in 1947, India has made enormous strides towards the progress of the nation. The concerted and coordinated efforts of the

*I sincerely acknowledge the academic help received from my Ph.D. supervisor Professor K.B. Pathak, Director, International Institute for Population Sciences, Mumbai, India to finalize this paper.

national governments through various Five Year Plans, starting from 1951, have changed the economic scenario of the country considerably. Agriculture production has risen steadily, and progress of industrialization has increasingly played a role in India's economic development. During 1950-51, agriculture contributed about 50 per cent of the country's Gross Domestic Product but in 1992-93 its share reduced to 26 per cent. There are, indeed, many areas of economic development and social development in which India's achievements have been creditable. However, overall success in reducing poverty, ignorance and inequality has been quite limited. From 350 million inhabitants in 1952, India's population had grown to 593 million by 1974, 900 million by 1992 and probably it will cross the one billion mark by the next decade. But a large proportion of the population continues to fall far short of minimum basic needs. The average per capita income for the year 1991-92 stood as low as Rs.5,529 per annum. The sheer number of people, together with the instability and inability of the economy to provide them with even a bare level of subsistence, along with the unprecedented population increases, is an ongoing threat to India's economic development. The faster movement of the population growth compared to economic growth never allows India to come out of the vicious circle of per capita contributions (Dandekar, 1995). At the same time, the enormous size of the country, its cultural, ethnic and religious traditions, social backwardness, its paucity of communication, and variety of climate, geographical and socio-economic activities, make nation-wide solutions incomparably difficult to devise and implement.¹

One of the most important aspects of India's development progress is its remarkable regional disparity in eliminating basic deprivations. The economy suffers from large and incessant inequalities. The majority of the poor people live in rural areas and belong to the category of landless labourers and the land continues to be highly inequitably distributed.² On the other hand, underemployment and unemployment are standard features of urban life. The rural population below the poverty line in some of the relatively economically developed states is about 21 per cent, while in some of the other states, more than 65 per cent. The rural population is below the poverty line. In terms of social development this contrast is even sharper. For

¹It is worth mentioning that many countries are heterogeneous with respect to ethnic origins, languages, religions, geography and traditions, but none can match the vast scale and diversity to be found in India. As a result the country is called an "ethnological museum".

²Small and marginal farmers constitute over three-quarters of the landholders, but own only 29 per cent of the land. In contrast, large farmers constitute only 2 per cent of the landholders, but own more than 20 per cent of the land (Agarwal, 1991).

example, female literacy of the major Indian states varies from 20 per cent to 86 per cent. Other indicators relating to health, nutrition, etc. also registered significant internal diversities.

Various factors, such as the level of literacy, female education, nutritional standards, infant mortality, morbidity, employment, income distribution, public distribution system, political commitments etc., and their corresponding interactions, contribute to these striking variations among states in the livelihood of common people. It may be mentioned that broad state-level comparison may not be able to capture fully the extent of diversities among various indicators characterizing several facets of development. Nevertheless, state-level indicators are of prime importance as far as the state is a crucial and political unit. A wide range of relevant fields of actions, including health and education, are constitutionally defined as 'state subjects', to be handled by the individual states rather than the central government, or as 'concurrent subjects', involving both state and central governments (Sen and Dreze, 1998). This provides a strong motivation for studying the variability of inter-state development and thereby identifying the indicators responsible for existing diversity in development. In this context, any state-level policy action on the issues relating to human livelihood necessarily depends on the proper measurement of development process and the suitability of the choice of the indicators affecting development. In this paper we have focussed on the proper measurement and derivation of a composite index of developmental process and thereby studying the variability existing among major Indian states.

The specific objectives of this paper, as alluded to earlier, are as follows: a) Sectoral identification of the developmental process into some category (categories not necessarily mutually exclusive) by identifying the dynamics from the outcome of the process. b) To develop a composite index for each sector of the development process and thereby constructing the overall indices of development of individual states. c) To identify the relative hierarchy of states in the sectoral and overall development by identifying the variables responsible for the hierarchy.

The second section is devoted to the selection and sources of variables, and the limitations of the data. The principal component methodology for constructing a composite index of development for individual states is briefly discussed in the third section, followed by the empirical analysis in the fourth section. The disparity in each sectoral development of individual states has been discussed in various sub-sections. A two-dimensional clustering diagram has been used to study the similarity/dissimilarity of the progress of development among states. Some issues on the progress of

development in India vis-a-vis some other Asian countries have also been presented in this section. The final section concludes with some policy implications.

DATA AND SELECTION OF VARIABLES

After the Second World War, the study of economic development of the economically backward countries grew very rapidly with the issue of economic needs and deprivation of the common people as the central importance (Hall, 1983). Studies in this respect and subsequently in the area of human development and physical quality of life, especially in the context of India, are voluminous (Sen, 1981; Ram, 1982; Karkal and Irudaya Rajan, 1991; Nissan, 1993). Several authors used the methodology given by UNDP to construct the composite index of development. Irrespective of the arguments and debate regarding the methods to pursue the policy, there remains the question of how to measure the progress of development. As the major focus of this paper is to study the socio-economic differential and related behaviour in a developmental perspective, the macro-level country characteristics and individual state level variables affecting quality of life, directly or indirectly, through developmental process have to be identified. "The Indian subcontinent, with its large size, wide structure and eco-social disparities is better understood and better interpreted when studied at the regional level. Analysis of data at disaggregated form narrows down the variability and enables better identification of special characteristics" (Dutta Roy Choudhury, 1995). Accordingly, the country is divided into five different regions of 16 major states, which account for above 95 per cent of the total population. The Northern region is comprised of four states: Punjab, Haryana, Himachal Pradesh, and Rajasthan; western region is comprised of two states: Maharashtra and Gujarat; eastern region is comprised of four states: West Bengal, Assam, Orissa and Bihar; and the central region is comprised of two states: Uttar Pradesh and Madhya Pradesh; and finally southern region is comprised of four states: Andhra Pradesh, Kerala, Tamil Nadu, and Karnataka.³

³For administrative purposes, India is divided into 32 units including 26 states and 6 Union Territories, which are further divided into about 500 districts. The distribution of major states has been represented by a map at the end of this paper. Geographically, Madhya Pradesh is the biggest state accounting for 13.5 per cent of the total area of the country. Other large states, in order of sizes are Rajasthan, Maharashtra, Uttar Pradesh and Andhra Pradesh. Uttar Pradesh, which is fourth in land area, stands first in the country in population size accounting for 16 per cent of the total population of India. The next largest states in terms of population

In general, development can be viewed as a multi-dimensional phenomenon; some of its major dimensions include level of economic development, level of education, level of health services, degree of modernization, status of woman, level of nutrition, quality of housing, distribution of goods and services, and access to communication. Again, it is not possible to study one particular factor mentioned above in isolation. The movements of the indicators specifying various levels of socio-economic development among states are not uniform. Thus, instead of studying the variability of a particular variable across states, a composite index based on several indicators is being developed and then the states are arranged according to the indices derived. Though this method of composite index for ranking of the regions is widely popular in development economics, there are few attempts made in the field of demography (Mauldin and Berelson, 1978; Fabri, 1977; Morris, 1979). None of these studies, however, has received the general endorsement of the international community and none of the studies include a range of available modernization measures. Here a composite index of development is constructed using four broadly accepted components: (a) economic production and economic condition or in other words level of economic development; (b) common minimum needs (CMN) which, in general, the state is supposed to provide; (c) health and health related services and (d) communication. However, many of these categories are problematic to measure and there is no internationally accepted rule to measure such categories.

Indicators Relating to Economic Development

The selected variables for level of economic development are as follows: 1) GDP per capita at constant price (1980-81=100) (PCGDP); 2) Per capita consumption expenditure for 30 days (PCCONSU); 3) Percentage of people above poverty line⁴ (ABOVE); 4) Employment Rate (EMPL). Of the many choices available for measuring economic production, state level GDP per capita is the most widely accepted and commonly available indicator. The

size are Bihar, Maharashtra, West Bengal, Andhra Pradesh and Madhya Pradesh.

⁴The Task Force on "Minimum Needs and Effective Consumption Demand" constituted by the Planning Commission in 1979 defined the poverty line as per capita monthly expenditure of Rs.49.09 in rural areas and Rs.56.64 in urban areas at 1973-74 prices, corresponding to the per capita daily calorie requirement of 2400 in rural areas and 2100 in urban areas. For subsequent years, the poverty line has been adjusted because of price changes, using the price indices which are implicit in the private consumption expenditure series reported by National Accounts Statistics. The corresponding levels at 1987-88 price levels are Rs.131.80 in rural areas and Rs.152.13 in urban areas.

state level GDP (State domestic product-SDP) figures are available from *the Directorate of Economics & Statistics of respective state governments*. One important aspect of economic health of the people in the nation is the capacity of their expenditures towards consumable goods to the extent possible. It is universally accepted that income and consumption vary in the same direction. Thus, per capita consumption expenditure of states can be taken as a proxy index of states' income standard too. The NSSO (National Sample Survey Organization) published, in their 43rd round survey, the state level per capita consumption expenditure for 30 days. Those figures have been used here. Several planning strategies are being implemented to meet the challenges to eradicate poverty. It is perceived that the foremost priority in eradication of poverty is to meet the common basic needs of the people. "Poverty has to be identified with deficiency in total level of living. And total level of living includes not only energy requirements but also balanced diet needed for health, and the other components of basic needs essential for human existence at a tolerable level" (Rao, 1977). The percentage of people below the poverty line of the state shows their level of output, income and distribution of necessary goods and services irrespective of the debate of determining the poverty line. Though there is no general agreement about a "normal" calorie intake, we have taken the state level data on percentage of people above poverty line from CMIE (Centre for Monitoring Indian Economy) publication on social sectors.

Another important indicator for economic development is the employment rate. It is an indicator of the ability of the economy to create and cater jobs. This particular variable is not only an index of the overall economic development but also serves as a crucial link between social and demographic determinants. Employment data for individual states has also been taken from CMIE (Centre for Monitoring Indian Economy) publication on social sectors.

Indicators Relating to Common Minimum Needs (CMN)

Selected variables for this group are as follows: 1) Literacy (Enrollment Ratio) (ENROL); 2) Percentage of households having safe drinking water (WATER); 3) Percentage of houses having electric facility (ELEC) and 4) Percentage of households living in *pucca house*⁵ (HOUSE). Education is one of the principal attributes of the quality of a population. It plays an impor-

⁵Made of high-quality materials like cement, bricks, etc. throughout, including the roof, walls and floor. About 24 per cent of houses in India are *pucca*. The quality of housing is better in urban areas, where about 57 per cent of houses are *pucca* (NFHS, 1992).

tant link between social and economic development processes. For the education component of the developmental process, two types of indicators are generally used. One type is cumulative and measures the proportion of the population with certain characteristics relating to educational attainment, such as the percentage of the population literate or the percentage with primary schooling completed. The other type of measure is current and measures the proportion of the student-age population currently enrolled in school. Thus, the percentage literate is a measure of the stock of education in the population at a moment in time, while the enrollment ratio is a measure of the current input to that stock. Because the developmental process is dynamic and socio-economic change may be rapid, the measures reflecting the current situation are considered preferable. Therefore, enrollment ratios are selected as being more representative of the current situation than literacy rates. The indicator selected is the gross enrollment ratio for males and females for the primary and secondary levels of schooling combined. This measure represents the total number of students enrolled at the primary and secondary levels, regardless of age, divided by the population within the age groups normally attending these schooling levels. The net enrollment ratio, which includes only those enrolled students in the appropriate age group, would have been preferable, but comparable data were not available for all states.

In India, even after 50 years of independence, a majority of the people do not have a safe drinking water facility.⁶ There is a wide disparity among states in this respect. A village with a safe drinking water facility does not necessarily mean that all households in the village have a safe drinking water facility. Therefore, percentage of households having a safe drinking water facility is a better indicator than percentage of villages having safe drinking water. Other than this, one major component of daily amenities is the household electricity. It may be mentioned that availability of these two infrastructure facilities is mainly dependent on the public (government) actions and political commitments.

Indicators Relating to Health

One vital component of human development is the access and availability of primary health services. In this category, six variables have been selected: 1) Expectation of life at birth (EXP); 2) Doctors per *lakh*⁷ population

⁶It is pity to mention that even after 50 years of independence, problems relating to safe drinking water facilities is still a burning issue of any election campaign in India.

⁷1 lakh = 100,000 and 10 lakh = 1 million. According to 1991 Population Census, India's

(DOCPL); 3) Hospital bed per *lakh* population (HOSBPL); 4) Percentage of people not morbid (NMORBI); 5) Children survival rate per thousand birth (CSR) and 6) Hospitals per *lakh* population (HOSPL). Decline in the death rate and reduction in infant mortality is directly related to the level of existing health standard. These are related to other socio-economic indicators too. Therefore, expectation of life at birth (EXP) can be taken as an indicator of the health of the country. It may be mentioned that expectation of life at birth (EXP) is one of the most widely used variables in the field of human development.

Another indicator for availability of health services relates to the number of hospital beds. Accordingly, hospital beds per lakh population are taken as an indicator of health services facilities, specifically characterizing the level of infrastructure and accommodation facilities of health available in a state. But, all hospitals in a country extend their services towards the outdoor patients on a regular basis. Thus number of hospitals per lakh population (HOSPL) indicates the accessibility of health facilities around the vicinity of the hospital. It is generally felt, however, that measures, such as HOSBPL, HOSPL, etc., of the supply of health services are weak both because the component of distribution of services is not captured, and hospital care is only one component of the health care system. There are several health centres and several doctors who practice outside the bigger medical and health institutions. Services rendered by them can be thought to be more powerful components than the available hospital facilities as far as the distribution and accessibility are concerned. Therefore, the number of doctors per *lakh* population (DOCPL) is taken as another indicator in this group under discussion.

However, it is perceived that the child survival rate can be taken as an indirect measure of health-care accessibility, as suggested by the World Health Organization (1981). Although the child survival rate can be seen as reflecting the distribution of health services, it is obviously influenced by other factors as well, such as nutritional levels, general sanitation, access to transport and cultural practices. In the recent years, much attention has been given to the morbid condition of the people because a state may have good health in terms of life expectancy, infant mortality, etc., but a sizable proportion of people in the state may be sick or morbid. In this connection, sometimes many demographers in India quote the example of Kerala.⁸ Most of the time, especially in India, reliable data on morbidity is not available.

population is 846.3 million.

⁸The state Kerala has made remarkable progress in reducing mortality. The mortality characteristics of Kerala are commendably comparable with most of the developed nations. However, morbidity rate in Kerala is not as low as that developed nations.

However, recent National Family Health Survey data (NFHS, 1992-93) has provided some excellent dis-aggregated data on many of the demographic characteristics of people, including data on state-level prevalence of morbidity.⁹ State-wide morbidity data, included here, is relevant both for demographic assessment of the population and to health policies and programmes.

Communication

The final component of the development process discussed here relates to the extensiveness of the communication infrastructure and mass media. This component also measures the extent of infrastructure facilities for the distribution of goods and services in the society. The role of this component was to evaluate the degree of percolation throughout the community of those goods and services, which particularly relate to communication networks. There are a wide variety of indicators of communication infrastructure based on consumption items, such as passenger cars, television sets etc., available for this purpose. But the indicators based on consumption items are more suitable for developed countries. Reliability and accuracy of these data is always questionable in the developing countries. Another way to envisage the effect of mass media would be the exposure of common people to TV, radio, etc. While exposure to television is mostly centralized in urban/semi-urban places, exposure to radio is more in rural areas.

Keeping all these things in mind, the following five variables, for which a fair amount of reliable state level data are available in India, have been chosen as communication and mass media indicators: 1) Post offices per lakh population (POSTL); 2) Telegraph offices per *lakh* population (TELGL); 3) Telephones per lakh population (TELEPHL); 4) Percent of ever married women age 13-49 who usually watch television (TV) at least once a week; 5) Percent of ever married women age 13-49 who usually listen to the radio (RADIO) at least once a week. The data on mass media exposure are based on National Family Health Survey (NFHS), 1992-93 and communication data are based on CMIE (Centre for Monitoring Indian Economy) publications.

Most of the data points in each category of variables relate to the year 1990-91, except per capita consumption expenditure for 30 days which relates to the year 1988-89. Unless otherwise mentioned the source of the

⁹The data on morbidity, as reported by NFHS (1992-93), include prevalence of blindness (partial and complete), tuberculosis, leprosy, physical impairment of limbs and malaria during last three from the date of survey.

information base is CMIE.

METHODOLOGY

To derive a composite index from a set of variables, a wide variety of multivariate statistical techniques are available. Actually, the choice of the most appropriate method depends upon the type of the problem, the nature of the data and the objective of the analysis. In social science, variables are, in general, correlated and the researchers are not in a position to study the socio-economic dynamics with a set of independent variables. One needs to look for an alternative dimension reduction technique which will enable them to summarize the whole set of information into a manageable form without much loss of the information content of the original data. The theme of the multivariate analysis is simplification and "to summarize a large body of data by means of relatively few parameters" (Chatfield & Collins, 1980).

Though the composite index can be built up using simple techniques like ranking and indexing methods, these techniques have many drawbacks which have been criticized by many researchers like Dandekar Committee (1984), Kundu and Raza (1982), and Sarker (1995). Main drawbacks are arbitrariness and allocation of equal weights. Kendall (1939) developed a composite index formula to overcome these problems using inter-dependent variables pertaining to agricultural productivity, which is formally equivalent to what Hotelling (1933) called as a "first principal component". In principal component analysis (PCA), a set of original variables is transformed to a new set of uncorrelated variables called principal components. These new variables are linear functions of the original variables and derived in decreasing order of importance. The objective is to find out only a few components, which account for most of the variation in the original data set. For details of methodology, refer to Anderson (1985), and Chatfield and Collins (1980).

It is important to note that the principal components of a set of variables depend critically upon the scales used to measure the variables. This scaling procedure is arbitrary and data dependent. If all the variables are of equal importance, then the variables have to be scaled in such a way that they have unit variance. According to Chatfield and Collins (1980), there is generally thought to be little point in carrying out a PCA unless the variables have roughly similar variances. Thus the conventional way of getting unit variance is either to standardize the variables or simply divide by standard deviation. In this study, the aim is to develop composite index of development rather than to study the disparities among the states. Assuming *a priori* that the variables are of equal importance, the correlation matrix has

been analyzed. However, the composite index derived using the correlation matrix will enable one to study the disparities also. Hence, we have scaled the variables by normal standardizing procedure. In addition, an overall efficiency index has been compiled by taking the first principal component score (PRIN1) as the variable of the respective group and subsequently using PCA. An effort is made to include both first (PRIN1) and second principal component scores (PRIN2) in the overall index construction by taking respective communality as weights. But, because of the substantial reduction of power to explain variability to a greater extent, the idea has been dropped.

EMPIRICAL ANALYSIS

Five variables, per capita state domestic product (PCGDP), per capita consumption expenditure for one month (PCCONSU), percentage of people above the poverty line (ABOVE) and employment rate (EMPL), have been considered for the construction of the index relating to economic development. Loading structure and other related statistics are depicted in Table 1. It can be seen that the first principal component (PRIN1) explains almost 59 per cent of variation of the data, which is taken to be satisfactory.

It is observed that per capita consumption expenditure has the highest loading in the first principal component followed by per cent above poverty line and per capita state gross domestic product. One interesting and striking result is that employment has not turned out to be as significant as compared to other factors for the economic development process in India.

If we examine more carefully then we find that expenditure capacity for India is very low and that determines to a greater extent the level of economic development. On average, one Indian national consumes only Rs.188.40 worth of things that are absolutely necessary in a month (Table 2). Low per capita income and higher degree of economic imbalance in the earnings capacity leads to the fact of lower consumption expenditure. Being above the poverty line is also found to be an important indicator. We observe that only 64.8% of India's population live above the poverty line. In other words, 35% of the total population is still below poverty line.

Thus, irrespective of GDP per capita and employment rate, the basic problem of India still lies in the circle of poverty, hunger and economic imbalance. It must be recognized that the majority of the common people in India (especially in rural areas) are deprived of every opportunity of life and continue to live a miserable life, often falling far short of even minimum calorie needs. These poor people belong to the categories of landless labourers, small and marginal farmers, fishermen, rural artisans and backward

TABLE 1. PRINCIPAL COMPONENT LOADINGS FOR DIFFERENT GROUP OF INDICATORS

Variables	Economic development			Common minimum needs			Health			Communication		
	PRIN1	PRIN2		Variables	PRIN1	PRIN2	Variables	PRIN1	PRIN2	Variables	PRIN1	PRIN2
PCGDP	0.5179	0.1982		ENROL	0.3554	0.8765	EXP	0.4625	0.0582	TELEPL	0.4855	-0.3885
PCCONSU	0.6021	-0.1298		ELEC	0.6350	0.0267	DOCPL	0.2725	0.4754	POSTL	0.2343	0.6355
ABOVE	0.6006	0.1079		WATER	0.4438	-0.2847	HOSBPL	0.3761	-0.6183	TELGL	0.3239	0.6152
EMPL	-0.0925	0.9655		HOUSE	0.5229	-0.3867	HOSPL	0.2792	-0.5295	TV	0.5441	-0.2554
							NMORBI	0.3402	0.4869	RADIO	0.5554	-0.0370
							CSR	0.4985	0.1479			
Variation Explained	58.8%	84.5%		Variation explained	56.8%	79.5%	Variation explained	61.4%	79.8%	Variation explained	57.0%	90.0%

Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

TABLE 2. INDICATORS RELATING TO ECONOMIC DEVELOPMENT

STATE	PCGDP	PCCONSU	ABOVE	EMPL
ANDHRA PRADESH	1979.25	183.14	72.80	92.65
ASSAM	1992.77	159.66	63.16	94.91
BIHAR	1353.68	152.89	46.63	95.96
GUJARAT	3029.80	171.55	67.67	94.21
HARYANA	3807.28	244.65	83.37	92.41
HIMACHAL PRADESH	2485.79	239.61	90.80	96.88
KARNATAKA	2284.57	157.55	61.86	94.94
KERALA	2098.15	217.97	67.92	78.81
MADHYA PRADESH	1939.36	152.89	56.60	97.14
MAHARASHTRA	3739.39	171.07	59.90	95.33
ORISSA	1542.48	174.34	44.39	93.56
PUNJAB	4128.00	264.71	87.30	94.93
RAJASTHAN	2151.25	218.79	65.40	94.26
TAMIL NADU	2537.01	170.93	54.87	89.64
UTTAR PRADESH	1785.73	164.73	59.01	96.56
WEST BENGAL	2749.52	169.98	56.01	91.87
MEAN	2475.25	188.40	64.86	93.38
STD	822.33	36.26	13.34	4.36
CV%	33.22	19.25	20.57	4.67

classes and backward tribes. They have either no assets or assets with very low productivity and thus they continue to work for very low paid jobs. Unless the condition of these categories of people is improved, the root cause poverty will not be alleviated, and overall development process will be delayed by further decades.

The programme to cater to common minimum needs (CMN) of the people was outlined several times in several five year plans of various governments. To a common citizen, CMN became a part of the government's responsibility to satisfy. Four selected variables in this category are enrollment ratio (ENROL), percentage villages electrified (ELEC), percentage of household having safe drinking water facility (WATER) and percentage of households living in pucca houses (HOUSE). In India, average enrollment ratio is estimated to be 88.8% (Table 3). Rajasthan has the lowest level of enrollment ratio (49.9%), followed by Bihar (54.2%) and Uttar Pradesh (60.5%). The highest level of enrollment is achieved by Tamil Nadu (125.1%).

More than fifty per cent (51.2) of Indian households still do not have the facility of electricity at home, even after 50 years of Independence. A distressing situation is revealed in the case of Bihar where only 12.5% of house-

TABLE 3. INDICATORS RELATING TO COMMON MINIMUM NEEDS

STATE	ENROL	ELEC	WATER	HOUSE
ANDHRA PRADESH	90.62	46.30	55.08	29.77
ASSAM	76.36	18.74	45.86	10.53
BIHAR	54.19	12.57	58.76	24.07
GUJARAT	103.70	65.93	69.78	43.42
HARYANA	73.05	70.35	74.32	41.46
HIMACHAL PRADESH	102.37	87.01	77.34	49.75
KARNATAKA	98.41	52.47	71.68	30.45
KERALA	103.65	48.43	18.89	51.56
MADHYA PRADESH	81.48	43.30	53.41	20.93
MAHARASHTRA	114.28	69.40	68.49	35.37
ORISSA	83.94	23.54	39.07	13.00
PUNJAB	93.31	82.31	92.74	72.14
RAJASTHAN	49.91	35.03	58.96	47.04
TAMIL NADU	125.09	54.74	67.42	34.60
UTTAR PRADESH	60.48	38.89	68.84	32.70
WEST BENGAL	110.50	32.90	81.98	15.74
MEAN	88.83	48.87	62.66	34.53
STD	21.87	21.98	17.86	16.23
CV%	24.62	44.98	28.50	47.00

holds are electrified, followed by Assam (only 18.7%). On the other hand, about 87% of households in Himachal Pradesh have the facility of electricity, followed by Punjab (82.3%). Achievements of these two states are far ahead of any other Indian states. On the average, 62.7% of households in India have the facility of pure drinking water. Punjab and West Bengal are on the top of the list, followed by Himachal Pradesh and Haryana. One of the acute problems in Orissa is safe drinking water. Only six per cent of households in Orissa has the facility of safe drinking water. The last component of common minimum needs is percentage of household having pucca house. This is one proxy indicator of housing quality in India. It is not necessarily true in India that living in *kachcha*¹⁰ house signifies bad quality of housing. In some of the cases in India, housing quality for *kachcha* houses is even better than *pucca* houses. But *pucca* house shows the ability of the person to improve the housing quality. On the average, only 34.5 households in India live in pucca house. Here again Assam and Orissa are at the bottom of

¹⁰Made from mud, thatch or other low quality materials. Almost one-half (49 per cent) of houses in India are *kachcha* and sixty per cent of houses in rural area in India are *kachcha* (NFHS, 1992-93).

the list. Especially for these two states, almost 90% of people do not have *pucca* housing facility.

The first principal component (PRIN1) for the category of common minimum needs explains about 57 per cent of the variation in the data (Table 1). Percentage of households having electricity (ELEC) has highest loading (0.64) in PRIN1, followed by housing facility (0.52) and safe drinking water facility. Least weight was assigned to enrollment ratio (0.35). It plausibly supports the dictum that basic needs, which is described in economic development and CMN are of major importance for a healthy enrollment ratio. When the people do not have the ability to provide other minimum needs and the state is not supplying the necessary facilities of life, the drop out rate is significantly high. Therefore, enrollment ratio can not be raised unless minimum needs are satisfied.

To study the overall health situation in individual states, six indicators *such* as life expectancy at birth (EXP), number of doctors per *lakh* population (DOCPL), hospital beds per *lakh* population (HOSBPL), hospitals per *lakh* population (HOSPL), percentage of population not morbid (NMORBI) and children survival rate (CSR) have been considered. The average life expectancy of an Indian individual is only 62.3 years which is significantly low as compared to developed countries. Kerala has achieved the highest life expectancy at birth (72.4 years) and in contrast Uttar Pradesh recorded the lowest at 52.8 years, followed by Assam (54.5 years) and Madhya Pradesh (57.9 years) (Table 4). There were only 51 doctors available per lakh population in India. Haryana was at an extreme low of only 3 doctors per *lakh* population, followed by Madhya Pradesh and Uttar Pradesh. Punjab, on the other hand, recorded the highest number of doctors per *lakh* population. It is observed that number of hospital beds per *lakh* population (HOSBPL) has the highest observed variability. This indicates that there is a very high degree of disparity among states in terms of health infrastructure facilities.

For the health category, first Principal component (PRIN1) explains 61.4 per cent of the variation of the data. It is observed from the loading structure that most determining factors for the health component in India still lie in the infant mortality rate followed by expectation of life. The number of doctors per lakh population has the least weight in the loading pattern.

The chosen variables for the last component of development, communication, are presented in Table 5. The extent of variability was more discernible for telephone per *lakh* population (TELEPHL). This communication media is used more in urban localities than in rural India, and the level of urbanization for individual states varies greatly.

TABLE 4. INDICATORS RELATING TO HEALTH

STATE	EXP	DOCPL	HOSBPL	HOSPL	NMORBI	CSR
ANDHRA PRADESH	64.48	49.51	40.28	2.80	90.76	980.00
ASSAM	54.48	46.83	56.49	1.20	95.11	969.50
BIHAR	60.09	30.53	33.68	0.38	94.39	973.20
GUJARAT	62.74	52.80	142.78	5.74	92.63	976.30
HARYANA	64.22	3.18	42.69	0.47	97.22	977.20
HIMACHAL PRADESH	66.55	32.84	74.49	1.10	96.62	982.40
KARNATAKA	65.30	98.23	84.33	0.65	93.58	978.30
KERALA	72.37	56.55	265.30	7.01	97.22	996.10
MADHYA PRADESH	57.96	16.90	27.41	0.55	90.14	961.50
MAHARASHTRA	65.06	62.54	99.98	3.95	91.79	984.10
ORISSA	58.40	35.03	45.78	0.10	90.46	966.60
PUNJAB	66.55	131.33	72.34	1.07	95.48	982.60
RAJASTHAN	61.34	31.92	46.51	0.50	88.79	966.40
TAMIL NADU	63.05	81.61	87.33	0.73	96.92	984.70
UTTAR PRADESH	52.84	23.85	33.99	0.53	88.09	962.20
WEST BENGAL	61.94	61.29	80.45	0.58	97.62	981.60
MEAN	62.34	50.93	77.11	1.71	93.55	976.42
STD	4.86	32.11	58.62	2.08	3.23	9.35
CV%	7.79	63.05	76.02	121.63	3.45	0.96

The first principal component (PRIN1) explains 57 per cent variation of the data. It is observed that mass media variables *such* as TV and RADIO were more important, followed by TELEPHL. This clearly affirms that media has a very definite and positive role to play in the overall development process. The other two variables, namely number of post offices per *lakh* population (POSTL) and number of telegraph offices per *lakh* population (TELGL), are almost of equal importance in determining the first principal component.

First, the sector specific indices have been developed and discussed in the next four sub-sections, followed by a discussion on overall development in the subsequent section.

Composite Indices Based on Economic Development

The composite index/score of this sector has been calculated based on the indicators as described in an earlier section. State-wide scores for all the major 16 states based on first principal component and second principal component are presented in Table 6 and the states are arranged in descending order of magnitude of indices derived from the first principal compo-

TABLE 5. INDICATORS RELATING TO COMMUNICATION

STATE	TELEPHL	POSTL	TELGL	TV	RADIO
ANDHRA PRADESH	652.00	24.38	5.92	39.10	62.40
ASSAM	476.00	30.77	4.93	18.00	32.80
BIHAR	167.00	13.20	4.30	12.70	25.90
GUJARAT	1331.00	21.29	4.29	39.40	47.00
HARYANA	834.00	15.50	2.29	49.00	42.20
HIMACHAL PRADESH	864.00	50.46	12.20	47.10	54.60
KARNATAKA	950.00	21.58	8.94	39.50	62.90
KERALA	1181.00	17.08	6.84	42.20	71.30
MADHYA PRADESH	460.00	16.70	5.01	26.70	32.70
MAHARASHTRA	1851.00	15.25	3.26	46.40	52.30
ORISSA	289.00	25.10	7.61	16.10	34.90
PUNJAB	1250.00	18.73	2.95	57.30	42.00
RAJASTHAN	501.00	23.18	3.94	17.90	27.20
TAMIL NADU	1016.00	21.57	9.91	50.40	59.70
UTTAR PRADESH	291.00	13.92	4.16	19.00	29.70
WEST BENGAL	653.00	12.36	2.74	33.30	48.30
MEAN	797.88	21.32	5.58	34.63	45.37
STD	453.35	9.25	2.82	14.32	14.19
CV%	56.81	43.39	50.54	41.35	31.27

ment. The highest value of the score for a particular state indicates that the state was the top of the hierarchy in terms of economic development. It is observed that the value of the scores varied from -2.172 to 3.286 (PRIN 1).

As the indicators have been standardized with respect of their means, on the whole it can be interpreted that the states yielding positive scores on the first component are above 'average' level of existing states in India. In other words, these states are better off as compared to the other states. Accordingly, there were only seven states, which can be considered above average in terms of economic development. There was no surprise that Punjab was at the top with a score of 3.29 followed by Haryana marked with a score of 2.63. Punjab has dominated in all selected indicators. Himachal Pradesh has occupied the third position. The only South Indian State identified in the above average group was Kerala.

In respect of economic criteria, 9 major states were below average level. Andhra Pradesh was approaching the average. Bihar was the poorest of all, preceded by Orissa, Madhya Pradesh, and Uttar Pradesh. As Rajasthan was observed to be above average in Indian scenario, the nomenclature of BIMARU¹¹ as described by some dogmatic demographers in India, is no longer valid here. It may be mentioned that the largest share of population

TABLE 6. INDICES SCORES BASED ON ECONOMIC DEVELOPMENT

STATES	PRIN1	PRIN2
PUNJAB	3.286	0.650
HARYANA	2.627	0.055
HIMACHAL PRADESH	1.951	0.804
KERALA	0.700	-3.395
RAJASTHAN	0.306	0.013
MAHARASHTRA	0.244	0.758
GUJARAT	0.179	0.401
ANDHRA PRADESH	-0.027	-0.198
WEST BENGAL	-0.500	-0.273
TAMIL NADU	-0.622	-0.831
KARNATAKA	-0.800	0.386
ASSAM	-0.890	0.312
UTTAR PRADESH	-1.158	0.575
MADHYA PRADESH	-1.379	0.763
ORISSA	-1.746	-0.300
BIHAR	-2.172	0.280

Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

in India belongs to these least performing states, such as Bihar, Orissa, Madhya Pradesh and Uttar Pradesh. It is thus observed that northern states dominated the India's economic scenario while states in central and most of the eastern India registered a very low level of economic development.

Composite Indices Based on Common Minimum Needs

First principal component scores of individual states have been arranged in descending order and presented in Table 7. Out of 16 major states, 7 states were found to perform above the average and the scores in the first principal component varied between -2.26 to 2.99. Punjab and Himachal Pradesh, with their respective scores of 2.99 and 2.18, stood at the top. In contrast, Assam was at the bottom of the hierarchy. In fact there was virtually little difference among the last three states, Assam, Orissa and Bihar, in this group. West Bengal was presented just below the average standard. Most of the southern states were much better off compared to eastern and central regional states in India. In the western region, states were evenly poised and

¹¹BIMARU is the acronym given for the states Bihar (BI), Madhya Pradesh (MA), Rajasthan (R) and Uttar Pradesh (U). BIMARU in Hindi (national) language means 'sick' (in somewhat derogatory sense!) for the very fact that these states are highly underdeveloped and account for a major share of India's population.

TABLE 7. INDICES SCORES BASED ON COMMON MINIMUM NEEDS

STATES	PRIN1	PRIN2
PUNJAB	2.998	-1.156
HIMACHAL PRADESH	2.177	-0.007
GUJARAT	1.198	0.292
MAHARASHTRA	1.179	0.932
TAMIL NADU	0.879	1.383
HARYANA	0.877	-0.958
KARNATAKA	0.352	0.342
WEST BENGAL	-0.235	0.989
KERALA	-0.311	0.886
ANDHRA PRADESH	-0.387	0.303
UTTAR PRADESH	-0.655	-1.204
RAJASTHAN	-0.722	-1.817
MADHYA PRADESH	-0.949	0.170
BIHAR	-2.046	-1.122
ORISSA	-2.092	0.662
ASSAM	-2.264	0.303

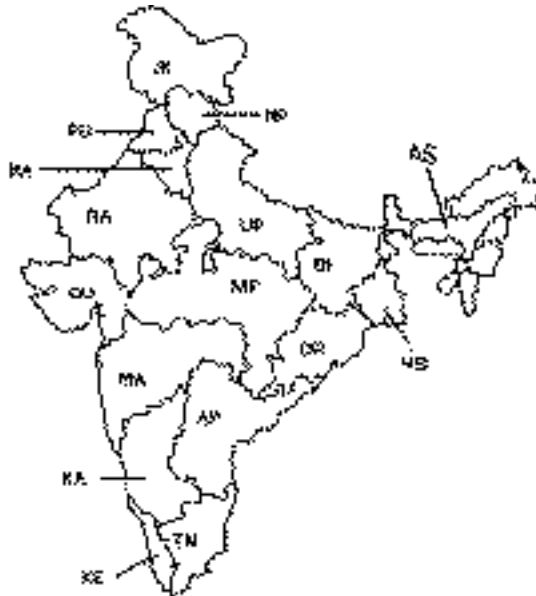
Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

disparities were much less. Gujarat and Maharashtra, with third and fourth position respectively in the hierarchy list, showed very little difference in the first component scores.

A similar situation was observed in the case of Tamil Nadu and Haryana. Condition of Uttar Pradesh was noticeably better than Bihar, Orissa and Assam. These states have to drive a long way in the transition process of overall development to reach the level of northern states, especially Punjab.

Composite Indices Based on Health

From the loading pattern in the first principal component of health category, it was envisaged that in Indian context the most important components for health are infant survival rate and average span of life. These two indicators were also universally identified and used as the major variables for human development index as outlined by UNDP. In fact, these two variables are proxy measure of health facilities, evolved through the process of socio-economic development. Composite indices of health for individual states are presented in Table 8. There is wide range of variation among states in the composite scores. It can be seen that Kerala was on the top of the hierarchy with a score of 4.85. The next best state in this respect was found to be Punjab with an index of 1.46, which was much lower than



MAP. MAJOR STATES IN INDIA

Abbreviations used for the name of major states:

- 1) Northern Regional States: Punjab - PU, Himachal Pradesh - HP, Haryana - HA, Rajasthan - RA and Jammu and Kashmir - JK.
- 2) Western Regional States: Maharashtra - MA and Gujarat - GU.
- 3) Southern Regional States: Karnataka - KA, Kerala - KE, Tamil Nadu - TN and Andhra Pradesh - AP.
- 4) Eastern Regional States: Bihar - BI, Orissa - OR and West Bengal - WB, Assam - AS.
- 5) Central Regional States: Uttar Pradesh - UP and Madhya Pradesh - MP.

States not indicated in the map in the North-Eastern region are: Mizoram, Meghalaya, Nagaland, Tripura, Manipur, Arunachal Pradesh. Remaining states are Goa, Sikkim and Delhi.

Kerala.

Out of 16 major states, 9 states were above the average level. It is also observed that all south Indian states are located above average in the list. Two states, positioned in the top of the list, Gujarat and Maharashtra, had almost the same level of health development. These two states were even better than Tamil Nadu. Himachal Pradesh ranked sixth in the hierarchy list. The health facilities of this state are not in tandem with other sectors of development. Indeed this state is lagging behind in terms of health infrastructure facilities. West Bengal and Andhra Pradesh were in the vicinity of the average.

In contrast to these states, seven states were marked noticeably below

TABLE 8. INDICES SCORES BASED ON HEALTH

STATES	PRIN1	PRIN2
KERALA	4.853	-1.661
PUNJAB	1.463	1.849
GUJARAT	1.187	-1.708
MAHARASHTRA	1.163	-0.745
TAMIL NADU	1.027	1.330
HIMACHAL PRADESH	0.759	0.537
KARNATAKA	0.651	1.040
WEST BENGAL	0.577	1.159
ANDHRA PRADESH	0.001	-0.457
HARYANA	-0.288	0.460
BIHAR	-1.047	0.408
ASSAM	-1.239	0.249
RAJASTHAN	-1.747	-0.622
ORISSA	-1.892	-0.234
MADHYA PRADESH	-2.454	-0.657
UTTAR PRADESH	-3.014	-0.948

Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

average level. Uttar Pradesh, with a score of -3.01 was at the bottom of the list preceded by Madhya Pradesh and Orissa. Bihar was placed in a comparatively better position than Uttar Pradesh, Madhya Pradesh, Orissa, Rajasthan and Orissa. This was due to, a slightly longer life span, and the better health services availability, especially doctors per lakh population, of Bihar compared to other states. It is important to notice that these states consistently performed badly in all sectors of the development process. The poor performance of Orissa was due to very high level of infant mortality rate and as a result Orissa is designated as the most 'tragic state' in India.

Composite Indices Based on Communication

Composite indices of development, in respect of communication for ranking of the states on the basis of first principal component score, are depicted in Table 9. About 8 major states in India are found to have communications facilities below average. Even Punjab, the high performing state in other categories of development, is found to be comparatively in the lower position in the list. Bihar once again is at the bottom of the list followed by Uttar Pradesh and Rajasthan. Less communication infrastructure of these states may be a major bottleneck to its development process. Himachal Pradesh is marked as the top most state in terms of communication infrastructure. This

TABLE 9. INDICES SCORES BASED ON COMMUNICATION

STATES	PRIN1	PRIN2
HIMACHAL PRADESH	2.402	3.141
TAMIL NADU	1.896	0.454
KERALA	1.749	-0.547
MAHARASHTRA	1.426	-2.052
KARNATAKA	1.425	0.486
PUNJAB	0.846	-1.533
ANDHRA PRADESH	0.796	0.285
GUJARAT	0.667	-0.829
HARYANA	-0.064	-1.395
WEST BENGAL	-0.643	-1.093
ASSAM	-1.303	1.113
ORISSA	-1.329	1.495
MADHYA PRADESH	-1.341	0.022
RAJASTHAN	-1.805	0.370
UTTAR PRADESH	-2.099	-0.063
BIHAR	-2.622	0.145

Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

state performed consistently in every other area of development too. Tamil Nadu secured the second position of the list followed by Kerala. Maharashtra and Karnataka registered almost the same level of development in respect to communication.

It may be noticed that the hierarchy of the states does not change much in respect of communication and mass media.

Composite Indices of Overall Development

Development models of individual states in each of the categories clearly establish a cogent regional pattern. Most of the states in northern region are economically developed and do provide a relatively higher proportion of minimum basic needs to the people as compared to other states. Southern states, on the other hand, are found to be more advanced in respect of health achievements. Western states fall in between these two different scenarios and are marked with a middle level of progress. The crux of India's development problem is, therefore, mainly associated with the states in central region. In some cases, it is associated with eastern states. As the regions/states differ noticeably in each sector of the development process, indices of overall development have been compiled by taking the scores of first principal component as the variable values for respective categories

TABLE 10. PRINCIPAL COMPONENT LOADINGS OF CATEGORY OF VARIABLES

Variables	PRIN1	PRIN2
Economic Development	0.4795	-0.5826
Common Minimum Needs	0.4700	-0.6179
Health	0.5247	-0.3833
Communication	0.5233	0.3630
Variation explained	73.4%	90.7%

Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

and thereby using another PCA.¹² Using these four variables, each characterizing a separate sector of the developmental process, component scores have been estimated. An attempt was also made to include first two principal components' scores of each category as the variables for further PCA. But, as the inclusion of the second component score as variable drastically reduced the explanation power of the resulting first principal component, we confined our analysis to using the first component scores only.

The loading structure of the variables, representing each sector of development, in the first two principal components have been exhibited in Table 10. It is observed that the first component explains about 73 per cent variability of the data. The first two components together capture more than ninety per cent of variation in the combined data. It is interesting to note that almost all sectors are equally important in determining the overall development of any state. However, health facilities turned out to be one of the most important factors in the overall development process in India. Nine states, out of 16 major states, were found above the average level of development. Lots of coercive efforts has to be made to pull up the other half of the states. Composite index scores also differed substantially among states.

In the overall development, Punjab, as indicated in Table 11, was again at

¹²Though there may be some criticism about the underlying methodology of using principal component scores as variables in the construction of overall index. The argument behind this was the fact that when the first principal component cannot capture the full information content of the data set, further use of first component score as a variable in another PCA will lose out more information content of the original data. Instead one can use all original variable together to construct the overall index provided the combined variables will explain a sizable variation of the data in the first principal component. But this procedure every time may not yield good results; and for our case only 36 per cent variation was explained by the first component when all variables were taken together. Therefore, we decided to consider the earlier method for construction of composite index of overall development.

TABLE 11. INDICES SCORES BASED ON OVERALL DEVELOPMENT

STATES	PRIN1	PRIN2
PUNJAB	2.706	-1.348
HIMACHAL PRADESH	2.338	-0.506
KERALA	1.869	1.771
MAHARASHTRA	1.237	0.304
HARYANA	1.035	-1.328
TAMIL NADU	0.982	0.772
GUJARAT	0.981	0.160
KARNATAKA	0.497	0.746
ANDHRA PRADESH	0.117	0.289
WEST BENGAL	-0.307	0.289
RAJASTHAN	-1.172	-0.903
ASSAM	-1.795	0.220
MADHYA PRADESH	-1.800	-0.328
UTTAR PRADESH	-2.013	-0.839
ORISSA	-2.171	0.285
BIHAR	-2.504	0.414

Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

the zenith of the list. Himachal Pradesh, comparatively a small state in India, performed consistently better in tandem with Punjab in each category of development, economic criteria, basic needs, health facilities and communication. This particular state can play a model role in India's progress and development. In contrast to performance of these successful states, Bihar and Orissa were at the zephyr. Uttar Pradesh, Madhya Pradesh, Assam and Rajasthan were also at the bottom of the list. These states recorded almost the same level of overall development. The sector specific problems of these states have to be identified as mentioned earlier. Specific programmes have to be outlined and properly implemented to uplift these states to a stage from where socio-economic transition would be easy to achieve.

Seeing the overall development of states from the bottom of the Table 11, it may be mentioned that BOUMAR (Bihar, Orissa, Uttar Pradesh, Madhya Pradesh, Assam and Rajasthan) would be a better acronym for the least developed Indian States.

Clustering of States

Another way to look into the homogeneity/heterogeneity of states is to plot the second principal component scores (PRIN2) against the first principal component (PRIN1). Diagrammatic representation of PRIN2 against

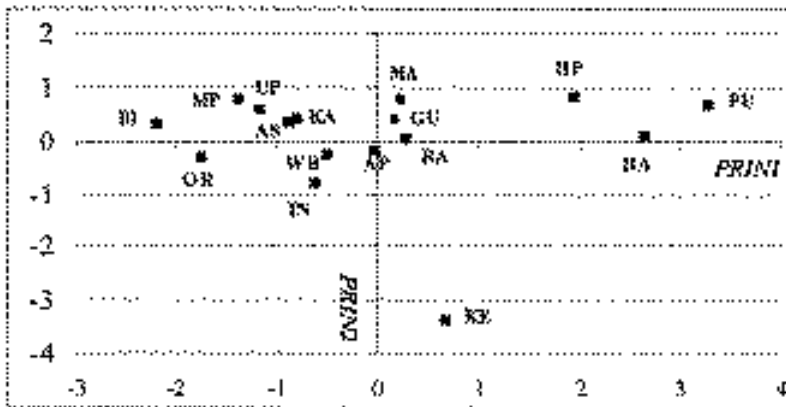
PRIN1 is generally called a two-dimensional plot.¹³ Taking the first component (PRIN1) along the X-axis and the second component (PRIN2) along the Y-axis, the two-dimensional plotting was carried out. The plots of PRIN2 vs. PRIN1 for all the categories separately are presented in Graph 1 to Graph 5. Clustering of states¹⁴ for each sector of development and overall development based on these plots is discussed below separately.

The first two principal components, in respect of economic criteria, cumulatively explain 84.5 percent of variation of the data. It is observed from Graph 1 that, there is a feasible homogeneous group, consisting of Punjab, Haryana and Himachal Pradesh, which were above average. Another cluster very close to the average consists of Maharashtra, Gujarat and Rajasthan. There was little difference between Karnataka and Assam in their economic condition. One can see the enormous difference between Bihar and Punjab. Kerala turned out be an outlier state in India. These results, therefore, suggest that there is wide disparity among states. Thus policies affecting the economy of the state would have to be outlined and implemented separately for each of the homogeneous clusters and separate plan outlays have to be proposed according to the nature of the problems and level of development of the cluster.

In respect of common minimum needs, the first two principal components jointly explains 79.5 percent of variation of the data. As indicated in Graph 2, Punjab, Himachal Pradesh and Haryana belong to one homogeneous cluster. Similarly, Gujarat, Maharashtra, Tamil Nadu and Karnataka formed another cluster. These two clusters lie in two different sides of the X-axis indicating that there exist substantial differences between them,

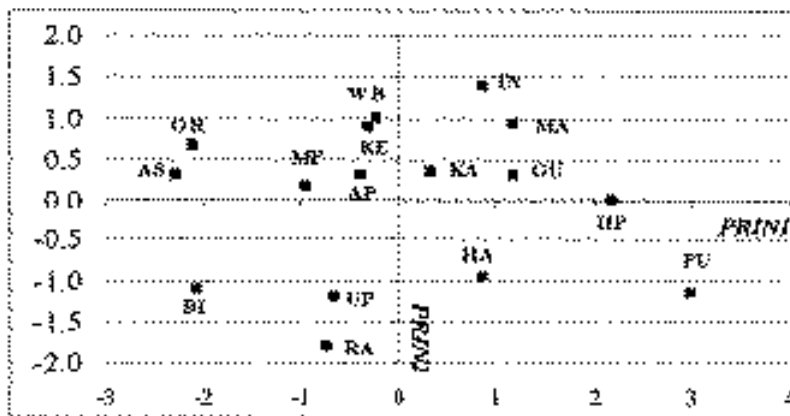
¹³Basically this plotting technique for clustering the units is more popular in social sciences when cardinal/ordinal distances of several categories of variables are to be measured. Principal component methodology is a very powerful multivariate tool for the dimension reduction of huge data set. Most of the social science research using PCA terminates with the first component only. But only the first principal component may not be adequate to summarize substantial information of the data set. In this process, a good amount of valuable information may be lost. Therefore plotting of PRIN2 against PRIN1 would be an alternative solution to the problem. Because, any point on the two-dimensional plot (PRIN2 vs. PRIN1) for a particular unit will summarize the total information content of first two principal components. In other words, any point on this plot explains a cumulative variation of the first two components. Thus it is possible to identify regional disparities/trends on the plot among units. This procedure can also detect the outlier existing among units.

¹⁴The abbreviation used for the name of individual states in the graphs (and Map as well) is as follows: Punjab - PU, Rajasthan - RA, Himachal Pradesh - HP, Haryana - HA, Uttar Pradesh - UP, Madhya Pradesh - MP, Bihar - BI, West Bengal - WB, Orissa -OR, Assam - AS, Maharashtra - MA, Gujarat - GU, Andhra Pradesh - AP, Karnataka - KA, Tamil Nadu - TN, Kerala - KE.



Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

GRAPH 1. TWO-DIMENSIONAL PLOT OF PRINCIPAL COMPONENT SCORES OF STATES FOR ECONOMIC DEVELOPMENT

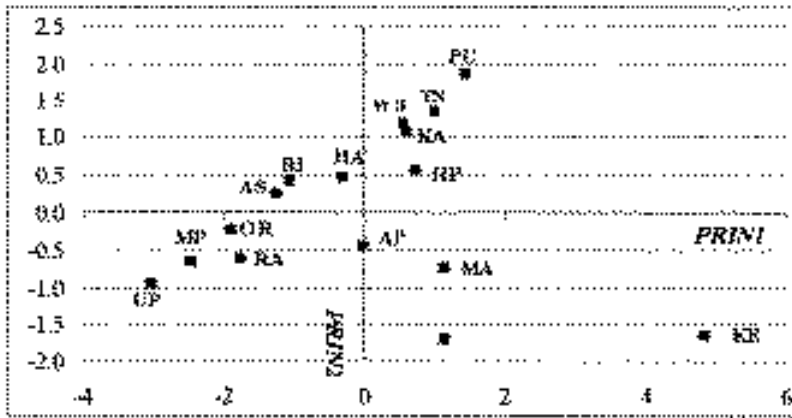


Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

GRAPH 2. TWO-DIMENSIONAL PLOT OF PRINCIPAL COMPONENT SCORES OF STATES FOR COMMON MINIMUM NEEDS

although they contain all the better performing states of India. On the other hand, the least performing cluster of states, comprising Bihar, Rajasthan and Uttar Pradesh, lies on one side, and the cluster containing Orissa and Assam lies on the other side of the X-axis.

This particular phenomenon needs to be examined more specifically. Any strategic planning focussing on the least performing states may not lead to

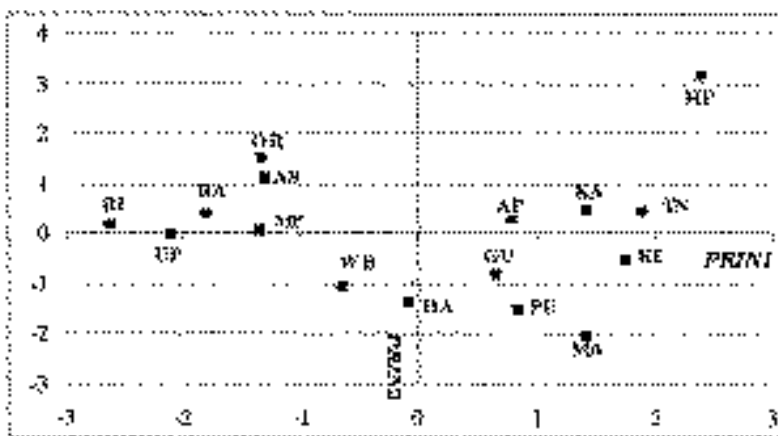


Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

GRAPH 3. TWO-DIMENSIONAL PLOT OF PRINCIPAL COMPONENT SCORES OF STATES FOR HEALTH

the same results because they do not belong to the same cluster, in the sense that reasons for poor performance of these states are attributed to different factors, although these states are marked with a very low level of development. Instead, separate planning strategies have to be urgently outlined and implemented for states belonging to different clusters. The variables, which characterize two separate clusters, are to be studied properly and the issues related to their different characteristics have to be addressed quickly. Here, in the case of CMN, enrollment ratio turned out to be the important variable for the segregation of the states into two different clusters.

The first two principal components, in respect to health development, together explain 79.8 percent of the variation in the data. It can be observed from Graph 3 that the state of Kerala made significant progress from other states of India in the area of health development. This validates our common perception about Kerala. In fact, this state is marked as an outlier as in the case of economic development. There is noticeable vertical distance between Kerala and Punjab although both states are marked with high levels of health development. Therefore, the composition of the planning portfolio in terms of the variables resulting into higher level of health development need not be same for different states. Kerala has the highest level of health infrastructure facilities such as hospital beds, hospitals, etc., whereas Punjab is marked with a higher number of health workers like doctors, nurses, etc. Punjab, Tamil Nadu, West Bengal, Himachal Pradesh, and Karnataka formed a separate cluster in the first quadrant. The cluster on the



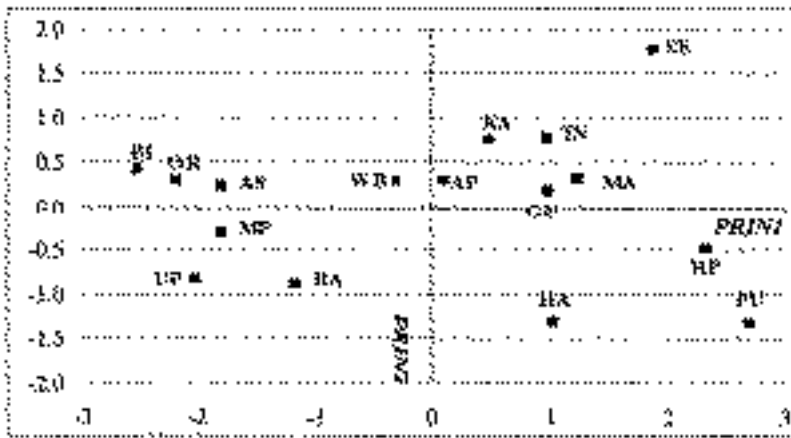
Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

GRAPH 4. TWO-DIMENSIONAL PLOT OF PRINCIPAL COMPONENT SCORES OF STATES FOR COMMUNICATION

extreme negative side of the plot consists of Uttar Pradesh, Madhya Pradesh, Orissa and Rajasthan. The significant differences between these two extremities are due to a large gap in both health infrastructure and health services.

In respect to communication, the first two principal components jointly captures 90.0 percent variation of the data. It is observed from Graph 4 that Himachal Pradesh and Maharashtra are in two different quadrants of the positive side of the X-axis, and their distance between them is significantly high although both the states had relatively higher ranks in communication and mass media. Punjab, Gujarat and Kerala were closer to Maharashtra than Himachal Pradesh. All other economically low developed states such as Bihar, Uttar Pradesh, Rajasthan, Orissa, Madhya Pradesh and Assam lie in the vicinity of a unit circle in the negative side of the Y-axis. This indicates that these states recorded very little differences in respect to communication. Himachal Pradesh by itself formed a single entry outlier class and is far distanced from other states in India.

The composite indices of overall development of individual states have been calculated on the basis of the first principal component scores, estimated in each sector of development process. One point of caution may be stated that the macro level findings derived here need not throw any further light in the complexity of the developmental process. The first two principal components, in respect of overall development of states, cumulatively



Note: PRIN1 = 1st Principal Component Scores PRIN2 = 2nd Principal Component Scores

GRAPH 5. TWO-DIMENSIONAL PLOT OF PRINCIPAL COMPONENT SCORES OF STATES FOR OVERALL DEVELOPMENT

explain 90.7 percent variation of the data. A two-dimensional plot of the first two principal components score is depicted in Graph 5.

Punjab, Himachal Pradesh and Haryana formed a homogeneous cluster and are positioned in the higher level of overall development. On the other hand, Tamil Nadu, Maharashtra and Gujarat were clubbed to another cluster. Kerala, in one upper corner of the first quadrant, again turned out to be an outlier. The overall development pattern of the cluster comprising of Madhya Pradesh, Uttar Pradesh and Rajasthan were totally different from that of the cluster comprising of Bihar, Orissa and Assam. However, all these states are marked with very low levels of overall development.

The development process in India is different than that of other Asian countries for several reasons. The development in India has a spatial dimension and the issues of development in India has been highly politicized and resulted in very little success. The entire development plan of any country must find its roots on a social base. For example, countries like South Korea, Hong Kong, Taiwan and also post-reform China have all been well ahead of India in many 'social' respects that have made it easier for them to make use of the economic opportunities offered by the expansion of markets. These countries have not only experienced very high economic growth, but also have managed to raise the quality of life through other means (even in the absence of economic growth), such as public support for general health care and basic education (See Sen and Dreze, 1998). Adult literacy rates of select-

TABLE 12. ADULT LITERACY RATES IN SELECTED ASIAN COUNTRIES

Country	1960	1980	1992
India	28	36	50
South Korea	71	93	97
Hong Kong	70	90	100
Thailand	68	86	94
China	NA	69	80

Source: The Amartya Sen & Jean Dreze Omnibus, *India: Economic Development And Social Opportunity*, eds., pp.38, 1998.

ed Asian countries, such as India, South Korea, Hong Kong, Thailand and China are presented in Table 12. It is seen that India's present literacy rate is much lower than what these countries had achieved many years ago, even prior to the initiation of market-based economic transformation. Therefore, one of the major bottlenecks of India's development process has been the slow progress in the field of basic education. The adult literacy rate of India in 1992 stood at 50, while the same for China was recorded at 80. The economic liberalization of India currently underway has to be viewed on the background of poverty, deprivation, illiteracy and inequality existing among the masses. And therefore, the development pattern of India's may not be directly comparable with that of other Asian countries, like South Korea, Hong Kong, Taiwan and China, which have established a very strong social development base on which processes of economic reforms have resulted in high economic growth and overall development.

CONCLUSION

In general, development can be viewed as a multi-dimensional phenomenon. Here a composite index of development is constructed using four broadly accepted components: (a) economic production and economic condition or in other words level of economic development; (b) common minimum needs; (c) health and health-related services and (d) communication.

The findings of the analysis support the general perception about the states. The factors, which are found out to be more important for the overall development process, relate to basic needs like education, availability of food, minimum purchasing power and facilities like safe drinking water, health care infrastructure, etc. It is also found that enrollment ratio cannot be raised unless minimum needs of the common people are satisfied. Therefore, true development requires government action to improve ele-

mentary education, safe drinking water facilities and health care, and to remove barriers against sections of societies, especially women.

The states in India are marked with wide disparity in socio-economic development. Some states are better-off in terms of economic development, while states like Kerala, and Tamil Nadu have recorded remarkable social progress. The role of social development such as literacy (and particularly of female literacy) in promoting basic capabilities emerges as the prerequisite to overall development. Entitlements to basic commodities and services also differ significantly among states. These results clearly emphasize the role of well-functioning public actions in improving the overall living conditions of the people. The disparity in entitlement of basic necessities among states mainly emanates from the scope and quality of a wide range of public services such as schooling facilities, basic health care and public food distribution system. Indeed, Kerala's success may be attributed to the role of public action in promoting a range of social opportunities relating to elementary education, status of women in society and provisions for health care and other services. The condition of BOUMAR states, on the other hand, is the result of incessant public neglect of the same opportunities. Thus the overall results clearly stress that economic reforms alone are not sufficient for overall development unless it is accompanied by social and political commitments. Faster development requires government action to improve elementary education, especially for the younger generation. Kerala has set up the example and has clearly established the primary benchmark/goal for other states in India. Its success has very little to do with economic growth because in spite of its social progress it has a sluggish economy and a high level of unemployment. Although, economic growth in the sense of expanding gross national product and other related variables is one of the most fundamental input to the overall development process, the basic objective of development should focus on the expansion of human capabilities which has been neglected for too long in India.

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