University of Mumbai

DEPARTMENT OF ECONOMICS
(AUTONOMOUS)

INETR-STATE DISPARITIES IN ECONOMIC GROWTH IN INDIA: SOME POLICY IMPLICATIONS FOR LAGGARD STATES

By

Anjali Masarguppi
ManishaKarne

WORKING PAPER UDE 45/11/2013

NOVEMBER 2013

ISSN 2230-8334

DEPARTMENT OF ECONOMICS
(AUTONOMOUS)
UNIVERSITY OF MUMBAI
VIDYANAGARI, MUMBAI - 400 098.

Documentation Sheet

Title

INETR-STATE DISPARITIES IN ECONOMIC GROWTH IN INDIA: SOME POLICY IMPLICATIONS FOR LAGGARD STATES

Author(s)	**External Participation:**
Anjali Masarguppi ManishaKarne	----------

WP NO.: UDE45/11/2013 ***Date of Issue:*** November 2013	***Contents:*** 33 P,18 T, 8 F,39 R ***No. of Copies:*** 100

Abstract

Faster economic growth of some of the backward states like Bihar, Uttarakhand and Chhattisgarh in the post 2004-05 compels us to think if it is any indicative of convergence among states of India. However, PCNSDP (per capita net state domestic product) shows huge gap between traditionally high income and newly faster growing state economies. Regional imbalance has been one of the perennial issues of Indian economy which has led to formation of smaller states and present demand for some separate states is result of the same. This study makes an attempt to find causes and extent of inter-state disparity in India by taking data for various variables related to three sectors- agriculture, industry and service sector (including infrastructure)- for 19 major states for 2007-08. A Multi-stage Principal Component Analysis is used to identify factors that contribute most to inter-state disparity and Composite Index of Economic Growth is built to measure the extent of disparity. A policy implication for the lagging states is to identify a 'lead' sector as an engine of overall growth.

Key Words: Principal Component Analysis, Composite Index of Economic -Growth, Inter-state disparities

JEL Codes: O11, R11

Inter-state Disparities in Economic Growth in India: Some Policy Implications for Laggard States

1.1Introduction

The issue of disparities in the economic performance of different Indian states has gained greater attention in the post reform period (post 1990-91) as, although economic performance of India has been impressive in this period with GDP (Gross Domestic Product) growing at 6-7% per annum or even more, the States are growing at different rates and this inter-state disparity can threaten the sustainability of all-India growth performance.Post 2004-05,States like Bihar and Uttarakhand have registered more than 11% growth rate per annum (measured by Gross State Domestic Productat 2004-05 prices) as compared to 2.96% and 8.71% (at 1999-00 prices) respectively in the previous quinquennial period; leaving behind some of the leading States like Gujarat, Haryana, Maharashtra and Punjab[1]. This trend compels us to think if it is any indicative of convergence among the States of India.The neo-classical growth model of Solow[2] (Ray, 2009) states that (log) per-capita growth rate tends to be inversely related to the starting level of output or income per person in an economy. Thus poor regions or economies have a tendency to grow faster than richer ones;yet, due to low base, even when growth rates of backward regions are higher, the absolute gap is not likely to be reduced.Tables 1.1 and 1.2 (in Appendix) indicate that, the range of growth rates[3] has narrowed, mean growth rate is higher and CV (coefficient of variation) has decreased for the period between 2004-05 and 2010-11 compared to the previous quinquennial period. However, Indian States still continue to perform differently. PCNSDP (Per Capita Net State Domestic Product) which is considered as a better indicator of performance of any economy shows large variations across States. E.g. PCNSDP of Haryanais as high as Rs.47520/- and on the other end is Bihar with Rs. 9658/- (2007-08)[4].

With this backdrop, this paper tries to analyze causes and extent of inter-state disparities in economic growth for 19 major States that account for 96.06% of

[1] In the post 2000 period growth rate of Punjab has considerably reduced as compared to previous decades.
[2] Reference to Solow's model is purely to make a point and not to prove the theory.
[3] CAGRs (Compound Annual Growth Rates $Y_t=Y_0*e^{rt}$ where, r= CAGR) are calculated for GSDP as Gross SDP indicates the total productive capacity of any economy.
[4]PCNSDP data is taken at 2007-08 because the analysis is for the same year

population in India, using Multi-stage Principal Component Analysis (PCA) by taking data for all three sectors(agriculture, industry and service sectors) for the year 2007-08.One important point needs to be mentioned here is that the concepts of national or state incomes refer to the productive activity that generates a variety of goods and services and physical capital stock. However, these directly productive activities are supported by investments in what is known aseconomic and social infrastructure likeroads, electricity, water, sanitation, communication, health and educational facilities that facilitate and integrate economic activities. Therefore, along with sectoralperformance indicators, an indicator of infrastructural performance is also included in the analysis of inter-state disparities in economic growth among Indian States.

1.2Inter-state Disparities in India: A Historic Perspective

Indian federal democracy has been challenged many a times in the past due to inter-regional economic imbalances. This is visible by the fact that some of the new and smaller States were born because of agitation based on perceived neglect of certain backward regions in some of the bigger States. Recent examples include Bihar (and Jharkhand), Uttar Pradesh (and Uttarakhand), and Madhya Pradesh (and Chhattisgarh) in 2000. A number of States have regional pockets that are at different stage of economic development. Current agitations in Andhra Pradesh for a separate state of Telanganaand Naxalite movement in Central India are a result of intra-state regional imbalance.

During the planning period (1950-51 to 1990-91), Planning Commission, a central institution of economic control in India since 1950, always emphasized growth targets for the country as a whole. This aggregate growth was never disaggregated into evaluation of performance of each state in terms of growth of SDP (State Domestic Product). However, in the post reform period, since Planning Commission has withdrawn its control to a great extent, size and scope of public sector has become almost negligible. Therefore, the state level initiative in attracting investment, both private and foreign, wouldbe responsible for the pattern and rate of growth of each state in India. India being a federal democracy, state has an eminent role to play in many key areas, especially in delivering social and economic development as the Constitution confers major programmatic responsibilities

on the States, and both components of development and regulatory administration are directly underthe state list.[5]

Regional imbalances may be natural due to unequal distribution of natural resourcesand/or man-made, in the sense ofpreference for some regions and neglect of some for investment and infrastructural facilities. Since all regions are not equally endowed with resources, they have a dissimilar agricultural and industrial base. The well-endowed regions can generate larger revenue and such regions further attract private investment.

In India, apart from geographical factors, historical factors too have greatly contributed to regional inequalities. British rulers developed only those regions that ensured economic and political gain i.e. regions that possessed better facilities for manufacturing and trading activities or irrigated those regions that could fetch greater revenue. Hence, in the pre-1947 almost all commercial and industrial activities remained confined to major cities, viz. Bombay, Calcutta and Madras.

In the post-independence period one of the major landmarks of Indian economic history that led to greater regional disparity was The New Agricultural Strategy (popularly known as the Green Revolution) of the mid-1960s. It fuelled not only inter-regional but also inter-personal disparities. The bulk increase in the agricultural output remained confined to a few regions, particularly Punjab, Haryana and Western Uttar Pradesh while the benefits of this new strategy did not reach many backward States at all. According to Banerjee and Ghosh (1988), "the decade of the 1960s has been identified as the most decisive period in setting the pace of regional growth." Differential agricultural growth became a major source of inter-state and intra-state disparities in economic levels and growth in the later periods. Both inter-state and intra-state disparities in overall performance are broadly related to the development of agriculture and infrastructure especially of irrigation, electricity, transport and credit.[6]

Similarly, a detailed account of Five-Year Plans has showed that the most important consideration in deciding locations for the commanding heights was one of techno-economic consideration and not really that of backwardness of the region. Hence,

[5]Division of duties between the Centre and States is constitutionally sanctioned

[6]These infrastructure facilities grew in regions where NAS was already introduced.

expansion of public sector met with limited success in achieving industrial dispersion andbalanced regional growth.

In view of this, development of infrastructure in backward areas and promotion of small-scale industries as main instruments of regional dispersion of growth were suggested by the Second Five Year Plan. Subsequent plans also followed the same policy. Other instruments adopted were: freight equalization of major inputs in order to promote backward areas, industrial licensing policy for the private sector favored applications for setting up units in backward areas, concessional tax policy to encourage movement of industries to backward regions. In the Fourth Five-Year Plan, financial incentives were granted to disperse investment to backward regions. However, these instruments did not meet with enough success and during Sixth Five-Year Plan government established The National Committee on Development of Backward Areas. The committee, however, gave a verdict that unless enough infrastructure is developed in the backward regions, these instruments cannot bring about desired results. Therefore, despite plan policies and availability of various instruments even the process of industrialization failed to bring about balanced regional development in India.

Dandekar(1992)[7], has explained the extent of regional inequalities in growth rates by taking per capita SDP as percentages of GDP as an indicator of economic growth for a period of forty years i.e. between 1960-61 and 1988-89 for 16 major States. The study shows that States of Bihar, Madhya Pradesh, Orissa, Uttar Pradesh, Assam and Rajasthan were at the bottom of the spectrum whereas four States of Gujarat, Haryana, Maharashtra, and Punjab remained at the top of the ladder for the entire period under consideration. The range between the highest value and the lowest value has increased for subsequent periods from 1960-61 onwards. This also indicates that States that were at the bottom have continued to remain at the bottom and States that have been at the top have continued to perform better.

1.3Literature Review

[7]Dandekar has used averages of the ranking of the states for four decades to calculate the final rankings.

Several studies have made an inquiry into the aspect of 'regional imbalance' in Development Economics.Theoretical framework of development economics ranges from 'trickle down' to 'backwash effect'. Myrdal (1958), in his work, tried to find reasons for the 'spread' and 'backwash' effects. Myrdal, while studying economic underdevelopment and development, suggested existence of circular inter-dependence within a process of cumulative causation, released by primary changes, that tend to increase rather than decrease the inequalities between regions as movements of labor, capital and goods/services do not by themselves counteract the natural tendency of regional inequality. Hirschman (1958) has done similar work using concepts of 'trickle down' and 'polarization' effects. According to him, economic progress does not appear everywhere at the same time and that once it has appeared, powerful forces push for a spatial concentration of economic growth around the initial starting point. Nurkse (1962) gave a theory of 'balanced' and 'unbalanced' growth. However, the most significant empirical analysis has come from Kuznets` (1956), wherein he tried to answer 'how income inequality changes along with the process of country's economic growth?' According to Kuznets`, various factors suggest that income inequalities widened in the early phase of economic growth (when there is a rapid transition from pre-industrial to industrial civilization), becomes stabilized for a while and then narrows in the later phase. This observation came to be characterized by Kuznets` 'inverted-U' curve. Williamson (1965) has tried to examine causes of regional income differences as national development proceeds.According to Williamson, regions within nations do not necessarily possess equal capacity to grow, hence when growth occurs in any one region (due to random shock), the barriers among regions may be too strong to let the growth transmit to other less developed regions. He also tried to probe why growth tends to be self-perpetuating in a nation that has already experienced growth whereas, is difficult to generate in countries that are underdeveloped.

In India, several studies have been undertaken that have tried to explain inter-regional, inter-state and intra-state disparities in economic performance. The literature on regional disparity is very vast and varied. It can be classified in a number of ways such as the unit of discussion like, nation, state or district, the methodology used (using multivariate analysis for developing composite indices or resorting to simple rank analysis etc.), the

coverage (including all the important sectors of the economy or concentrating on few sectors only), the results and findings (showing increase or otherwise in the extent of disparity) etc.

Researchers like Mathur(1983) and Ahluwalia (2000) have explained that analysis of movements in sectoral disparities provides insight into the underlying forces generating the observed trends mainly because not all sectoral movements take place in the same direction. According to Mathur's study, structural diversification of different States as measured by the proportion of income from the primary sector is an important indicator of level of economic development. Ahluwalia (2000) has tried to document the performance of 14 major States in the post-reform period (1991-92 to 1998-99) and compare it with the performance of the previous decade.The study also seeks to explore reasons for differences in growth across States and to identify the critical policy issues that need to be addressed if slow growing States have to achieve faster growth rates in future. Ahluwalia finds that variations in private investment ratio are positively and significantly correlated with variations in growth, while public investment and plan expenditure show insignificant direct impact on the same. Also, provision of infrastructure and extent of literacy are associated with variations in growth. Hence, the study has recommended that, it is essential to strengthen finances and governance of the state governments as key factors in supplying economic and social infrastructure, thereby promoting private investment, productivity, growth and economic development. Role of the Central Government in supporting developmental activities of the States and funding large-scale infrastructure is considered crucial.

Das and Barua (1996) have examined pattern of regional inequalities in India during 1970-92 taking 23 States into consideration using Theil index of inequality. Rao, Shand and Kalirajan (1999) have tried to examine trends in inter-state inequalities in levels of income over three and a half period (1965-94) taking 14 major States into consideration. Kurian (2000)has mainly focused on causes for increasing inter-state disparities in India despite planned government efforts. Shetty (2003) has made an attempt to compare economic performance across States over the period 1980-81 to 2000-01 using SDP, per capita SDP and sectoral composition of SDP as measures of inter-state disparities. Using

the EPWRF data series, annual growth rates of gross and net SDP and per capita income have been calculated for the decades of 1980s and 1990s (the period has been broken into two period blocks: 1980-81 to 1993-94 and 1993-94 to 2000-01). Results indicate that, with respect to growth of SDP and per capita SDP, overall growth has accelerated in the 1990s as compared to the 1980s.Dholakia (2003) has analyzed regional disparity with respect to human capital as it is being considered as a prime determinant of economic growth.

Bhattacharya and Sakthivel (2004) have tried to probe whether regional disparity has widened in the post-reform period by analyzing growth rates of aggregate and sectoral domestic product of 17 major States in the pre-and post-reform decades. The results indicate that while growth rate of GDP has improved only marginally in the post-reform decade, regional disparity in SDP has widened much more drastically. Industrial States have grown much faster than backward States and there is no evidence of convergence of growth rates among the States. Authors also point at an inverse relationship between population growth and SDP growth that has serious ramification for employment and political economy of India. Some of the other studies that have used 'Convergence Hypothesis' to test whether States have converged over a period of time using different indicators, time periods and number of States are: MarjitamdMisra (1996), Dasgupta, Maiti, Mukherjee, Sarkar and Chakrabarti (2000), Sachs, Bajpai and Ramiah (2001), Nair (2004), Dadibhavi and Baglakoti (2006), Gaur (2010), Agarwalla and Panagotra (2011), Ghosh (2012). However, studies do not show evidence of convergence among Indian States.

Another commonly used method to examine the causes and extent of inter-state disparities in economic performance is the 'factor analysis method'. Some of the important studies in this category are by Pal (1975), Gulati (1999), Shukla and Dhagat (1999), M Mallikarjun (2002), Majumdar (2002), Phull (2010). A study undertaken by Debroy, Bhandari and Banik (2000) tries to analyze performance of 18 major States by applying Multi-stage Principal Component Analysis to compute composite indices to integrate diverse variables into a single summary measure.

The current research study, too, incorporates Multi-stage Principal Component Analysis to build indices for flow and structural indicators of each of the three core sectors of the economy (agriculture, industry and service sector). In the second stage these index values are used as inputs to build composite index of overall economic growth and for all the three sectors.

With this theoretical and historical background, this research study tries to examine causes and extent of inter-state disparities in India using Multi-stage Principal Component Analysis.

1.4Data and Methodology

Regional imbalance has always remained a cause of concern for the Indian Economy. Several studies have tried to explain the causality of this phenomenon. Hitherto studies have largely used regression analysis (Ahluwalia (2000), Dholakia (2003),Bhattacharya and Shaktivel(2009) etc.), convergence hypothesis (Sachs J.et al (2001), Nair (2004) etc.) and Factor Analysis (Pal (1975), Majumder (2002), and many others). Inaddition Debroy, Bhandariand Banik (2000) have used Multi-stage Principal Component Analysis to determine performance rankings of the States.This research study takes sectoral performance of each state measured by the index values of two indicators as inputs to calculate Composite Index of Economic Growth and Composite Index of each sector based on Multi-stage Principal Component Analysis. Since this study uses Multi-stage PCA, the results found are also classified into two stages:

1. In the first stage, weights of the variables that form Indicators (I and II) for each sector (agriculture, industry and service sectors) are determined and indices are built for both indicators of the sectors for 2007-08.
2. Index values of all six Indicators (two indicators per sector) are used as inputs for the second stage PCA to build Composite Index of Economic Growth. And weights of two indicators of each sector are used to build Composite Index for each sector for

allStates.Indicators (or variables) with higher weights are considered to be indicative of greater contributors to inter-state variations.

1.4.1 The Database

The availability of data for all variables was limited to 2007-08; the main sources of the data are EPWRF (Domestic Product of States in India: 2004-05 series), sas (Statistical Analysis of States)of CMIE, and Planning Commission.

Variables related to state economies have been classified into six broad categories of flow and stock variables for each sector. The flow variables indicate performance of each sector and the stock variables mainly represent structural/institutional variables that are indicative of productivity of the sector.Due to big differences in the size of population and area of the selected States, observed values of the variables are not comparable in the aggregate and hence do not portray the true picture with respect to disparity in economic variables in India. Hence, data based on ratio, proportions, percentage are taken into consideration. Most of the variables have been standardized with respect to population and some as percentages and ratios.

Table 1.1Lists of Indicators and Variables

Agricultural Sector (Total 09)	
Indicator I **Agricultural Performance (05)**	**Indicator II** **Land Utilization (04)**
i) Per Capita Income from Agricultural Sector (PCYAS)	i) Net Sown Area as Percentage of Reporting Area (SARA)
ii) Percentage Share of Agricultural Income in NSDP (SASY)	ii) Cropping Intensity (CRIN)
iii) Per Capita Income from Cultivation Activity (PCYAGR)	iii) Irrigation Intensity (IRIN)
iv) Per Capita Milk Production (MILKPC)	iv) Consumption of Fertilizer (Per hectare) (FERCON)
v) Per Capita Loan Issued by Agricultural Credit Societies (PCLAS)	
Industrial Sector (Total 09)	
Indicator I **Industrial Sector Performance (05)**	**Indicator II** **Industrial Sector Productivity (04)**
i) Per Capita Industrial Sector Income (PCINDY)	i) Per Capita Invested Capital in Factory Sector (PCINCA)

ii) Percentage share of Industrial Sector in Total NSDP (SINDSY)	ii) Per Capita Net Value Added (PCNVA)
iii) Per Capita Income from Registered Manufacturing (PCYRM)	iii) Per Capita Gross Power generation (PCPOWGEN)
iv) Per Capita Income from Unregistered Manufacturing (PCYURM)	iv) Per Capita Foreign Direct Investment (PCFDI)
v) Per Capita Income from Construction Activity (PCYCON)	
Service Sector (Total 09)	
Indicator I **Service Sector Performance (04)**	**Indicator II** **Infrastructural Performance (05)**
i) Per Capita Income from Service Sector (PCYSS)	i) Credit- Deposit Ratio of Banks (C-DRB)
ii) Per Capita Income from Trade, Hotel and Restaurant (PCYHR)	ii) Development Expenditure/ GSDP Ratio (DE-GSDP)
iii) Per Capita Income from Banking and Insurance (PCYBI)	iii) Per Capita Consumption of Electricity (PCCE)
iv) Percentage share of Service Sector in NSDP (SSS)	iv) Infant Mortality Rate (IMR)
	v) Gross Primary Enrolment Ratio (GPRER)

1.4.2 Methodology

In order to accomplish a Multi-Stage PCA, this study uses PCA at the first as well as at the second stage. For performing the first stage PCA, all the variables of each indicator are taken together and for the second stage first Principal Component indices obtained from different sub-groups are considered as a set of new variables and are taken together as inputs to obtain the Final Composite Index.Within a sub-group, there is a high-degree of inter-correlation among variables, while theoretically recognized correlation between pairs of sub-groups is relatively low.[8] Factor Analysis refers to the variety of statistical techniques whose common objective is to represent a set of variables in terms of smaller number of hypothetical factors.

This study uses method of Factor Analysis for extracting those variables (or indicators) that explain the maximum variability. One of the extraction methods, of the Factor Analysis, is the Principal Component Analysis. The goal of PCA is to try to explain part of the variation in a set of observed variables on the basis of a few underlying dimensions. Generally, the first few principal components account for most of the variation in variables. The Principal Components are linear combinations of observed

[8]Debroy, Bhandari andBanik (2000) Hence analysis does not suffer from multicollinearity.

variables that are orthogonal to each other and the first principal component represents the largest amount of variance in the data, the second representing the second largest and so on.

Method for determining relative weights for the variables and indicators is explained below(using the OECD method)[9]:

1. One of the basic conditions of the PCA is that number of variables should be less than number of observations. The ideal ratio is considered to be between 3:1 and 5:1; hence, observations to variables ratio is largely maintained for all six indicators.
2. Variables selected for this analysis are measured in different units, hence, are not additive. Data, therefore, has been converted into standard comparable units so that the initial scale chosen for measuring them does not bias the results. The method adopted to standardize the variable is z-scores,

   $Z_{ij} = (X_{ij} - X_m / \sigma_i)$

   where, Z_{ij}- standardized value of the ith variable for the jth state

   X_{ij} – original value of ith variable forthejth state

   X_m– mean of the ith variable

   σ_i – standard deviation of ith variable

   The transformed series would be scale free and $Z_{ij} \sim Z (0, 1)$.
3. This study uses Varimax Factor Rotation method with Kaiser Normalization[10]. Varimax Factor Rotation method implies that, instead of maximizing variance of squared loadings for each variable; it maximizes variance of the squared loadings for each factor.
4. The method for determining the relative weights for the variable is explained below:

   $W_i = F_{ik}\lambda_k$

   where, W_i – weight of ith variable

[9]OECD (2008)

[10]Kaiser Normalization implies that those components are chosen that have Eigen values greater than or equal to 1.

F_{ik} – factor loading of the ith variable and kth factor which reflects the highest correlation variable (X_i) and factor (F_k)

λ_k – variation explained by the kth factor

5. The weights of the variables determined by applying above mentioned technique are in accordance with the contribution made by the variable in inter-state variations. Higher weights are assigned to those variables that contribute more towards inter-state variations and vice versa. It is important to note that different methods for extraction of principal components imply different weights, leading to different scores for the composite index (and hence different state ranking)
6. The composite index is defined as,

$$Cj = \sum_{I=1}^{n} W_i x_{ij};$$

where, Cj is the composite index for the jthstate, Wi is the weight assigned to ithvariable/ indicator and xij is the observation value after standardization.

1.5 Inter-state Disparities in Economic Growth in India: Factor Analysis (Principal Component Analysis) for 2007-08

1.5.1 First-Stage PCA

A) Agricultural Sector

Indicator I (Agricultural Performance)

Table 1.2 Agricultural Sector Indicator I (Agricultural Performance)

Rotated Component Matrix					
Variables	**1**	**2**	**Communality**	**Weights**	**Weights (%)**
PCYAS	**0.920**	0.197	0.885	0.188	18.85
SASY	0.113	**0.970**	0.954	0.259	25.90
PCYAGR	**0.967**	0.196	0.973	0.208	20.82
MILKPC	**0.901**	0.184	0.846	0.181	18.09
PCLAS	**0.856**	-0.338	0.847	0.163	16.33
Variance explained	0.741	0.259	Total	1.000	100.00
% Variance explained	74.10	25.90	**CV (%)**	**18.35**	
Cumulative Variance	74.10	100.00			

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a	Rotation converged in 3 iterations.

Table 1.2 indicates factor analysis results for the first indicator of the agricultural sector; communalities vary between 0.846 and 0.973 indicating thattwo factors are sufficient to explain most of the variability for the first indicator. Factors account for 74.1% and 25.9% variability respectively. All variables except SASY(Percentage Share of Agricultural Sector in NSDP)have higher correlation to the first factor; however, SASY alone explains about 26% of the variability and the remaining variables together explain 3/4th of the variability. Among these variables PCYAGR (Per Capita Income from Cultivation Activity) has the largest weight and the lowest is for PCLAS (Per Capita Loan Issued by Agricultural Societies).SASY is the highest in Punjab[11] followed by Uttar Pradesh, Bihar and other northern States including Assam and is the lowest in Maharashtra, Tamil Nadu and Kerala. Agricultural Growth Index for all States calculated (Table A-1.1 in Appendix) shows that Punjab, Haryana continue to dominate this indicator and progress of Andhra Pradesh, Himachal Pradesh and Rajasthan is remarkable as they have not been conventionally agricultural States; although difference between index values among the above average States is considerable.Ironically, other northern States like Uttar Pradesh, Bihar (that enjoy favorable agro-climatic topography) are in the below average category. States like Maharashtra, Tamil Nadu and Kerala that come in the category of progressive States are at the bottom end of the ladder.

Indicator II (Land Utilization)

Table 1.3 Agricultural Sector Indicator II (Land Utilization)

Rotated Component Matrix					
Variables	**1**	**2**	**Communalities**	**Weights**	**Weights (%)**
SARA	**0.848**	0.028	0.720	0.210	21.00
CRIN	0.110	**0.989**	0.991	0.325	32.45
IRIN	**0.887**	0.368	0.922	0.229	22.93
FERCON	**0.900**	0.061	0.814	0.236	23.63
Variance explained	0.675	0.325	Total	1.00	100.00
% Variance explained	67.5	32.5	**CV (%)**	**20.37**	
Cumulative Variance	67.5	100.0			

[11]Referred to the database

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

Factor analysis results given in Table 1.3 for indicator II of agricultural sector indicatethat a single variable of CRIN (Cropping Intensity (gross)) carries the maximum weightage and explains 32.5% variability; the remaining three variables have more or less similar weights and together account for 67.5% variability. CRIN is high in Punjab, West Bengal, Haryana and Himachal Pradesh and is lowest in States like Karnataka, Andhra Pradesh, Chhattisgarh and Tamil Nadu. State-wise index values for second indicator are given in Table A-1.2 in Appendix. Punjab and Haryana continue to dominate the Land Utilization indicator indices followed by West Bengal, Uttar Pradesh and Bihar. Once again Andhra Pradesh has managed to remain among the above average States. Gujarat, Himachal Pradesh and Rajasthan are among the below average state unlike in the case of the previous indicator. Tamil Nadu is relatively better off in the second indicator as compared to the first indicator. Jharkhand, Chhattisgarh and Assam are the poor performers as far as this structural indicator of agricultural sectoris concerned. Largely, Punjab has superseded all the States in all the variables of agricultural sectorwith respecttobothindicators.

B) Industrial Sector

Indicator I (Industrial Sector Performance)

Indicator consists of five variables that are indicative of growth performance of industrial sector of any economy. Factor analysis results are given in table 1.4.

Table 1.4 Industrial Sector Indicator I (Industrial Sector Performance)

Rotated Component Matrix						
Variables	**1**	**2**	**3**	**Communalities**	**Weights**	**Weights (%)**
PCINDY	**0.665**	0.498	0.546	0.988	0.093	9.33
SINDSY	0.033	**0.965**	0.139	0.951	0.327	32.68
PCYRM	**0.742**	0.614	0.082	0.935	0.116	11.61
PCYURM	**0.950**	-0.064	0.175	0.938	0.190	19.05
PCYCON	0.160	0.113	**0.980**	0.999	0.273	27.34
Variance explained	0.400	0.327	0.273	Total	1.00	100.00
% Variance explained	40.0	32.7	27.3	**CV (%)**	**49.99**	
Cumulative Variance	40.0	72.7	100.0			

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 3 iterations.

Since two components were inadequate to explain more than 80% variability, three components were extracted. SINDY (Percentage Share of Industrial Sector in NSDP) has the largest weight followed by PCYCON (Per Capita Income from Construction Activity); both together explain 60% of the variability in industrial growth among States and remaining variables together account for 40% variability.However, CV of weights is relatively high for this indicator. Jharkhand, Chhattisgarh have the largest percentage of industrial share in NSDP followed by Himachal Pradesh, Gujarat and lowest share is in Bihar and West Bengal. PCYCON is the largest in Himachal Pradesh and Kerala and is the lowest in Bihar, Assam and Uttar Pradesh. State-wise index values of indicator I of the industrial sector are given below (TableB-1.3 in Appendix). Himachal Pradesh has superseded the conventionally industrial States of Gujarat and Maharashtra;Uttarakhand and Chhattisgarh are among the ten above average States. Bihar, Assam and Uttar Pradesh (in descending order) are the worst performers in the industrial sector.

Indicator II (Industrial Productivity)

Four crucial variables are chosen for this indicator and factor analysis results are indicated in Table 1.5.

Table 1.5 Industrial Sector Indicator II (Industrial Productivity)

Rotated Component Matrix

Variables	1	2	Communalities	Weights	Weights (%)
PCINCA	**0.899**	0.316	0.907	0.229	22.88
PCNVA	**0.826**	0.419	0.858	0.193	19.33
PCPOWGEN	**0.921**	0.061	0.852	0.241	24.05
PCFDI	0.209	**0.965**	0.976	0.337	33.72
Variance Explained	0.663	0.337	Total	1.00	100.0
% Variance explained	66.3	33.7	**CV (%)**	**24.62**	
Cumulative Variance	66.3	100.0			

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 3 iterations.

A single variable PCFDI (Per capita Foreign Direct Investment) has the largest weights and has high correlation with the second factor, the remaining variables together account

for 2/3rd weights with PCPOWGEN (Per Capita Power Generation) having the second largest weights. However, all variables carry sufficiently large weights and CV is relatively low. PCFDI is the highest in Maharashtra and Karnataka and is the lowest in Assam followed by Jharkhand and Bihar. However, PCPOWGEN is the highest in Himachal Pradesh followed by Gujarat and Maharashtra and it is the lowest in Bihar and Uttarakhand. Index values of Indicator II (Table B-1.4 in Appendix) show that, Himachal Pradesh has the largest index value superseding States of Maharashtra and Gujarat; Chhattisgarh and Orissa are among the ten above average States. However, Bihar and Assam have a very low industrial productivity index.

C) Service Sector

Indicator I (Service Sector Performance)

Four main variables are selected to indicate service sector performance and factor analysis results are given in Table 1.6.

Table 1.6 Service Sector Indicator I (Service Sector Performance)

Rotated Component Matrix					
Variables	**1**	**2**	**Communalities**	**Weights**	**Weights (%)**
PCYSS	**0.932**	0.329	0.977	0.242	24.17
PCYHR	**0.878**	0.342	0.889	0.215	21.47
PCYBI	**0.903**	0.207	0.858	0.227	22.69
SSS	0.294	**0.954**	0.996	0.317	31.69
Variance Explained	0.683	0.317	Total	1.00	100.0
% Variance Explained	68.3	31.7	**CV (%)**	**18.36**	
Cumulative Variance	68.3	100.0			

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

A single variable SSS(Percentage Share of Service Sector in NSDP) explains almost 1/3rd of the variability, hence, has the largest weight followed by PCYSS (Per Capita Income from Service Sector) and the remaining two variables. All the variables of first

component have more or less same weights and together account for more than 2/3rd variability. It is important to note that, all States have large percentage share of service sector in NSDP (SSS); however, Kerala, Maharashtra and West Bengal (in descending order) have the largest shares and the lowest being in States of Himachal Pradesh, Chhattisgarh, Jharkhand and Punjab. PCYSS is the highest in Maharashtra, Kerala and Tamil Nadu and is the lowest in Bihar, Uttar Pradesh and Jharkhand. Index values (Table C-1.5 in Appendix) of States of Maharashtra, Kerala and Tamil Nadu are distinctly higher than the remaining above average States where as those of Chhattisgarh and Jharkhand are the lowest.

Indicator II (Infrastructural Performance)

This indicator includes three variables representing physical infrastructure and two representing pertinent social infrastructuresviz. IMR (Infant Mortality Rate) and GPRER (Gross Primary Enrolment Ratio)indicating health and education levels of the States.The factor analysis results are indicated in Table 1.7.

Table 1.7 Service Sector Indicator II (Infrastructural Growth)

Rotated Component Matrix						
Variables	**1**	**2**	**3**	**Communalities**	**Weights**	**Weights (%)**
C-DRB	-0.076	**0.907**	-0.121	0.843	0.214	21.42
DE-GSDP (%)	**0.902**	-0.185	0.036	0.850	0.346	34.64
PCCE	-0.585	**0.674**	0.027	0.797	0.118	11.83
IMR	0.497	0.140	**0.736**	0.808	0.133	13.25
GPREN*	-0.156	-0.214	**0.878**	0.841	0.189	18.86
Variance explained	0.346	0.332	0.321	Total	1.00	100.00
% Variance explained	34.6	33.2	32.1	**CV (%)**	**45.41**	
Cumulative Variance	34.6	67.8	100.0			
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a Rotation converged in 3 iterations.						

Three components had to be extracted in order to ensure sufficient variability (more than 80%), single variable DE-GSDP (%) (Development Expenditure/GSDP ratio) has high correlation to the first component and explains 34.6% of the variability distantly followed

by C-DRB (Cash-Deposit Ratio of Banks) that explains 21.42% variability and GPREN (Gross Primary Enrolment Ratio) explaining 18.9% variability. By and large, backward States like Bihar, Assam have high DE-GSDP ratio as compared to the developed States like Gujarat and Maharashtra. Himachal Pradesh has the highest and Chhattisgarh has the lowestDE-GSDP ratio. C-DRB is the highest in Tamil Nadu and Rajasthan and is the lowest in Bihar and Jharkhand. GPREN is the highest in Jharkhand and Madhya Pradesh and is lower in Haryana, Punjab, Andhra Pradesh and Kerala. Index values of this indicator for the States (able C-1.6) show that, 12 States have above average values led by Madhya Pradesh, Rajasthan and Himachal Pradesh (in descending order) whereas Haryana, Punjab, Maharashtra, West Bengal and Kerala have below average index values. This trend shows thatsmaller States are trying to invest more in physical and social infrastructure.

1.5.2 Multi-Stage PCA

By using index values of six indicators as inputs, the final composite index of economic growth is constructed that indicates the level and pattern of economic growth across selected States. PCA results are given in Table 1.8.

Table 1.8 Composite Index of Economic Growth

Rotated Component Matrix						
Variables	**1**	**2**	**3**	**Communalities**	**Weights**	**Weights (%)**
AGRI I	0.228	**0.917**	-0.163	0.919	0.164	16.38
AGRI II	-0.094	**0.927**	0.218	0.916	0.168	16.77
IND I	**0.913**	0.083	0.041	0.842	0.184	18.39
INDII	**0.944**	0.037	0.023	0.894	0.197	19.68
SSS I	0.385	-0.047	**0.803**	0.795	0.131	13.10
INFRII	0.196	-0.089	**-0.879**	0.819	0.157	15.71
Variance Explained	0.381	0.331	0.288	Total	1.00	100.00
% Variance Explained	38.1	33.1	28.8	**CV (%)**	**13.61**	
Cumulative Variance	38.1	71.2	100.0			

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 3 iterations.

Three components had to be extracted to ensure sufficient variability; first component has higher correlation with both indicators of Industrial sector that together account for

38.1% weights and Industrial Productivity indicator has the largest weight; second component has higher correlation with both indicators of agricultural sector accounting for 33.1% weights and third component has larger correlation withservice sector indicators accounting for 28.8% weights. However, CV is quite low indicating that all indicators play an important role in stimulating economic growth of any economy. The weights imply that, the industrial sector accounts for maximum inter-state disparity across States followed by agricultural and service sectors.

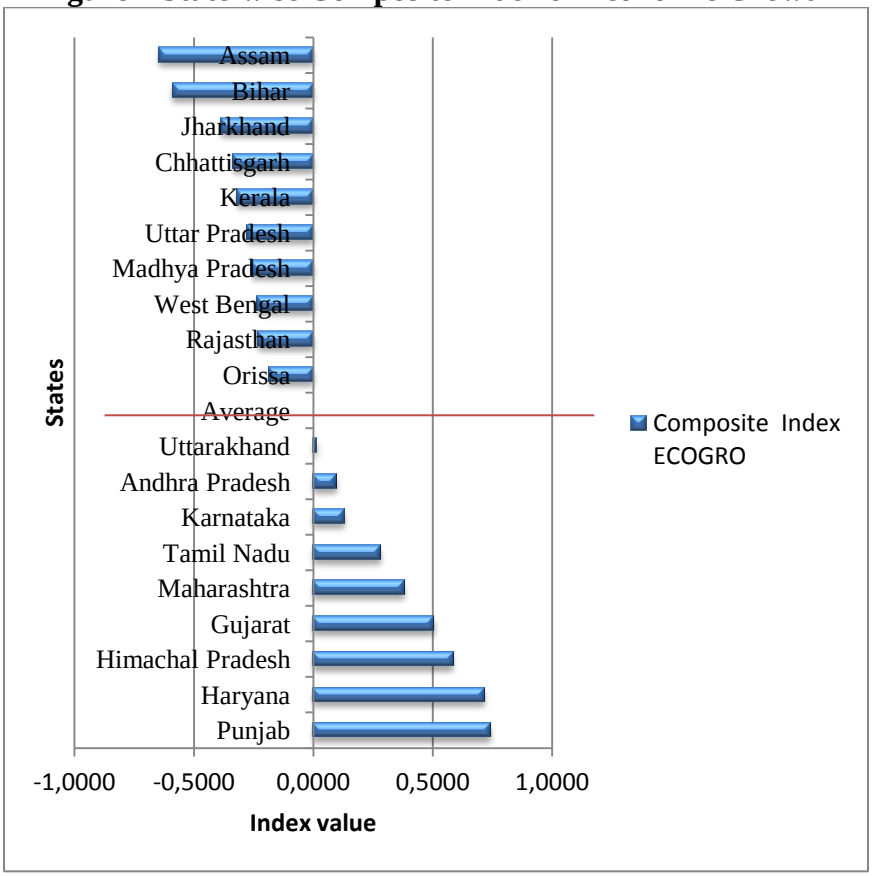
The final index values, given in Table 1.9 and Figure 1, show that Punjab and Haryana are the best performing States, Himachal Pradesh has progressed considerably in the last decade leaving Gujarat and Maharashtra behind; however, most BIMARU States still continue to have low index values despite high growth rates as mentioned earlier. Bihar and Assam are the least performing States with extremely low index values. Kerala's economic performance has been unique, in the sense that although state does not indicate any promising economic performance in any of the three sectors, it has performed extremely well on human development indicators. The state economy is highly dependent on remittances from abroad. Hence, low growth index value of Kerala does not raise any major economic debate. In addition to human development if the state performs well on the economic front as well, it will be an advantage to the people of Kerala. Remaining three southern States are the above average States with Tamil Nadu showing better performance, distantly followed by Karnataka and Andhra Pradesh. Of the three newly formed States, Uttarakhand is the only above average state. However, the index value is not very high.

Table 1.9 Composite Index of Economic Growth

States	Composite Index ECOGRO
Punjab	0.7409
Haryana	0.7181
Himachal Pradesh	0.5850
Gujarat	0.5066
Maharashtra	0.3806
Tamil Nadu	0.2816
Karnataka	0.1309
Andhra Pradesh	0.0970
Uttarakhand	0.0158
Average	0.0000

Orissa	-0.1860
Rajasthan	-0.2297
West Bengal	-0.2333
Madhya Pradesh	-0.2571
Uttar Pradesh	-0.2738
Kerala	-0.3201
Chhattisgarh	-0.3361
Jharkhand	-0.3874
Bihar	-0.5889
Assam	-0.6441

Figure 1 State-wise Composite Index of Economic Growth



In order to find the real cause of this disparity a final composite index values of all three sectors viz.agriculture, industry and service sector have been calculated (Table 1.10). It

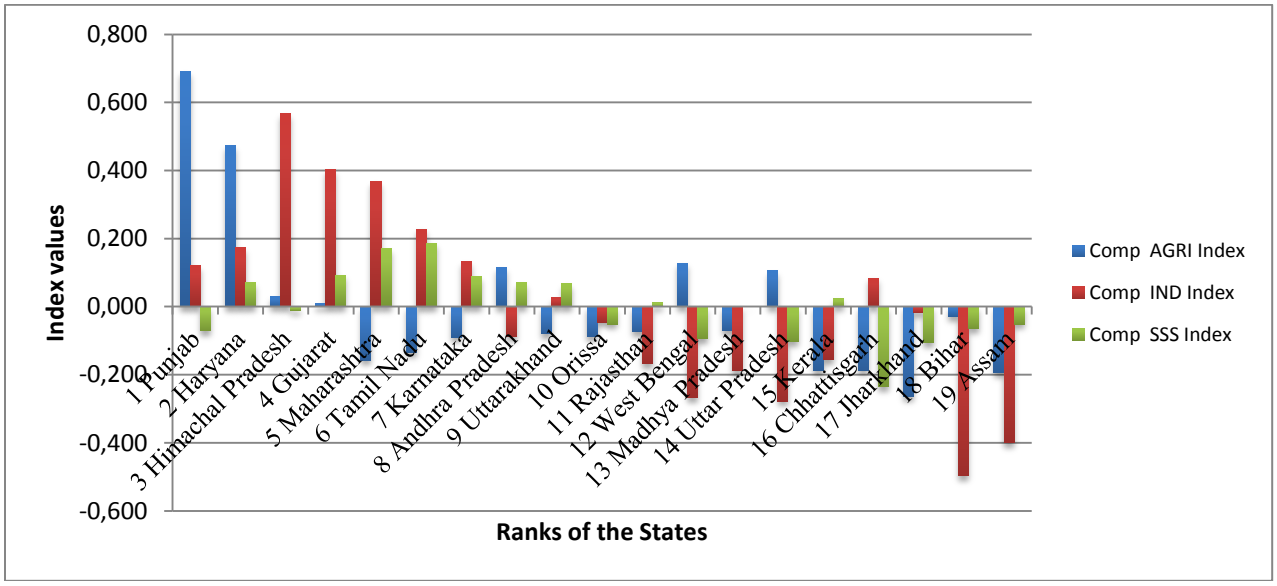
shows that all the three sectors perform differently in each state economy as resource base of every state and region is different. Figure 2 depicts composite indices of all sectors for each state that are arranged in descending order of overall performance. Punjab and Haryana have strong agricultural sector; in addition Haryana also has other two sectors performing well though the service sector in Punjab is weak. In case of Himachal Pradesh and Gujarat strong performance of industrial sector has outweighed sluggish performance of agriculture and service sectors. Maharashtra, Tamil Nadu and Karnataka indicate poor performance in agricultural sector; however, strong industrial growth accompanied by considerably good service sector performance has out done the sluggish agricultural growth. Performance of Andhra Pradesh in agricultural sector in the last decade or so has been quite remarkable. As a result despite poor performance in industrial sector the state has an above average economic growth. Uttarakhand, an emerging state, has managed to overcome deficient agricultural performance by relatively stronger growth of the service sector and a positive performance of the industrial sector.

Table 1.10 State-wise Composite Index of All-Sectors

States	Composite AGRI Index	Composite IND Index	Composite SSS Index
Punjab	0.691	0.121	-0.071
Haryana	0.472	0.173	0.072
Himachal Pradesh	0.029	0.567	-0.011
Gujarat	0.010	0.404	0.093
Maharashtra	-0.157	0.368	0.170
Tamil Nadu	-0.133	0.228	0.187
Karnataka	-0.090	0.132	0.089
Andhra Pradesh	0.115	-0.089	0.070
Uttarakhand	-0.079	0.026	0.068
Orissa	-0.089	-0.046	-0.051
Rajasthan	-0.074	-0.167	0.012
West Bengal	0.128	-0.267	-0.095
Madhya Pradesh	-0.070	-0.188	0.001
Uttar Pradesh	0.106	-0.277	-0.103
Kerala	-0.188	-0.155	0.023
Chhattisgarh	-0.186	0.084	-0.234
Jharkhand	-0.264	-0.018	-0.106
Bihar	-0.028	-0.497	-0.063
Assam	-0.194	-0.399	-0.051

Coming to the below average States, almost all States have all the three sectors performing unsatisfactorily. West Bengal and Uttar Pradesh do have positive agricultural performance however; very low index of industrial sector and poor service sector performance has dragged the economies down. Rajasthan, Kerala have marginal positive performance of the service sector and Chhattisgarh has moderately high performance in the industrial sector but poor performance of the remaining two sectors has dragged the economy down. Bihar, Assam and Orissa have no sector that can work as an engine of growth for their economies. Bihar and Assam show extreme backwardness in the industrial sector. Except Chhattisgarh, almost all below average States show backwardness of the industrial Sector.

Figure 2 State-wise Composite Indices of Three Sectors



1.6 Conclusion and Recommendations

Classical and neo-classical growth theories have emphasized that, economic growth is a result of an inter-play of several factors like natural endowments, quality and quantity of human and physical capital, social and institutional factors, good governance and technology. Each region (inter–state or intra-state) is at a different level of economic progress and has different combination of prerequisites of growth.

Results of this study clearly indicate that the progressive States have at least one 'lead' sector that is providing the necessary thrust to the growth process of the state economy and that enables to overcome sluggish performance of the remaining sectors, if any.

Policy implications for backward state are that, depending upon strengths of the state economy;the state should identify the 'lead' sector and put-in maximum investment into that sector and ensure backward and forward linkages for other sectors to grow.

However, States like Bihar, Assam, and Orissa seem to have missed the traditional 'take-off' stage; they still remain factor-endowment driven economies. Hence, these States need to make rigorous efforts and mobilize large amount of resources, invest in physical as well as human capital to come out of the 'low trap'. Extent and rate of economic growth surely has implications in the poverty alleviation process. It is imperative that these state economies not only increase growth rates but also bring about desired structural changes to ensure higher productivity. Post-reform period has provided opportunities as well as challenges that have to be addressed by the economic polity and create favorable atmosphere for private and foreign investment to flow in.

In addition, the Indian federal democracy is marked by a multi-party system and each state is governed by different state governments that can have different ideologies and efficiency levels. In the post-reform period, since States have gained greater economic autonomy (due to withdrawal of control by the Planning Commission), resources move to the state that has greater political stability and can offer better institutional, administrative and infrastructural support.According to Ahluwalia (2000),

One of the indicators taken into consideration to determine extent of inter-state disparities in growth is the policy environment and governance. Although it is difficult to define and measure good governance, it influences growth in many ways. In the post reform period, this indicator has shown greater degree of variation due to varying levels of deregulation. The law and order situation in each state influences decision of private sector investment largely.

Therefore, a pre-condition of growth of any state is the presence of efficient governance.

Today, key to growth of a state lies in the efficient governance and ability to deliver public services; hence, if each state government improves its functioning it can surely mobilize human, physical and financial capital adequately that can help reduce inter-state disparities to a great extent.

Appendix

Table 1.1 Growth RatesTable1.2 Growth Rates

GSDP (2004-05 to 2010-11)	
States	**CAGR**
Uttarakhand	12.73
Bihar	11.64
Chhattisgarh	9.8
Tamil Nadu	9.02
Orissa	8.88
Haryana	8.87
Maharashtra	8.5
Gujarat*	8.24
Kerala*	8.19
Himachal Pradesh	8.02
Assam	7.22
Uttar Pradesh	7
Rajasthan	6.95
Punjab	6.85
Madhya Pradesh*	6.82
West Bengal*	6.77
Andhra Pradesh	6.37
Karnataka	5.62
Jharkhand	5.18
Mean	8.04
CV (%)	23.64

GSDP (1999-02 to 2004-05)	
States	**CAGR**
Gujarat	9.8
Uttarakhand	8.71
Orissa	7.89
Haryana	7.69
Maharashtra	6.56
Chhattisgarh	6.47
Kerala	6.42
Himachal Pradesh	6.29
Rajasthan	6.12
Andhra Pradesh	5.79
West Bengal	5.51
Assam	5.32
Karnataka	4.56
Jharkhand	4.45
Madhya Pradesh	4.13
Tamil Nadu	4.11
Uttar Pradesh	3.85
Punjab	3.84
Bihar	2.96
Mean	5.81
CV (%)	31.19

CAGR calculated at 2004-05 prices

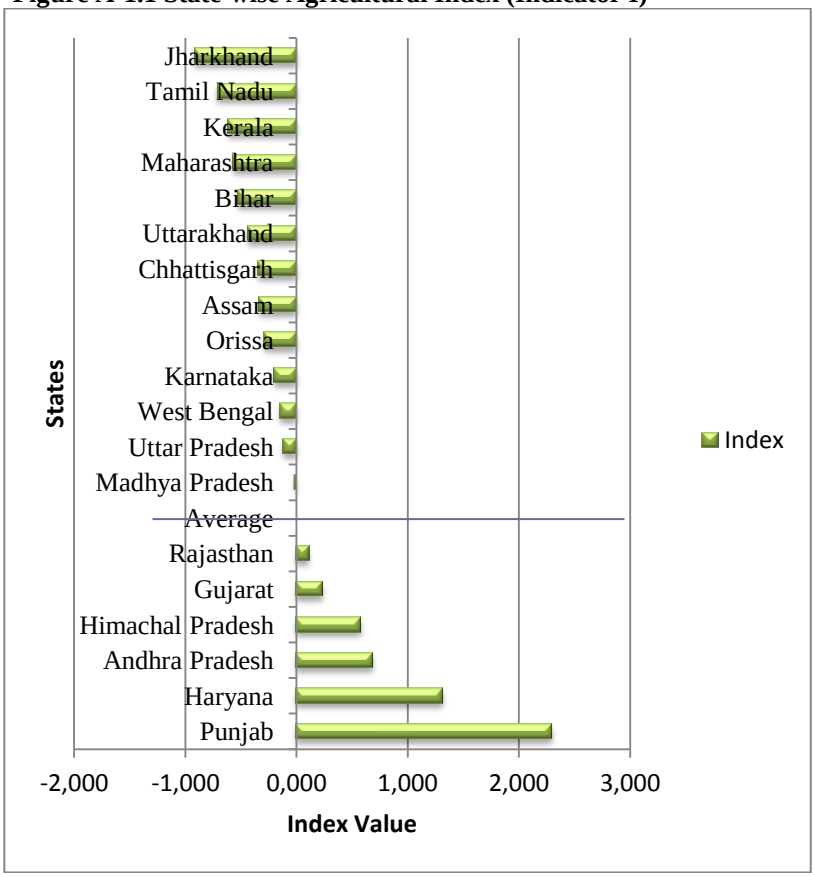
*Data available up to 2009-10 CAGR calculated at 1999-00 prices

Agricultural Sector Indicator I (Agricultural Performance)

Table A-1.1 Index Values

States	Index
Punjab	2.294
Haryana	1.310
Andhra Pradesh	0.684
Himachal Pradesh	0.575
Gujarat	0.236
Rajasthan	0.110
Average	0.000
Madhya Pradesh	-0.018
Uttar Pradesh	-0.117
West Bengal	-0.150
Karnataka	-0.201
Orissa	-0.291
Assam	-0.336
Chhattisgarh	-0.340
Uttarakhand	-0.434
Bihar	-0.524
Maharashtra	-0.564
Kerala	-0.609
Tamil Nadu	-0.710
Jharkhand	-0.915

Figure A-1.1 State-wise Agricultural Index (Indicator I)

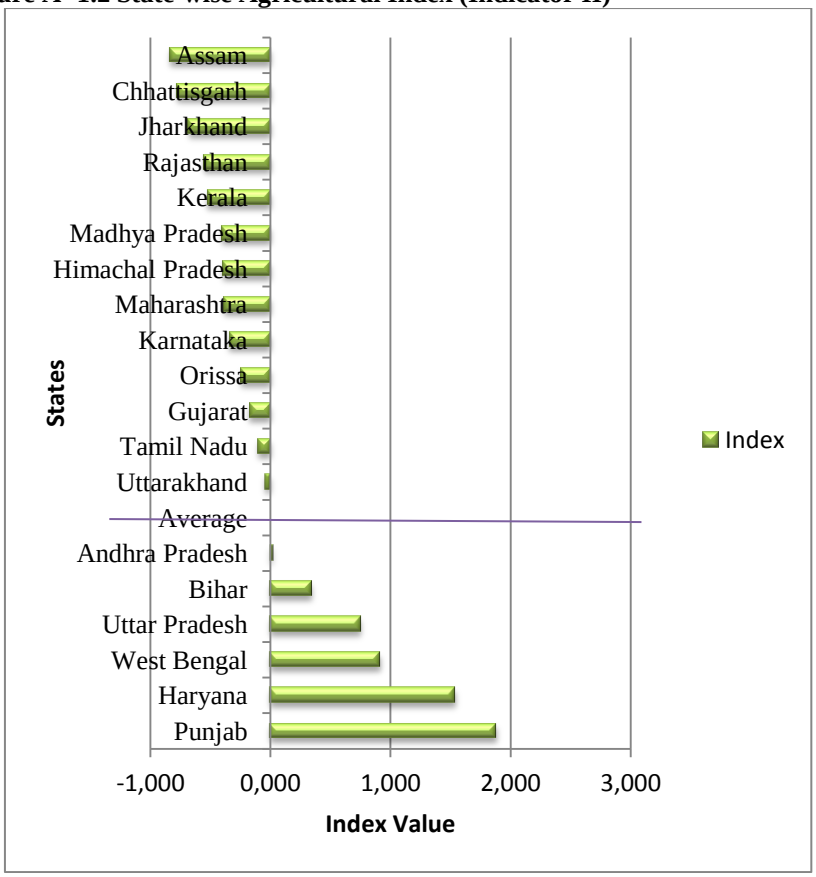


Agricultural Sector Indicator II (Land Utilization)

Table A-1.2 Index Values

States	Index
Punjab	1.880
Haryana	1.536
West Bengal	0.912
Uttar Pradesh	0.749
Bihar	0.343
Andhra Pradesh	0.019
Average	0.000
Uttarakhand	-0.045
Tamil Nadu	-0.102
Gujarat	-0.172
Orissa	-0.245
Karnataka	-0.341
Maharashtra	-0.384
Himachal Pradesh	-0.391
Madhya Pradesh	-0.401
Kerala	-0.524
Rajasthan	-0.549
Jharkhand	-0.678
Chhattisgarh	-0.779
Assam	-0.829

Figure A- 1.2 State-wise Agricultural Index (Indicator II)

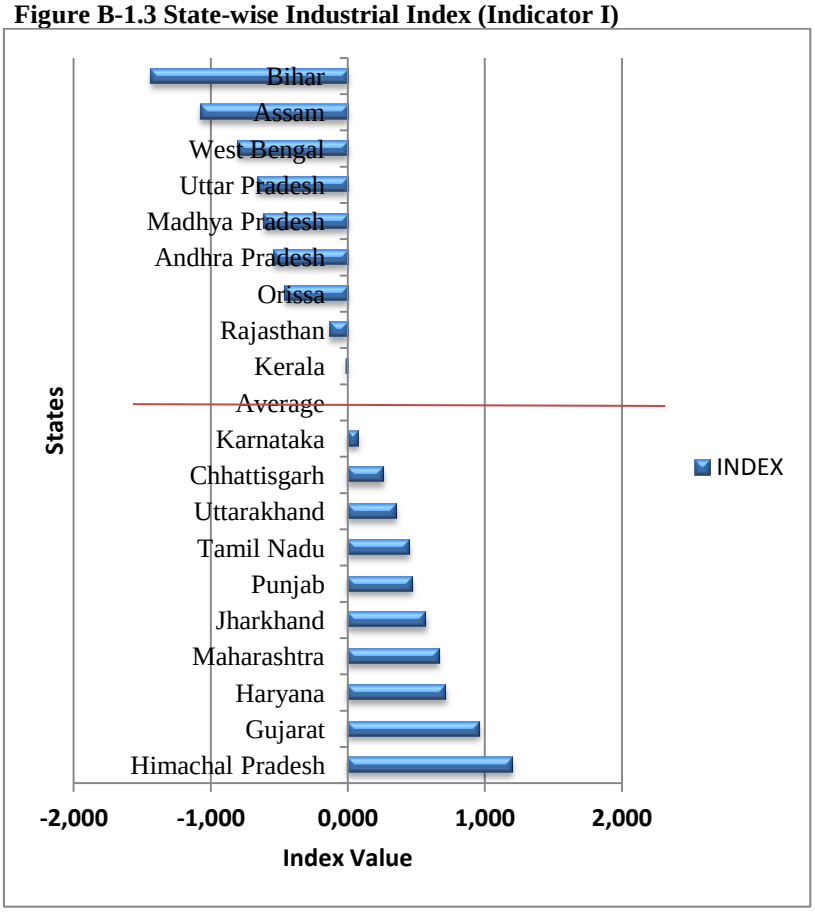


Industrial Sector Indicator I (Industrial Sector Performance)

Table B-1.3 Index Values

States	INDEX
Himachal Pradesh	1.199
Gujarat	0.960
Haryana	0.715
Maharashtra	0.664
Jharkhand	0.571
Punjab	0.470
Tamil Nadu	0.447
Uttarakhand	0.352
Chhattisgarh	0.259
Karnataka	0.080
Average	0.000
Kerala	-0.016
Rajasthan	-0.134
Orissa	-0.455
Andhra Pradesh	-0.541
Madhya Pradesh	-0.607
Uttar Pradesh	-0.658
West Bengal	-0.800
Assam	-1.072
Bihar	-1.436

Figure B-1.3 State-wise Industrial Index (Indicator I)

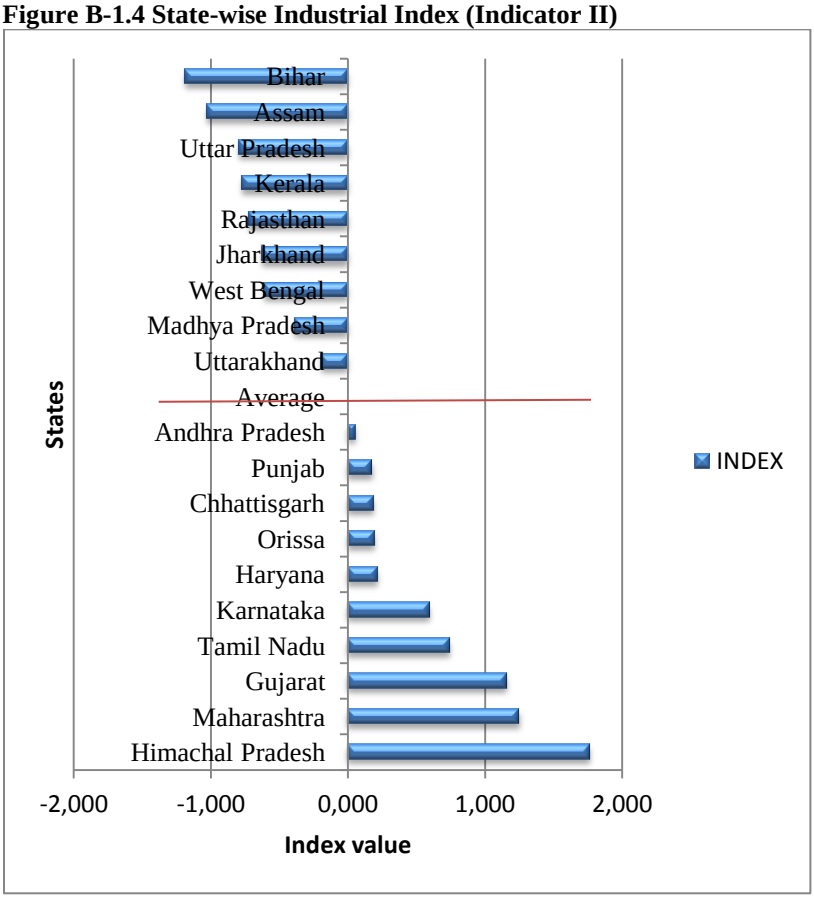


Industrial Sector Indicator II (Industrial Productivity)

Table B-1.4 Index Values

States	INDEX
Himachal Pradesh	1.762
Maharashtra	1.248
Gujarat	1.154
Tamil Nadu	0.742
Karnataka	0.594
Haryana	0.213
Orissa	0.193
Chhattisgarh	0.186
Punjab	0.176
Andhra Pradesh	0.054
Average	0.000
Uttarakhand	-0.196
Madhya Pradesh	-0.388
West Bengal	-0.609
Jharkhand	-0.625
Rajasthan	-0.724
Kerala	-0.774
Uttar Pradesh	-0.795
Assam	-1.027
Bihar	-1.184

Figure B-1.4 State-wise Industrial Index (Indicator II)

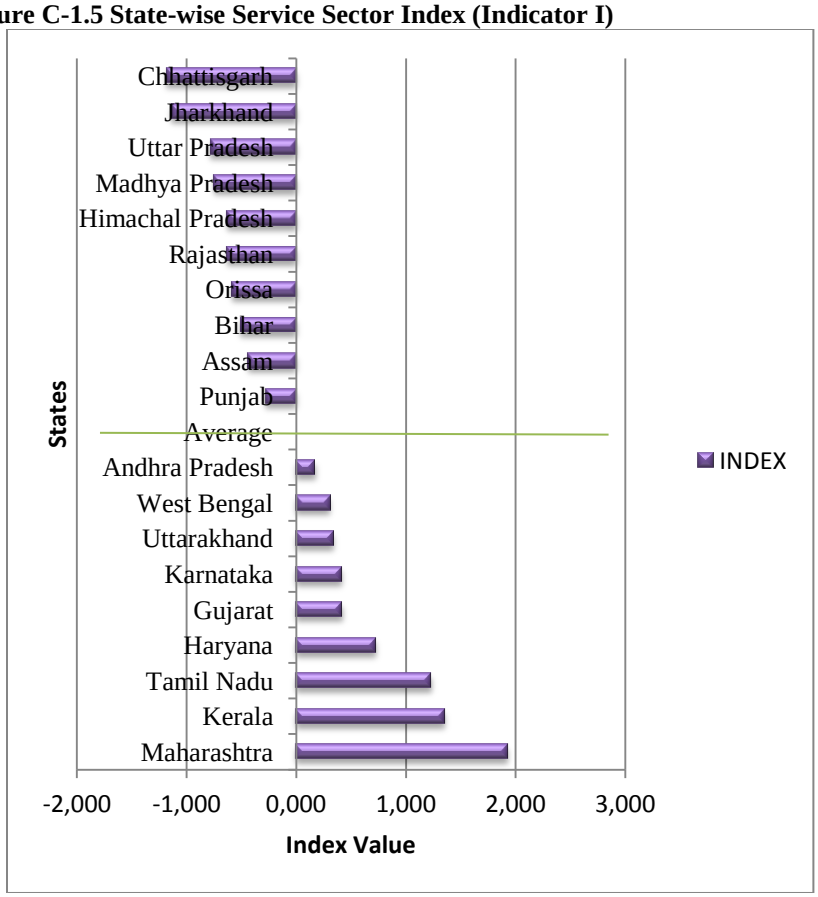


Service Sector Indicator I (Service Sector Performance)

Table C-1.5 Index Values

States	INDEX
Maharashtra	1.929
Kerala	1.352
Tamil Nadu	1.232
Haryana	0.726
Gujarat	0.419
Karnataka	0.413
Uttarakhand	0.339
West Bengal	0.308
Andhra Pradesh	0.175
Average	0.000
Punjab	-0.279
Assam	-0.434
Bihar	-0.506
Orissa	-0.580
Rajasthan	-0.625
Himachal Pradesh	-0.628
Madhya Pradesh	-0.749
Uttar Pradesh	-0.779
Jharkhand	-1.133
Chhattisgarh	-1.180

Figure C-1.5 State-wise Service Sector Index (Indicator I)

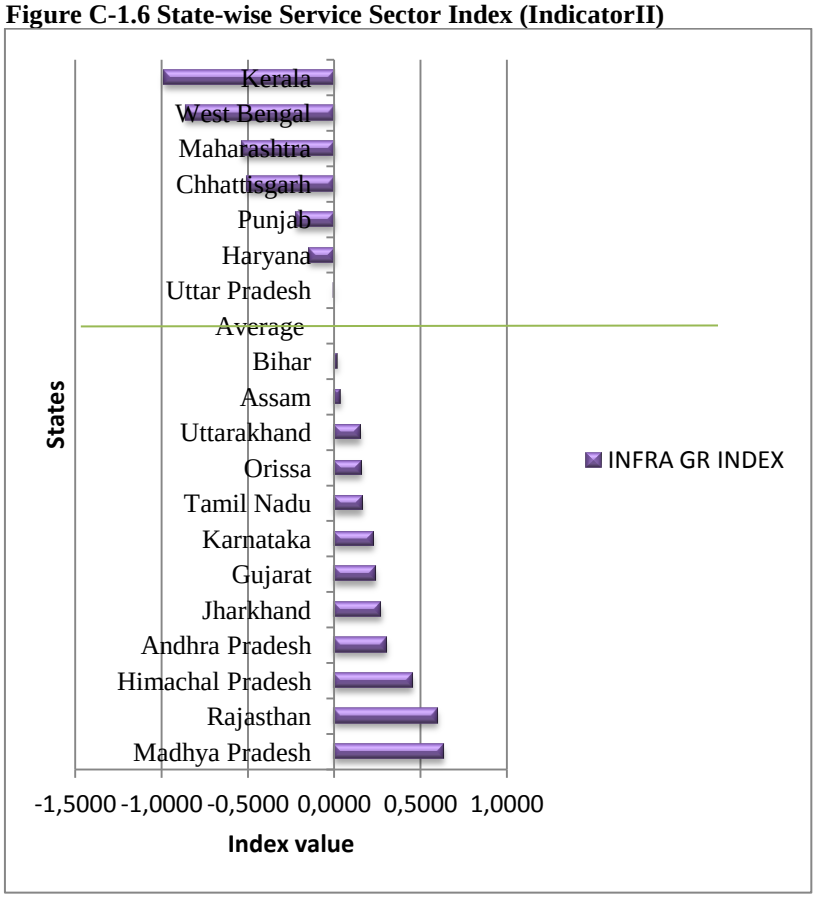


Service Sector Indicator II (Infrastructural Performance)

Table C-1.6 Index Values

States	INDEX
Madhya Pradesh	0.6317
Rajasthan	0.5950
Himachal Pradesh	0.4539
Andhra Pradesh	0.3025
Jharkhand	0.2718
Gujarat	0.2412
Karnataka	0.2248
Tamil Nadu	0.1625
Orissa	0.1558
Uttarakhand	0.1520
Assam	0.0381
Bihar	0.0187
Average	0.0000
Uttar Pradesh	-0.0055
Haryana	-0.1450
Punjab	-0.2210
Chhattisgarh	-0.5052
Maharashtra	-0.5293
West Bengal	-0.8592
Kerala	-0.9827

Figure C-1.6 State-wise Service Sector Index (IndicatorII)



References

1. Agarwalla A. and Pangora P., 2011, '*Regional Income Disparities and Test for Convergence – 1980to 2006*', Indian Institute of Management, Ahmedabad, W.P.No. 2011-01-04
2. AhluwaliaM. S., 2000, 'Economic performance of States in Post-Reform Period', *Economic and Political Weekly*, May 6
3. AhluwaliaM. S., 2002, 'State-Level Performance under Economic Reforms in India', in *'Economic Policy Reforms and the Indian Economy'*, (ed.) Krueger A.O., Oxford University Press, New Delhi
4. Banerjee, D. and Ghosh A., 1988, 'Indian Planning and Regional Disparity in Growth' in A.K.Bagchi, (ed.) '*Economy, Society and Polity: Essays in the Political Economy of Indian Planning*', New Delhi.
5. Beck M. L. (ed.), 1994, '*Factor Analysis and Related Techniques'* (International Handbook of Quantitative Applications in the Social Sciences) Vol.5, Sage Publications Toppan Publishing, 1994
6. Bhattacharya B.B. and Shaktivel S., 2004, 'Regional Growth and Disparity in India: Comparison of Pre and Post Reform Decades', *Economic and Political Weekly*, 29 (10), March 6.
7. Chakravarty S., 1987, '*Development Planning: The Indian Experience'*, Oxford.
8. Dadibhavi R.V. and Bagalkoti S.T., 2006, 'Reforms and Regional Inequalities in India: An Analysis', *The Indian Economic Journal*, Volume 54(2), July-September.
9. Dandekar, V.M., 1992, '*Indian Economy 1947-92- Population, Poverty and Unemployment'*, Vol. 2, Sage Publication, New Delhi
10. Dandekar V.M., 1992, 'Forty Years after Independence', in Jalan B. (ed.), '*The Indian Economy: Problems and Prospects*', Viking Penguin India, Delhi
11. Das S. K. and Barua A., 1996, 'Regional Inequalities, Economic Growth and Liberalization: A Study of the Indian Economy', *The Journal of Development Studies*, Vol.32, N0.3, February, Frankcass, London.
12. Dasgupta D., Maiti P., Mukharjee R., Sarkar S., Chakraborty S., 'Growth and Inter-state Disparities in India' *Economic and Political Weekly*, Vol. XXXV, No. 27, July 1.
13. Debroy B., Bhandari L. and Banik N., 2000, '*How are the States Doing*?' Rajiv Gandhi Institute for Contemporary Studies and Confederation of Indian Industry
14. Dholakia, R. 1994, 'Spatial Dimension of Acceleration of Economic Growth in India' *Economic and Political Weekly*, 29, 35, 27 August.
15. DholakiaR., 2003, '*Regional Disparity in Economic and Human Development in India'* Reserve Bank of India Chair Lecture, by IIM Ahmadabad, July 2.

16. Gaur A. K., 2010, '*Regional Disparities in Economic Growth: A case Study of Indian States*', Paper presented at IARIW 31st general Conference, St-Gallen, Switzerland, August22-28.(http://www.iariw.org)
17. Ghosh M., 2012, '*Regional Economic Growth and Inequality in India During Pre- and Post- Reform Periods*', Paper is a part of the major UGC Sponsored Research Project 'Economic Reforms and Regional Convergence in Indian Agriculture', Visva-Bharati University, Santiniketan, West Bengal, India, Oxford Development Studies, 40 (2).
18. Gulati R.K., 1999, '*Regional Disparities in Economic Development: Policies and Prospects for Balanced Regional Development'*, Deep and Deep Publications Pvt. Ltd., New Delhi
19. Hirschman A. O., 1958, '*Strategy of Economic Development'*, Yale University Press, New Haven
20. KurianN.J., 2000, 'Widening Regional Disparities in India: some indicators', *Economic and Political Weekly*, Feb.12.
21. Kuznets, 1956, 'Economic Growth and Income Inequality',*The American Economic Review*, Vol. XLV, No.1, March.
22. Majumder R., 2002, '*India's Development Experience – A Regional Analysis: An Essay in Honor of Prof. Ashok Mathur'*, MPRA (Munich Personal RePEc Archive) Paper No. 4818, November 7.
23. M. Mallikarjun, 2002, 'Inter Regional Disparities in Economic Development- A Study of Andhra Pradesh', *Indian Journal of regional Science*, Vol. XXXIV, No. 1.
24. Majumder R., 2002, '*India's Development Experience – A Regional Analysis: An Essay in Honor of Prof. Ashok Mathur'*, MPRA (Munich Personal RePEc Archive) Paper No. 4818, November 7. (http://mpra.ub.uni-muenchen.de/48181)
25. Marjit S. and Mitra S., 1996, 'Convergence in Regional Growth Rates: Indian research Agenda', *Economic and Political Weekly*, Vol. 3, No. 33.
26. Mathur A., 1983, 'Regional Development and Income Disparities in India: A Sectoral Analysis', *Economic Development and Cultural Change*, Vol. 31, No.3, pp. 67 – 127.
27. Myrdal, G. 1958, '*Economic Theory and Underdeveloped Regions'*, Duckworth, London, Ch. 3-5.
28. Nair K R G, 2004, '*Economic Reforms and Regional Disparities in Economic and Social Development in India*', Centre for Policy Research, August.
29. Nurske R., 1953, '*Problems of Capital Formation in Under Developed Countries'*, Oxford University Press, London.
30. OECD, 2008, '*Handbook on Constructing Composite Indicators: Methodology and User Guide'*.

31. Pal M., 1975, 'Regional Disparity in the Level of Development in India', *Indian Journal of Regional Science*, Vol. VII, No.1, pp. 38-52
32. Planning Commission, *Five Year Plans*, Govt. of India, Various Issues
33. Phull K. S., 2010, 'Inter-State Disparities in India under Liberalized Regime: Dimensions and Determinants', *Indian Journal of Economics*, Vol. XC, No. 359.
34. Rao M.G., Shand R.T. and Kalirajan K.P., 1999, 'Convergence of Income across Indian States: A Divergent View', *Economic and Political Weekly*, March 27.
35. Ray D., 2009, '*Development Economics'*, Oxford University Press
36. Sachs J., Bajpai N. and Ramiah, 2001, '*Understanding Regional Economic Growth in India'*, Paper prepared for the Asian Economic Panel, Seoul, October 25-26.
37. Shetty S.L., 2003, 'Growth of SDP and Structural Changes in State Economies: Interstate Comparison', *Economic and Political Weekly*, Dec.6.
38. Shukla N and Dhagat S., 1999, 'Disparities in Economic Development in India- A Factor Analysis Approach', *Indian Journal of Regional Science*, Vol. XXXI, No.1
39. Williamson J., 1965, 'Regional Inequality and the Process of National Development: A Description of Patterns',*Economic Development and Cultural Change*, Vol. XIII, No.4, Part II, July.

E-resources

1. epwrfits.in
2. sas, CMIE, Economic Intelligence Service.