Energy Efficiency and Structural Change in India during 1996-2002: A Divisia Index Approach

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With the responsibility for energy supply shared constitutionally between the central government and the states, economic growth in India and the welfare of its people will continue to be hampered as long as the country's energy supply constrains development and the financial losses of the energy sector remain a burden on public sector finances. The Government of India has placed increased emphasis on improving the efficiency in supply, consumption and pricing of different sources of energy, which can only be achieved by reforming management and financing at the state level. There have been a variety of studies investigating the relative importance of the change in energy consumption of India in the past. However, no detailed analysis has been done to examine the sources of change at the state level till date. This article seeks to fill this gap by investigating the change in energy efficiency in Indian states in the late 1990s, based on the data sets of SDP, the end-use energy consumption of all the states, and using the newly proposed decomposition method of giving no residual. The results clearly show a mixed trend.

After years of pursuing economic policies based on import substitution and state ownership of key industries, Indian government embarked on a series of economic reforms in the mid-1990s. As a result the GNP increased from \$ 373.9 billion in 1996-97, to about \$ 501.5 billion in 2002-03. The per capita real income also increased from \$ 390 in 1993-94 to \$ 480 to 2002-03. The increase in economic growth and per capita income boost the economic activity and result in more energy-dependent lifestyles. Thus the total primary energy demand increased from 269.9 million tones of oil equivalent (MTOE) in 1996-97 to 321.3 MTOE in 2001-02. But to sustain the growth of the economy we have to ensure uninterrupted supply of energy to support the economic and commercial activities necessary for sustained economic growth. The need of the hour, therefore, is to acknowledge the important challenges to energy security of India, which are both internal and external in nature. The energy production and consumption of India compared to Asia (excluding Middle East) and World are given in the Table 1. India accounted for 12.5 per cent of total primary energy consumption in the Asia-Pacific region and 3 per cent of the world primary energy consumption in 2000-01 (BP Statistical Review of World Energy, British Petroleum, 2001). The per capita energy consumption remains low at

486 KGOF (Kilograms of Oil Equivalent) compared with a world average of 1659 KGOE in 1998. Increasing oil and coal imports in recent years is an area of concern for the Indian energy sector, with net energy imports increasing from 8 per cent in 1980 to 20 per cent in 2001 (World Development Indicators 2001, World Bank, 2002). Internally, India has a limited resource base, lacks adequate infrastructure and an integrated long-term energy policy. There is also the growing concern over environment and problems of political and bureaucratic inertia. The external challenge lies in getting a continuous supply of energy at reasonable prices as domestic production is low and the demand is high. The monitoring of the developments in the energy intensity is necessary in order to ascertain if the policies aimimg to decrease the energy intensity have the desired effect or otherwise.

1. State-Level Trends in Energy Intensity of India

States vary significantly in how they use energy, which is well illustrated by the changes in energy use by different states over the past decade. Figure 1 graphs the annual changes in energy intensity for all the 25 states from 1996-97 through 2002-2003. In absolute terms, energy intensity varies substantially by states. In 2002-2003, energy intensity for each state ranged from 0.10 KWH to 0.64 KWH per crore of SDP (State Domestic Product). The magnitude and direction of change in energy intensity also vary significantly among states, with the states' energy intensity increasing or decreasing at various rates.

Numerous factors can affect a state's energy intensity rates, and those factors may help to explain the sources of the differences in the states' energy intensity over the years. Some of those differences can be traced to lesser or greater increases in energy efficiency within states, but other differences are likely due to, among other factors, demographic changes and changes in the states' economies, including the shift away from energy-intensive manufacturing and the growth of the service sector's share of the states' economic output.

2. Modeling Energy Intensity

The primary goal of this paper is to measure how energy intensity varies across and within states net of the effects of energy prices and other measured determinants of energy intensity. The two index decomposition methods most commonly used in previous analyses are "period-wise" specifications of either the Laspeyres or the simple average Divisia. The Laspeyres has been utilized to characterize energy consumption in the United States, as well as many of the other countries in the OECD (Schipper et al., 1990, 1992, 1993a; Howarth 1989; Howarth et al., 1991; Howarth and Schipper, 1991). The Laspeyres compares each of the components of energy usage patterns with a fixed base year, while holding the other components constant. As a result, this index does not have the time or factor reversal properties of an ideal price index (Fisher, 1972). The other main method previously used is the simple average Divisia method (Boyd et al., 1987, 1988; Torvanger, 1991). As opposed to the Laspeyres index, the Divisia index, as with the Cobb-Douglas index forms, does have the time reversal property but does not have the factor reversal property. Several other indexing schemes have been applied to the problem of energy decomposition. These methods may be characterized as time series methods. These indices use either a rolling base year or an annually changing weighting scheme. Although computationally more intensive and requiring more data, time series methods capture more information about changes in the underlying effects over time or how energy consumption has evolved over time. These methods include the Adaptive Weighting Divisia (AWD) and the simple average Divisia method with a rolling base year. The AWD allows for changing weights or parameter values through time in response to changing energy inputs and outputs (Liu et al., 1992; Ang, 1993, 1994; Ang and Lee, 1994). Limited applications of this method to the manufacturing sector in Taiwan and Singapore have indicated results that have smaller residuals than either the Laspeyres fixed base year or simple average Divisia fixed base year indices. The other time series energy decomposition method utilizes a simple average Divisia index with a rolling base year. This method has been applied by the Department of Energy, United States in 1995.

Let E be the total energy consumption and Y be the total GDP in a country. Assume that there are n states, and E_k and Y_k are, respectively, the energy consumption and production level in the k^{th} state. Define for state k the state energy intensity $I_k = E_k / Y_k$ and the share of the state $S_k = Y_k/Y$. The aggregate energy intensity $I = E/Y$ can then be written as

$$I = \sum_{k=1}^{n} \frac{Ek}{Yk} X \frac{Yk}{Y} = \sum_{i=1}^{n} I_k S_k \quad \text{...(1)}$$

The above equation indicates that a change in I may be due to changes in the state energy intensity I_k *and*/or the product mix S. The primary objective of an energy decomposition analysis is to quantify these two effects and to interpret their energy policy implications.

Aggregate energy intensity changes, say from the base period 0 to the comparison period t, may be measured in terms of the ratio It/I_o or the difference $I_t - I_0$. Each measure has its own merits. In the case of total national energy consumption given in a physical unit, we will prefer to use the difference method.

Differentiating both sides of Eq. (1) yields

$$\frac{dI}{dt} = \sum_{k=1}^{n} S_k \frac{dI_k}{dt} + \sum_{k=1}^{n} I_k \frac{dS_k}{dt} \quad \text{...(2)}$$

Integrating both sides of Eq. (2) in the interval [0,t] yields

$$I_t - I_0 = \sum_{k=1}^{n} \int_0^t S_k \frac{dI_k}{dt} dt + \sum_{k=1}^{n} \int_0^t I_k \frac{dS_k}{dt} dt \quad \text{..(3)}$$

where the first term on right hand side can be interpreted as the effect associated with energy intensity changes and the second term as the effect associated with product-mix changes. Since Eq. (3) is given in the additive form, this decomposition scheme is also known as additive decomposition.

Again, the mean value theorem for integral allows us to rewrite Eq. (3) as

$$I_t - I_0 = \sum_{k=1}^{n} S_k^{*}(I_{k,t} - I_{k,0}) + \sum_{k=1}^{n} I_k^{*}(S_{k,t} - S_{k,0}) \quad \text{......................................(4)}$$

where the asterisked variables are to be replaced by some appropriate functional forms so as to make the equation a mathematical identity. From Diewert (1998), which cited the studies by Bennet (1920) and Montgomery (1937), we can find functional forms of the asterisked variables that make Eq. (4) a mathematical identity. In energy decomposition analysis, this has been known as perfect decomposition, which is a desirable property as it does not lead to an unexplained residual term in the decomposition results.

The Bennet formula is given by

$$I_k^B \equiv \frac{I_{k,t} + I_{k,0}}{2}, S_k^B \equiv \frac{S_{k,t} + S_{k,0}}{2} \quad \text{..(5)}$$

The functional form as given by Eq. (5) is similar to that of the well-known Tornqvist formula in energy decomposition analysis (Boyd et al., 1988), but it can be easily shown that the Bennet formula makes Eq. (4) a mathematical identity, while this is not the case for the Tornqvist formula.

3. Sources of Data

The choice for a level of disaggregation at the state level is mainly dictated by the purpose of analysis and data availability. Ideally, the fine level of sub-sectoral detail is desirable in order to accurately disentangle the structural effect from the intensity effect. Sinton and Levine (1994) show that as the level of sub-sectoral detail becomes finer, more intensity change becomes attributable to structural shift. Given that the effect of changes in product-mix within and between sub-sectors is counted as the intensity effect, this should thus come as no surprise because a finer level of sector disaggregation is able to more accurately separate the effect from the intensity effect. But, in practice, the desire for a finer level of sector disaggregation is often restrained by data availability. The data used in this study consist of annual time series of real GDP, state's domestic product, energy consumption of India and all the states from 1996-97 to 2002-03. The real GDP series in 1993 constant million *rupees* were obtained from the economic survey while actual quantity data for each energy type was relied on to obtain the physical flows of energy across sectors. As no single comprehensive published source for such data is available, various official sources were used such as the official publications Coal Statistics, Petroleum and Natural Gas Statistics, Power Statistics, various issues on "Energy" by CMIE, various issues of Electricity Statistics by CEA, and the TERI online Energy Database (Central Electricity Authority, various issues; CMIE, 2004; Department of Coal, various issues; Ministry of Petroleum and Natural Gas, various issues; Ministry of Power, various issues; and Tata Energy Research Institute, 2004).

4. The Relative Importance of Structural Change and Intensity Change

In this section, we will apply the above proposed decomposition method to analyse the changes in energy consumption in India from 1996-97 to 2001-02. In the 1990s, the economy experienced spectacular growth. Accompanying the growth, the cumulative energy consumption in the economy between 1991 and 2001 would have increased by 171.5 million tons of oil equivalent (MTOE), provided that the production structure and energy intensity remained unchanged. But, the actual cumulative energy consumption during the period increased only by 131.2 MTOE at a growth rate of 3.4%. Clearly, it is energy conservation that has pushed down the energy consumption during the period under review. Measured as the difference between the would-be and actual energy consumption, the accumulative energy savings between 1991 and 2001 amounted to 40.3 MTOE.

The energy intensities of India, which have historically been very high compared to other industrialized economies, have started to come down since the beginning of liberalization. The extent of this decline varies greatly, however, and even the least energy-intensive states still use substantially more energy per GDP than their peers in the country. Against this backdrop, this paper analyzed the factors which are driving the decline in energy intensity in relatively better off states of India, and suggested certain reforms that are needed to get the nation's energy intensity closer to that of other advanced economies.

The major source of the state power sectors' ailments is poor operational efficiency of the State Electricity Boards (SEBs), which form the foundation of India's power system. Due to subsidized tariffs to residential and agricultural consumers, low investment in transmission and distribution systems, inadequate maintenance, and high levels of distribution losses, theft, and uncollected bills, the SEBs are continually in severe financial distress and have been unable to provide quality supply and efficient service to their customers. To overcome this, the states have embarked upon reform process in different directions. The first state to engage itself to this reform process was Orissa which has nearly completed its reform agenda. The states of Haryana and Andhra Pradesh have also embarked upon similar reform programs. Haryana completed the restructuring of its power sector, established the Haryana Electricity Regulatory Commission, and privatized one distribution zone in 2000 and the second zone by 2002. Andhra Pradesh made its reform legislation effective, created new companies that have taken over the business of APSEB, and established a regulatory commission. The state of Uttar Pradesh has initiated a similar reform agenda by approving comprehensive reform legislation and establishing its regulatory commission.

The decomposition of energy intensity data (shown in Table 2) showed different patterns in the evolution of energy intensity over the last decade. In 1997-98 out of 26 States/UTs, there was positive effect in 11 States/UTs; however in 7 States/UTs (viz. TamilNadu, West Bengal, Delhi, Haryana, Jammu & Kashmir, Pondicherry & Sikkim) there were negligible positive effect. The highest decline in intensity was seen in Goa in the order of 18.65; next was Manipur being followed by Punjab and Maharashtra. In 1998-99, there was positive intensity effect in 8 States/UTs. Surprisingly Maharashtra which was having negative effect in the previous year, started showing highest positive effect in the order of 112.962. Rest of the 18 States/UTs showed negative effect, maximum effect being shown by Uttar Pradesh.

In 1999-2000, though 17 States/UTs showed positive intensity effect, 9 States/UTs showed negligible effect while maximum positive effect was being shown by Punjab followed by Madhya Pradesh. The decline in intensity were there in rest of the States/UTs, highest being Tripura in the order of 7.54. In 2000-01, again 17 States/UTs showed positive intensity effect; 7 States/UTs were having negligible effect while maximum effect was there in Maharashtra followed by Meghalaya. The highest negative effect was being shown by Kerala though only 4 States/UTs were showing considerable negative effect. In 2001-02, India as a whole showed positive effect for the first time. There were 7 States/UTs showing positive effect while 11 States/UTs were showing opposite effect. There was no effect in 8 States/UTs. The highest positive effect was being shown by Meghalaya (11.295) while the highest negative effect was being experienced by Maharashtra (-11.827).

Overall there was positive structural divisia effect (shown in Table 3) in India during the period 1996-97 to 2001-02. However, while Andhra Pradesh and Uttar Pradesh showed negative effect throughout the concerned period, Gujarat showed remarkable negative effect till 1998-99 while the effect became positive in 1999-2000 till 2000-01, again negative effect in 2001-02.

Analyzing the total effect (shown in Table 4) it was found out that there was no great difference among States/UTs in 1997-98. However in the following year while Uttar Pradesh showed negative effect in the order of 33.287, Punjab was showing positive effect of 4.113. In 1999-2000 again Uttar Pradesh was showing positive effect in the order of 24.422 and subsequently in 2000-01 the effect was 17.936. During this phase Madhya Pradesh showed highest negative effect followed by Punjab. In 2001-02 while 17 States/UTs showed negligible positive/negative effect, only 9 States/UTs showed considerable effect; highest positive effect being shown by Goa (6.573) followed by Meghalaya (5.263); highest negative effect being shown by Sikkim (-7.641) followed by Haryana (-4.944). Overall the energy intensity effect has declined in India as the total effect greater than one was only seen in 10 States/UTs out of 26 in 1997-98; 9 States/UTs out of 26 in 1998-99; 6 States/UTs out of 26 in 1999-

2000; 11 States/UTs out of 26 in 2000-01; and 8 States/UTs out of 26 in 2001-02.

In the first group of states, which includes Andhra Pradesh, Maharastra, Gujarat, Tamilnadu, the energy intensity came down sharply, but in the rest of the states it decreased less or remained stable. Although it is hard to generalize, the states in this group typically moved fast on privatization, price liberalization and corporate restructuring. Consequently, industrial output and energy use was de-coupled during the mid-1990s and industrial energy intensity began to decrease. The energy intensity in the non-industrial part of the economy declined where it had been high at the beginning of transition, but remained constant in states that had a higher level of efficiency at the outset.

In the second group of states, particularly, Delhi, Haryana, Orissa, and Kerala, the picture is reversed: the energy intensity remained constant; but for the rest of the states in this group it has increased. These states tend to be characterized by a large share of heavy industry in GDP and certain reluctance by their governments to tackle the politically delicate restructuring of these sectors, although some of them made good progress in other reform areas.

In the third group of states, which includes most of the north-eastern states, the energy intensity went up in the course of transition, and sometimes dramatically so. In these states, privatization and enterprise restructuring were either delayed, or the privatization process was flawed and did not result in the necessary inflow of new capital and know-how. Industry continued to benefit from soft budget constraints either through state subsidies or the tolerance of tax and utility arrears, or both. Non-payment of energy bills also remained a problem in the non-industrial sectors, so that neither industry nor the rest of the economy had an incentive to bring down energy intensities. The pattern withrespect to the remaining decomposition factors is more uniform. Structural change was beneficial in most states but its contribution to changes in overall energy intensity was generally modest.

The decomposition of energy intensity undertaken in this paper is a purely descriptive exercise. It shows how energy use per unit of output has changed in different parts of the economy, but does not offer many insights into the factors driving these changes. There is both cross-sectional and time series evidence that enterprise restructuring and governance reform are crucial to create an environment under which energy intensities can improve.

Overall, there appears to be a strong link between improvements in energy intensity and progress in transition. This should not surprise, as liberalization is chiefly about creating structures and incentives for the efficient use of resources, and energy is a crucial resource in developing countries. There is thus a substantial overlap between the policies needed to improve energy intensity and some of the country's key transition challenges. The fact that some transitional countries still lag behind in the energy intensity stakes suggests that they have not yet reached the end of the road toward full-functioning market economies.

5. Conclusion

By implementing a series of policies and measures towards energy conservation, India has cut its energy consumption per unit of GDP by about one-fifth since 1990. Based on the data sets of the state domestic products and end-use energy consumption for the states of India and using our proposed decomposition method of giving no residual, we have examined the relative importance of structural change and real intensity change to the change in energy consumption in Indian States during 1996-97 to 2001-02.

Difficult as it is to analytically separate the factors that contributed to India's energy use changes, it is even harder to quantify the role of the causes behind those factors. Which aspects of the economic system reforms were responsible for changes in the sectoral structure of the economy and for shifts in product mix? What was better technical efficiency due to natural change in the stock of energy-using equipment as opposed to the introduction of more efficient equipment and practices? Decomposition of national level data could give only limited insights. To further understand the factors responsible for intensity changes, one must look in more detail within states and within sectors, particularly at the industrial sub-sectors that make the largest contribution to intensity changes.

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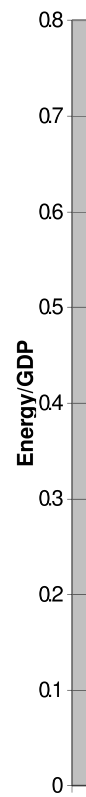
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Energy/GDP

Table 1: Energy Production and Consumption

(in thousand metric tonnes of oil equivalent)

	India	Asia (excluding Middle East)	World
Total energy production, 2000	421,565	2,435,747	10,077,984
% change since 1980	90	108	37
Total energy consumption, 1999	480,418	2,919,333	9,702,786
Energy consumption per GDP, 1999	222	221	244
% change since 1990	-18	-14	-13

Source: World Development Report 2001

Table 2: Decomposition of Energy Intensity of the States from 1996 to 2002:

Intensity Effect

	Intensity Effect	Intensity Effect	Intensity Effect	Intensity Effect	Intensity Effect	Intensity Effect
Group –I State\UT	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Andhra Pradesh	1.000	-0.629	0.075	-0.400	0.927	-0.219
Gujarat	1.000	-0.052	1.739	1.606	-2.735	0.146
Karnataka	1.000	-2.726	-0.032	0.115	1.142	0.718
Madhya Pr.	1.000	-2.766	18.676	10.777	3.114	-6.506
Maharashtra	1.000	-5.705	112.962	-1.044	51.427	-11.827
Punjab	1.000	-8.822	-8.117	30.713	0.829	0.000
Rajasthan	1.000	-0.923	-0.488	-1.271	7.688	-3.398
Tamil Nadu	1.000	0.151	-0.936	-0.878	-0.967	-1.075
Uttar Pradesh	1.000	-0.781	-12.731	4.292	0.763	-2.560
West Bengal	1.000	0.709	4.427	3.943	0.072	1.394

Group-II						
Assam	1.000	1.285	0.056	-0.382	1.879	-0.884
Bihar	1.000	3.828	-2.091	4.904	5.033	-0.739
Delhi	1.000	0.370	-1.922	1.785	0.449	-0.346
Haryana	1.000	0.069	-0.172	0.717	0.105	-1.954
Kerala	1.000	1.638	-0.052	0.014	-3.819	0.000
Orissa	1.000	-2.298	2.583	-1.268	2.602	-3.881
Group-III						
Arunachal Pradesh	1.000	-0.642	-0.805	0.397	-1.177	0.000
Goa	1.000	-18.654	-2.021	0.615	8.066	0.000
Himachal Pradesh	1.000	-0.016	-2.043	-0.014	0.345	0.673
J & K	1.000	0.323	-0.567	0.381		0.000
Manipur	1.000	-15.886	-3.138	0.774	-1.801	0.175
Meghalaya	1.000	-0.644	0.700	0.146	9.962	11.295
Nagaland	1.000	-0.355	-1.148	2.793		0.000
Pondicherry	1.000	0.007	-1.031	0.296	-0.477	0.697
Sikkim	1.000	0.574	-0.966	0.000	0.000	0.000
Tripura	1.000	3.467	-4.936	-7.547	0.790	0.000
India	1.000	-1.189	-3.913	-1.173	-3.010	1.940

Table 3: Decomposition of Energy Intensity of the States from 1996 to 2002:

Structural Effect

State\UT Group – I	1996-97 Structural Effect	1997-98 Structural Effect	1998-99 Structural Effect	1999-00 Structural Effect	2000-01 Structural Effect	2001-02 Structural Effect
Andhra Pradesh	1.000	-4.861	-1.738	-3.667	-2.088	-0.983
Gujarat	1.000	-26.253	-20.874	46.146	-19.230	-17.310
Karnataka	1.000	2.172	0.771	1.747	-0.310	0.865
Madhya Pr.	1.000	1.203	1.620	-1.782	1.878	-0.895
Maharashtra	1.000	0.669	1.768	-0.686	0.970	1.093
Punjab	1.000	2.066	2.059	1.448	1.341	0.000
Rajasthan	1.000	0.297	0.127	-0.205	0.963	-0.691
Tamil Nadu	1.000	0.568	0.747	1.090	0.335	0.001
Uttar Pradesh	1.000	-0.644	-6.176	-2.127	-4.713	-3.219
West Bengal	1.000	0.812	0.931	0.829	0.939	1.000
Group – II						
Assam	1.000	-0.522	1.965	2.328	1.842	2.345
Bihar	1.000	0.946	0.072	2.004	-0.141	0.562
Delhi	1.000	0.349	0.346	1.123	0.368	0.734
Haryana	1.000	6.083	8.682	9.147	6.966	7.722
Kerala	1.000	3.627	3.929	3.286	2.782	0.000
Orissa	1.000	0.252	0.525	-0.001	0.760	-0.296
Group – III						
Arunachal Pradesh	1.000	1.131	-0.073	4.542	-0.063	0.000
Goa	1.000	23.169	1.545	7.324	8.794	0.000
Himachal Pradesh	1.000	1.080	1.739	0.208	0.895	1.031
J & K	1.000	1.202	0.886	0.425		0.000
Manipur	1.000	0.157	0.829	-0.122	0.315	0.309
Meghalaya	1.000	1.806	1.556	1.516	0.898	1.586
Nagaland	1.000	-0.565	0.067	4.449		0.000
Pondicherry	1.000	0.497	0.109	0.854	0.363	0.368
Sikkim	1.000	0.717	0.173	0.000	0.000	0.000
Tripura	1.000	1.061	1.027	1.875	1.114	0.000
All-India		1.344	1.344	0.615	1.295	0.530

Table 4: Decomposition of Energy Intensity of the States from 1996 to 2002:

	Total Effect					
	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
	Total Effect	Total Effect	Total Effect	Total Effect	Total Effect	Total Effect
Group - I						
Andhra Pradesh	1.000	0.307	0.476	0.322	1.593	-0.050
Gujarat	1.000	1.698	2.244	0.499	0.129	0.574
Karnataka	1.000	-0.697	0.301	0.791	0.541	0.779
Madhya Pr.	1.000	2.373	-3.408	-5.484	1.514	0.759
Maharashtra	1.000	0.834	-1.116	-0.676	-0.339	1.428
Punjab	1.000	4.263	4.113	-4.458	1.444	2.808
Rajasthan	1.000	1.045	0.504	0.448	-3.160	0.968
Tamil Nadu	1.000	0.903	2.097	2.668	1.378	0.864
Uttar Pradesh	1.000	-1.213	-33.287	24.422	17.936	-0.493
West Bengal	1.000	0.843	-0.143	-0.128	1.205	0.880
Group-II						
Assam	1.000	2.422	-1.144	-2.086	1.903	-2.915
Bihar	1.000	-0.971	1.512	0.073	-3.583	1.429
Delhi	1.000	0.341	1.271	0.854	0.335	1.174
Haryana	1.000	-1.789	-2.907	-1.888	-2.015	-4.944
Kerala	1.000	2.085	0.843	0.750	-2.335	0.230
Orissa	1.000	2.473	-1.267	1.102	-0.843	2.825
Group-III						
Arunachal Pradesh	1.000	-0.455	-0.728	0.834	-1.059	0.158
Goa	1.000	1.464	-0.306	3.842	8.416	6.573
Himachal Pradesh	1.000	0.708	0.455	0.133	0.708	0.909
J & K	1.000	0.505	-0.265	0.390	0.226	0.605
Manipur	1.000	-3.973	-0.192	0.109	-0.230	0.275
Meghalaya	1.000	0.878	1.232	0.997	4.331	5.263
Nagaland	1.000	-1.081	3.053	8.519	-15.069	2.900
Pondicherry	1.000	1.295	1.969	1.763	1.732	-0.169
Sikkim	1.000	0.844	1.192	-0.406	3.079	-7.641
Tripura	1.000	1.844	-0.913	-1.191	1.009	0.336
All-India NDP	1.000	0.783	0.180	0.219	0.348	0.948