ECONOMIC REFORMS AND REGIONAL DISPARITIES IN ECONOMIC AND SOCIAL DEVELOPMENT IN INDIA

(Report of a Research Project funded by the SER Division of the Planning Commission of the Government of India)

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Preface

The project has been funded by the SER division of the Planning Commission of the Government of India. It has been carried out at the Centre for Policy Research, New Delhi. Work on the project formally began on the 15th of July 2003 and was to have been completed in a year's time.

The preliminary results of the project were widely circulated and also discussed at three seminars, two at the Centre for Policy Research on the 9th of February 2004 and on 28th of May 2004 and another at the University of Montenegro on the 11th of June 2004. A number of useful suggestions were received at these seminars and to the extent possible and necessary, these have been incorporated in the report. In order to do so, a month's extension of time was sought for and was granted.

As the Director of the project, I received considerable help from a large number of individuals and organisations in my work and I thank all of them for their whole-hearted co-operation in this regard. I would like to formally place on record my particular gratitude to the following: -

(1) Ms. Sreerupa, who was formally involved as a Research Associate in the project and helped me in a number of ways including the collection and analysis of data.
(2) The President and Faculty colleagues at the CPR
(3) The library, computer centre and administrative staff of the CPR
(4) The SER division of the Planning Commission of the Government of India, and
(5) The participants at the three seminars at which the preliminary results of the project were discussed

The usual disclaimers apply and the Project Director holds himself fully responsible for any errors or inconsistencies that have crept in to the Report.

Centre for Policy Research
New Delhi   K.R.G.Nair
13th August 2004   Project Director

Chapter 1: Introduction

India is a large federal nation and it is well known that there are widespread disparities in the levels of economic and of social development between the different regions of the Indian nation. It is generally recognised that inter-regional economic disparities increase, at least in the initial stages of national economic development. As a result, governments everywhere including India used to initiate deliberate policy measures to reduce these disparities. But with the reaffirmation of faith in the market mechanism in the liberalised economic scenario the world over now, there is a tendency to withdraw such measures under the implicit assumption that the invisible hand will deliver the goods in this regard too. India has also witnessed a sea change in its economic policy in recent years. While there are some who feel that these changes were initiated in the early eighties, all agree that there have been very major changes in this regard particularly since the early nineties.. From a closed economic set-up having considerable faith in centralised planning and with commanding heights reserved for the public sector, India has now become a highly liberalised and globalised economy with great faith in the efficacy of the market mechanism. It is hence a matter of considerable research interest to know the manner in which inter-regional disparities in the levels of economic and social development have changed in India over time in the past two decades. A comparison of India's regional development experience over the past two decades would therefore give at least a broad idea of the impact, if any, of these changes on the regional aspect of India's development.

This is all the more so because economic liberalisation was brought about in a big way since the 90s in India on the plea that growth could not trickle down under the earlier command and control regime. There was serious concern then at the fact that some Indian states with large populations and vast natural and mineral resources were pockets of poverty. This concern has even greater relevance to-day because the changes over time in the boundaries and in the number of states in India have been such as to make each them more and more linguistically, culturally and even ethnically homogeneous. On top of it we also have the phenomenon of regional parties coming up in a big way the last few years, having a say not only at the concerned state level but also as members of coalition governments at the

centre. In such a scenario, widespread inter-state disparities in levels of economic and social development can have serious economic, social and even political consequences, this being particularly so if these have persisted over long periods of time. A detaailed study examining the nature, extent, possible causes and manner of change of inter-state economic and social disparities in India and drawing broad inferences regarding regional policy in India would hence be of considerable relevance to policy-makers and planners in India, particularly since the period covered by the study includes a decade before the economic reforms and another afterwards. This is all the more so because at the time the study was undertaken, there was a real paucity of studies of this kind. A critical survey of studies related to Regional Economic Development in India by Nair (1993a) has clearly shown the paucity, till 1990, of studies of the type being attempted here. Earlier work mainly consisted of examining issues related to the choice of regions for anlaysis, estimation of indicators of regional well-being, regional impact studies and studies testing the validity of growth theories at the regional level. Barring few exceptions like the study by Nair (1982) dealing with the pre-80 period, these did not link regional development experience to government policies in this regard for regional development. The situation has remained more or less the same since the 90's. There have of course been a number of meaningful studies about indicators of regional well being like the ones by Cassen(2002), Malhotra(1998) and the Planning Commission (2002). There have also been some attempts to find out the relationship between economic growth and poverty at the regional level like the one by Datt and Ravilion(2002). There were also some efforts at linking regional development experience to regional policy. One of these by Nair(1993 b) was a mere exploratory note and that too concerned with just one state – Orissa. The other was a much more detailed one by Kurian(2000) and dealt with the major Indian states, but it focused mostly on the period since the 80's. There is no detailed study of inter-state regional experience in economic and social development in India examining the nature, extent and possible causes of disparities, the patterns of regional change and the inter-relationship between economic and social development at the regional level, linking all this up with changes in regional policy and covering both the pre and the post-reform periods

In view of all this, the states in India are hence taken as regions for the purpose of the study here. A question may arise as to whether it is appropriate to consider the states as regions for the purpose of this study

here[1]. It is true that no Indian state can be looked upon as an entirely homogenous region by any touchstone of homogeneity. Nor can a state be looked upon as a nodal region in terms of the existence of only self-contained economic linkages. But it is generally accepted in regional studies that there are no ideal regions for all purposes of regional analysis. The states are the politico-administrative units of the Indian federation, are the units for which data are collected and have also some leeway in plan formulation and implementation. Moreover, as a result of a number of changes in the number and in the borders of states since the linguistic reorganisation of states in the late 50's, there now exists considerable linguistic and cultural homogeneity within each state in comparison to what existed in the mid-50s. Inter-state comparisons of the type being attempted here have however to be done with considerable caution on at least on two counts. Firstly the different states differ from each other considerably in terms of area and of population. Secondly the borders of the different states have undergone great changes over time because of the carving out of many new states out of old ones and the conversion of some former Union Territories. In view of all this, despite the existence now of twenty-eight states in India , the analysis here is mostly confined to sixteen states for which comparable data used in the study are available for the period of analysis. The states studied are Andhra Pradesh, Assam, Bihar including the state of Jharkhand, Gujarat, Himachal Pradesh, Haryana, Karnataka, Kerala, Madhya Pradesh including the state of Chattisgarh, Maharashtra, Orissa, Panjab, Rajasthan, Tamil Nadu, Uttar Pradesh including the state of Uttaranchal, and West Bengal.

As pointed out by many including Nair (1993a) and Dholakia (2004), data problems are a major impediment in the way of meaningful and in-depth regional analysis even at the state-level in India. Data are available at the state level of net domestic product or income originating which can be considered indicative of the level and efficiency of resource use in the concerned state. These are being regularly brought out be the statistical bureaus of the concerned states, but there are doubts about the strict comparability of these estimates particularly in making inter-state comparisons. Moreover changes in the methodology of and data base used in these estimates make inter-temporal comparisons also difficult We have also to bear in mind the well-known fact that the state economies have always been much more open than the national economy if we consider the

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[1] For a good discussion in this regard, see among others, Nair(1993 a)

existence of considerable inter-state economic flows. In view of this, no serious analyst would consider the income originating in a state as indicative of the level of living of the people of the state concerned. In order to have a clearer understanding in this regard, it is necessary to examine other indicators like income originating or disposable personal income at the state level. But data regarding income accruing or personal income, available at the regional level in most countries of the world are conspicuous by their absence in India. However, in recent years, some serious efforts have been made to fill this important data gap. Planning Commission (2002) has brought out human development indicators at the state level for three points of time. Similarly the Economic and Political Weekly Research Foundation (EPWRF)(2002) has put together on a comparable basis data on state domestic product brought out by the different state statistical bureaus. The data from these two sources are mainly used for the purposes of analysis here.

Data limitations, shortness of the period studied and other constraints regarding the project have limited the nature of the work done here. No detailed and in-depth analysis of the relationship between regional policy and the nature and possible causes of inter-state disparities could be carried out. Further these also ruled out the application of advanced statistical and econometric techniques to analyse the data As pointed out by many including Hanna (1959), a usually accepted and simple way of carrying out regional analysis of this kind at the sub-national level is to compare the region concerned with the nation as a whole. This is done by working out region relatives, which give the position of the region concerned under the assumption that the value for the variable under study at the national level is 100. Subject to data limitations, comparisons between two single points of time are avoided and three-year averages are taken. The regions are then grouped into two, group one consisting of regions with values of relatives less than 100 and group two of regions with values of relative equal to or more than 100. However in the case of % people below the poverty line, states with state relative equal to or more than 100 are put in group one with the other states forming group two. The relative development experience of the different states is studied by looking at the manner in which these state relatives undergo change over time. In the case of all variables considered except the % people below the poverty line, when regional disparities lessen to lead to regional convergence, states of group one experience positive changes in the value of their relatives, while in the case of states of group two, state relatives experience negative changes over time with the exact

opposite happening when regional disparities increase to lead to regional divergence. In the case of the % people below the poverty line where the grouping has been done in a different manner, in the case of regional divergence, states of group one experience positive changes with the reverse happening to states of group two. Besides looking at the inter-temporal movement of states between the two groups in terms of the values of their respective state relatives, coefficients of correlation are worked out between the value of the state relative in the initial period and changes in this value over time. In order to decipher possible factors to explain inter-state disparities in HDI, in per capita net domestic product and in per capita value added in the different sectors analysed here, multiple linear regression equations are fitted to the data with state relative in HDI, per capita NSDP/ sectoral value added as the dependent variable. In the light of economic logic and earlier empirical indications, possible explanatory variables are chosen. The significance of the coefficients is tested at 5% level on the basis of the two-tailed t-statistic.

The study here is thus a preliminary exercise to enquire into the nature and causes of change in inter-state disparities in the levels of economic and social development in India. This is done in the light of the prevalent views in this regard the world over. Attention is particularly focused on a comparison between India's regional experience in the pre and in the post reform periods. The study analyses the manner in which inter-state disparities in economic development, as indicated by per capita net state domestic product (NSDP), have changed over time in India. It also carries out a similar exercise of other indicators of levels of living like consumer expenditure. % people below poverty line and human development index. An attempt is then made to get an idea as to which of the different hypotheses regarding the pattern of inter-regional change in the process of national economic development is valid in the case of India in the last two decades. The study also tries to explain not only inter-state disparities in HDI and in per capita NSDP but also such disparities in per capita value added in manufacturing, disaggregating the sector even further into registered and unregistered manufacturing. The study contains four more chapters besides this introductory one. Chapter two analyses the different prevalent hypotheses regarding the pattern of regional change in the process of national economic development and examines India's regional experience in the light of these. Chapters three is an exploratory exercise in explaining inter-state disparities in per capita NSDP and HDI. Chapter four examines inter-state disparities in terms of per capita value added in manufacturing

industry   attempting also to decipher the possible   explanatory factors leading to these inter-state disparities. The last chapter brings together the main findings of the study attempting also to draw some policy inferences and suggesting some further lines of work.

Chapter 2: Pattern of Change Over Time

An analysis is now made of the manner in which inter-state disparities in economic and social development in India have undergone change during the period under study. The analysis here is split into five sections. Section one examines the prevalent views regarding the pattern of regional change in the process of national economic development. Section two gives an idea of the variables considered and the methodology adopted for the analysis. Sections three and four contain the empirical results in this regard for India for the pre and the post-reform periods respectively. Section five compares the results of the pre-reform period with that of the post-reform one and draws inferences regarding the pattern of inter-regional change in the process of national economic development

2.1 Prevalent Views

The different regions of a nation are often endowed with different natural resources and usually have different historical, sociological and political backgrounds. The assumption, in traditional economic theory, of free and costless mobility of factors of production – labor, capital and entrepreneurship – across the regions of any particular nation hence seldom holds true in actual practice. As a result mainly of all this, it is very seldom that the different regions of a nation are all at the same level of economic development at any point of time. For less developed national economies where the levels of living of most people are quite low, the existence of lagging regions, which are also often pockets of poverty, can cause considerable concern. Further as a nation develops economically, the different regions of the nation may or may not share the benefits of this economic development equally. It is hence a matter of great interest to examine the manner in which inter-regional differences in the levels of economic development undergo change during the process of national economic development. If these have a natural tendency to decline in the process of national economic development, and the time taken for this decline is not the proverbial Keynesian long-run in which all of us may be dead, there is no need to devise and rigorously implement deliberate policy measures to mitigate these. But on the contrary, if there is an automatic and built-in tendency on economic grounds for these to increase with national economic development, policy measures to prevent such increases are definitely called for.

Considerable economic, and, since 1990s, econometric research has gone on to unravel the pattern of regional economic change in the process of national economic development. Myrdal (1956) and Hirschman (1961) have identified in detail the forces that operate to bring about these relative regional changes. While Myrdal (1956) refers to the forces of convergence and of divergence as spread and backwash effects, Hirschman(1961) describes these broadly as trickling-down and polarisation effects respectively. Scanning regional economic literature, one comes across at least three different hypotheses in this regard and these differ on the emphasis given to the relative importance over time of the forces of convergence and of divergence. One of these is the self-perpetuation hypothesis propounded by Hughes(1961) and found empirically valid by Booth(1964) for the USA. According to this view, the forces of divergence dominate over those of convergence and as a result, inter-regional differences in the levels of economic development keep on widening over time. A diametrically opposite view is the convergence hypothesis propounded and found empirically valid by Hanna(1959) and substantiated these days also with the Solovian logic that the rate of economic growth is inversely related to the level of per capita income and hence given identical technologies, preferences and rates of population growth, cotemporaneous differences in per capita incomes between any two regions will be transitory. Considerable evidence to support the hypothesis empirically has been provided by Hanna (1959), Perloff et al(1960) and more recently by Sala-i-Martin (1996) .The third hypothesis, which in a sense is a happy combination of these two diametrically opposite views is the concentration-cycle hypothesis propounded by Williamson(1965). The proponents of this view, point out that inter-regional economic differentials diverge initially to converge later on and thus trace out the famous Kuznetsian inverted U-shaped curve over time in the process of national economic development. Considerable empirical evidence in support of such a view emerged as a result of a detailed international study of regional development experiences by Williamson (1965). A new and valid point being stressed in this regard by many including Nair (1982) is that the pattern of regional change depends upon the indicator of development being considered, with different indicators showing different patterns of regional change.

2.2. Variables and Methodology

Per capita NSDP at constant 1993-94 prices have been obtained from the data brought out by the EPWRF(2002). Average values of state relatives in per capita NSDP have been calculated for the years 1980-81 to 1982-83, 1987-88 to 1989-90, 1991-92 to 1993-94 and 1997-98 to 1999-2000. Three variables indicative of level of living have been considered. These are the human development index and the % people below the poverty line as brought out by Planning Commission (2002) and per capita private consumer expenditure for the years 1983, 1987-88, 1993-94 and 1998-99 calculated from the data contained in the reports of the 38th, 43rd, 50th and 55th rounds of the National sample Survey. State relatives have been calculated on the basis of each of these three variables. The pattern of change is examined by looking at the signs of change in these as well as by examining the coefficients of correlation between the values of the state relatives in the initial year/period and the % change in these values between the initial year/period and the terminal year/period have also been worked out. Such studies are carried out for the pre and the post-reform periods separately. The analysis is carried out to decipher the pattern of regional change with particular attention paid to see whether there are any differences in this regard between the pre and the post-reform periods in India

2.3 Pre-reform period

2.3.1 Per capita NSDP

Table 2.1 gives the state relatives of per capita NSDP at constant 1993-94 prices for the pre-reform period.

	Table 2.1 State Relatives of Per Capita NSDP at constant (1993-94) prices for the Pre-reform period*.			
		State Relatives in		
S.No	State	1980-81 to 1982-83	1987-88 to 1989-90	% change
(1)	(2)	(3)	(4)	(5)
1	Bihar	62.33	59.71	-4.21
2	Orissa	71.40	70.83	-0.79
3	Uttar Pradesh	77.72	74.08	-4.69
4	Rajasthan	80.55	82.08	1.91
5	West Bengal	88.50	85.00	-3.95
6	Assam	89.81	78.02	-13.13
7	Andhra Pradesh	90.97	90.64	-0.37
8	Karnataka	93.26	94.39	1.21
9	Madhya Pradesh	93.92	83.27	-11.34
10	Tamil Nadu	100.16	102.41	2.25
11	Kerala	101.87	88.24	-13.38
12	Himachal Pradesh	105.87	101.52	-4.11
13	Gujarat	122.33	119.94	-1.96
14	Maharashtra	131.08	131.78	0.53
15	Haryana	140.33	143.96	2.59
16	Punjab	162.00	164.91	1.80

Note : *States are arranged in ascending order of the value of the state relative in the initial period, which refers to 1980-81 to 1982-83 . The terminal period refers to 1987-88 to 1989-90.

Source : Calculated from Economic and Political Weekly Research Foundation (EPWRF) (2002): Domestic Product of States of India 1960-61 to 2000-01

The signs of the changes in the relatives given in column five of the table indicate that there are no definite tendencies toward regional convergence or divergence in the period. Of course one of the states- Kerala – which is in group two at the margin in the initial part of the pre-reform period goes down considerably to have a value lower than 100 in the terminal part of the pre-reform era. The largest as well as the smallest % change in the relative is in states of group with a value of relative equal to or greater than 100 in the initial period of the pre-reform era. Further though three of the seven states of group two undergo negative changes, six of the nine states of group one also undergo negative changes in the value of their

relatives. This gets further strengthened by the fact that the coefficient of correlation between the value of the state relative in the initial period of the pre-reform era and its % change during the period is only 0.31 which is not statistically significant.

2.3.2 Regional levels of Living

State Relatives in terms of HDI, of per capita private consumer expenditure (PCE) and of % people below poverty line (PBPL) for the pre-reform period are given in tables 2.2,2.3 and 2.4 respectively.

Table 2.2   State Relatives in Human Development Index, 1981 and 1991*

		State Relative for		
S.No	State	1981	1991	% change
(1)	(2)	(3)	(4)	(5)
1	Bihar	78.48	80.84	3.01
2	Madhya Pradesh	81.13	86.09	6.12
3	Uttar Pradesh	84.44	82.41	-2.40
4	Rajasthan	84.77	91.08	7.44
5	Orissa	88.41	90.55	2.42
6	Assam	90.07	91.34	1.41
7	Andhra Pradesh	98.68	98.95	0.28
8	West Bengal	100.99	106.04	4.99
9	Tamil Nadu	113.58	122.31	7.69
10	Karnataka	114.57	108.14	-5.61
11	Gujarat	119.21	113.12	-5.10
12	Haryana	119.21	116.27	-2.46
13	Maharashtra	120.20	118.64	-1.30
14	Himachal Pradesh	131.79	123.10	-6.59
15	Punjab	136.09	124.67	-8.39
16	Kerala	165.56	155.12	-6.31

Note   :   *States are arranged in ascending order of the value of the state relative in the initial year.
Source :   Human Development Report 2001, Planning Commission

Table 2.3   State Relatives of Per Capita Private Consumer Expenditure in the Pre-reform period *

S.No	State	State Relative for 1983	1987-88	% change
(1)	(2)	(3)	(4)	(5)
1	Bihar	79.54	78.76	-0.98
2	Orissa	83.16	77.36	-6.98
3	Uttar Pradesh	88.27	89.24	1.10
4	Madhya Pradesh	89.20	90.12	1.03
5	Assam	94.20	91.63	-2.73
6	West Bengal	97.52	97.53	0.00
7	Andhra Pradesh	100.91	98.49	-2.40
8	Tamil Nadu	103.44	102.66	-0.75
9	Karnataka	106.14	94.59	-10.88
10	Gujarat	106.76	103.78	-2.79
11	Rajasthan	107.49	105.42	-1.93
12	Maharashtra	110.74	113.75	2.72
13	Kerala	121.58	124.32	2.25
14	Haryana	125.49	123.15	-1.87
15	Himachal Pradesh	126.68	121.85	-3.81
16	Punjab	139.26	138.56	-0.51

Note   :   *States are arranged in ascending order of the value of the state relative in the initial year, which refers to 1983 on the basis of the 38rd Round of the NSS. The terminal year refers to 1987-88 corresponding to the 43rd Round of the NSS.

Source :   Human Development Report 2001, Planning Commission. 43rd Round of the NSS

Table 2.4   State Relatives of Percentage of Population below Poverty line in the Pre-reform period *

S.No	State	State Relative for		% change
		1983	1987-88	
(1)	(2)	(3)	(4)	(5)
1	Orissa	146.79	143.03	-2.56
2	Bihar	139.88	134.15	-4.10
3	West Bengal	123.31	115.08	-6.68
4	Tamil Nadu	116.14	111.66	-3.86
5	Madhya Pradesh	111.92	110.83	-0.97
6	Uttar Pradesh	105.82	106.69	0.82
7	Maharashtra	97.66	103.99	6.48
8	Assam	90.98	93.18	2.41
9	Kerala	90.87	81.81	-9.98
10	Karnataka	85.97	96.58	12.34
11	Rajasthan	77.47	90.45	16.75
12	Gujarat	73.72	81.16	10.10
13	Andhra Pradesh	65.00	66.55	2.39
14	Haryana	48.04	42.82	-10.87
15	Himachal Pradesh	36.87	39.76	7.83
16	Punjab	36.38	33.97	-6.62

Note   :   *States are arranged in descending order of the value of the state relative in the initial year, which refers to 1983 on the basis of the 38rd Round of the NSS. The terminal year refers to 1987-88 corresponding to the 43rd Round of the NSS.

Source :   Human Development Report 2001, Planning Commission.

The tables indicate that there has on the whole been a tendency of convergence if we look at the signs of the % change in the value of the relatives between the initial and the terminal years of the pre-reform period. In the case of HDI while seven of the nine states of group two undergo negative changes, six of the seven states of group one undergo positive changes in the value of their relatives. The coefficient of correlation between the value of the relative in the initial year and the % change in it is negative. Actually the value is as high as - 0.70 and is significant. As regards state relatives in per capita private consumer expenditure, the signs of change in these do indicate a tendency towards convergence. In fact two of the seven states of group two – Andhra Pradesh and Karnataka shift from group two to group one during the period. It is also true that seven of the ten states of group two experience a decline in the value of their relatives. But only three of the six states of group one undergo positive changes in this regard. As a result, no definite inference can be drawn in this regard particularly since the coefficient of correlation between the value of the state relative in the initial year and the % change in it during the period 0.09 and is not significant. The changes in the state relatives in % people below the poverty line also give some indications of regional convergence in poverty reduction[2]. The relative positions of five of the six states of group one undergo declines while six of the ten states of group two experience increase in their relative positions on this count with the state of Maharashtra changing during the period from group two to group one as a result. These changes are however not reflected in the coefficient of correlation between state relatives in the initial year and the % change in it during the period. The value of this coefficient is of course negative but is only –0.18 and is not significant

2.4   The post-reform period

2.4.1 Per Capita NSDP

Table 2.5 gives the state relatives of per capita NSDP at constant 1993-94 prices for the post-reform period.

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[2] In terms of poverty reduction, regional convergence means states of group one experiencing negative changes in relatives with the reverse happening to states of group two, since the grouping is in descending order of the state relative in this case

**Table 2.5   State Relatives of Per Capita NSDP at constant (1993-94)
prices for the Post-reform period*.**

S.No	State	State Relatives in 1991-92 to 1993-94	1997-98 to 1999-2000	% change
(1)	(2)	(3)	(4)	(5)
1	Bihar	51.20	41.93	-18.11
2	Orissa	62.23	53.65	-13.78
3	Uttar Pradesh	69.30	56.78	-18.07
4	Assam	74.84	59.55	-20.42
5	Madhya Pradesh	81.33	75.85	-6.74
6	Rajasthan	85.01	89.03	4.73
7	West Bengal	86.34	90.58	4.92
8	Andhra Pradesh	94.01	91.50	-2.67
9	Kerala	97.19	98.50	1.34
10	Karnataka	100.14	105.88	5.73
11	Himachal Pradesh	101.52	103.29	1.74
12	Tamil Nadu	111.64	120.87	8.27
13	Gujarat	123.63	134.78	9.02
14	Haryana	146.21	133.95	-8.38
15	Maharashtra	147.12	146.20	-0.63
16	Punjab	164.06	146.78	-10.54

Note: *States are arranged in ascending order of the value of the state relative in
the initial period, which refers to 1991-92 to 1993-94 . The terminal period
refers to 1997-98 to 1999-2000.

Source: Calculated from Economic and Political Weekly Research Foundation
(EPWRF) (2002): Domestic Product of States of India 1960-61 to 2000-01

The signs of the changes in the relatives given in column five of the table
indicate that there are definite tendencies towards regional divergence in
the post-reform period. Six of the nine states, of group one, experience
negative changes. The largest negative change is in Assam What seems
even more striking is the fact that the second and third largest negative
changes have taken place in the least developed states of India – Bihar
and Uttar Pradesh. Four of the six states of group two undergo positive
changes in their relatives and the largest positive change has in fact taken

place in one of the most developed states of India - Gujarat. All this is reflected in the fact that the correlation coefficient between the state relative in the initial year and its % change during the post-reform period is positive and has a value of 0.35 which is higher than the one in the pre-reform period. Nothing very definite can however be said in this regard on the basis of this value because it is not significant.

2.4.2 Regional levels of Living

State Relatives in terms of HDI, of per capita private consumer expenditure and of % people below poverty line for the pre-reform period are given in tables 2.6,2.7 and 2.8 respectively.

Table 2.6   State Relatives in Human Development Index, 1991 and 2001*

		State Relative for		
S.no	State	1991	2001	% change
(1)	(2)	(3)	(4)	(5)
1	Bihar	80.84	77.75	-3.82
2	Uttar Pradesh	82.41	82.20	-0.26
3	Madhya Pradesh	86.09	83.47	-3.04
4	Orissa	90.55	85.59	-5.48
5	Rajasthan	91.08	89.83	-1.37
6	Assam	91.34	81.78	-10.47
7	Andhra Pradesh	98.95	88.14	-10.93
8	West Bengal	106.04	100.00	-5.69
9	Karnataka	108.14	101.27	-6.35
10	Gujarat	113.12	101.48	-10.29
11	Haryana	116.27	107.84	-7.25
12	Maharashtra	118.64	110.81	-6.60
13	Tamil Nadu	122.31	112.50	-8.02
14	Punjab	124.67	113.77	-8.74
15	Kerala	155.12	135.17	-12.86

Note   :   *States are arranged in ascending order of the value of the state relative in the initial year.
Source :   Human Development Report 2001, Planning Commission

Table 2.7   State Relatives of Per Capita Private Consumer Expenditure in the Post-reform period *

S.no	State	State Relative for 1993-94	1999-2000	% change
(1)	(2)	(3)	(4)	(5)
1	Bihar	72.15	70.59	-2.16
2	Orissa	74.94	70.00	-6.59
3	Assam	85.45	80.11	-6.25
4	Madhya Pradesh	88.31	81.04	-8.24
5	Uttar Pradesh	90.69	87.48	-3.54
6	Karnataka	97.04	108.09	11.39
7	Andhra Pradesh	98.20	93.16	-5.14
8	West Bengal	101.58	96.73	-4.77
9	Tamil Nadu	104.91	115.29	9.89
10	Rajasthan	105.61	103.42	-2.08
11	Gujarat	108.74	114.77	5.54
12	Maharashtra	113.21	118.01	4.24
13	Himachal Pradesh	117.69	124.85	6.08
14	Haryana	124.22	129.94	4.60
15	Kerala	127.70	138.20	8.23
16	Punjab	139.13	134.03	-3.67

Note: *States are arranged in ascending order of the value of the state relative in the initial year, which refers to 1993-94 on the basis of the 50th Round of the NSS. The terminal year refers to 1999-2000 corresponding to the 55th Round of the NSS.

Source :   Human Development Report 2001, Planning Commission.

Table 2.8 State Relatives of Percentage of Population below Poverty line in the Post-reform period *

S.no	State	State Relative for 1993-94	1999-2000	% change
(1)	(2)	(3)	(4)	(5)
1	Bihar	152.79	163.22	6.82
2	Orissa	135.00	180.65	33.81
3	Madhya Pradesh	118.21	143.41	21.32
4	Assam	113.59	138.28	21.73
5	Uttar Pradesh	113.57	119.35	5.09
6	Maharashtra	102.47	95.86	-6.45
7	West Bengal	99.14	103.52	4.42
8	Tamil Nadu	97.39	80.92	-16.91
9	Karnataka	92.19	76.78	-16.71
10	Himachal Pradesh	79.07	29.23	-63.03
11	Rajasthan	76.20	58.54	-23.17
12	Kerala	70.70	48.74	-31.06
13	Haryana	69.64	33.49	-51.92
14	Gujarat	67.31	53.91	-19.91
15	Andhra Pradesh	61.69	60.42	-2.06
16	Punjab	32.72	23.60	-27.87

Note : *States are arranged in descending order of the value of the state relative in the initial year, which refers to 1993-94 on the basis of the 50th Round of the NSS. The terminal year refers to 1999-2000 corresponding to the 55th Round of the NSS.

Source : Human Development Report 2001,
Planning Commission.

   The tables indicate that while the converging tendency of HDI continues in the post-reform period also, there are definite tendencies of inter-regional divergence if we consider per capita private consumer expenditure and the % people below the poverty line Nothing can be said in this regard on the basis of the signs of change of relatives of HDI because they are all negative[i3].

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[3] This could be because a number of states heave been left out

The coefficient of correlation between the value of the relative in the initial year and the % change in it during the period is negative and significant having a value of -0.69, which is almost the same as in the pre-reform period. There are however indications of regional divergence if we consider per capita private consumer expenditure. Six of the seven states of group one undergo negative changes in the value of their relatives and six of the nine states of group two undergo positive changes in their relative positions in the post-reform period. Actually the correlation coefficient between the value of the relative in the initial period and the % change in it over time is positive and high at 0.46, though not statistically significant. As regards the % people below the poverty line, there has on the whole been a tendency of divergence if we look at the signs of the % change in the value of the relatives between the initial and the terminal years of the post-reform period. Five of the six states of group one undergo positive changes with Orissa – one of the least developed states of India - experiencing the largest positive increase. Only one of the ten states of group two undergoes a positive change in this regard. The coefficient of correlation between the initial value of the relative and its % change is positive in the post-reform period in contrast with the pre-reform one. The value however is only 0.21 and is not statistically significant[4].

2.5   Main Findings

The analysis here has revealed that the pattern of regional change in the pre and post-reform periods have been somewhat different. As regards per capita NSDP, while there are no definite indications of either divergence or convergence at the regional level in the pre-reform era considered here, the evidence here points towards divergence in the post-reform period. The more worrisome aspect is that if we consider indicators of levels of living, there are signs of inter-state convergence in the pre-reform period, while there are definite indications of inter-state divergence in the post-reform one. Another finding also stands out quite clearly. Irrespective of whether we are concerned with the pre or post-reform era, the indications here are that the pattern of regional change depends upon the variable considered as suggested in the multi-pattern hypothesis of regional change in the process of national economic development

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[4] There have been criticisms of the new reference period adopted for the 55th round of the NSS and if we use data adjusted for this difference by Kijima and Lanjouw(2004), the coefficient is 0.68 and is significant.

Chapter 3: Explorations at Explanation

3.1 introduction

This chapter contains an exploratory effort to examine the possible reasons for inter-state disparities in India. Since infrastructure is usually considered the key to economic and social development, it is necessary to examine the relative position of a state in terms of infrastructural development as one of the factors influencing its relative position in terms of both per capita NSDP and in terms of overall human development. The Centre for Monitoring the Indian Economy has brought out indices of infrastructural development for the years 1981 and 1991. These are used to get state relatives (RIID) in this regard for the initial and terminal years of the pre-reform period. The indices of infrastructural development as brought out by the reports of the tenth and the eleventh Finance Commisions in India have been used to get RIID for the initial and the terminal years of the post-reform period. Another crucial factor, which is somehow not usually considered in this regard is the extent of poverty as indicated by the % people below the poverty line. What is generally taken for granted is that economic growth is accompanied by reductions in the extent of poverty. There is less recognition of the simple fact that the less the extent of poverty, the greater will be the extent of the market, the more will be the productivity of labour and hence the greater the level of economic development and also the overall level of human development. The study here hence considers the relative position of the state in terms of the % people below the poverty line (RPBPL) as one of the other important factors affecting the relative position of the state in terms of both per capita NSDP as well as in terms of HDI. A number of earlier critical studies of regional policy in India including the one by Nair (1982) had pointed out that the neglect of agriculture has been responsible for increasing regional disparities in India. This resulted in special efforts being made to extend the green revolution to the rice-growing and less developed eastern regions of India since the eighties. In view of this, the analysis here also goes on to examine the manner in which the relative positions of the different states of India have changed over time in terms of per capita value added in agriculture and allied sectors (RVAA). There is also considerable controversy these days about the development in India in the pre-reform period being mere creation of jobs without much economic growth and post-reform development being one of jobless growth. The chapter cxamines the validity of this argument at the state level in India on the basis of data on

employment brought out in the 38th, 50th and 55th rounds of the NSSO on Employment and Unemployment situation in India and the data on NSDP brought out by the EPWRF(2002).

The analysis is carried out in six parts in addition to this introductory one. Part two contains an exercise to explain the state relatives in terms of HDI by means of state relatives in terms of infrastructural development and of per cent people below the poverty line. Part three contains such an exercise for state relatives of per capita NSDP. Part four examines the way in which relatives in terms of the index of infrastructural development have changed in the pre and post-reform periods. Part five carries out such a study about relatives in terms of per capita value added in agriculture and allied activities. Part six examines the rate of growth of NSDP and of employment in the pre and post-reform periods in India. Part seven brings together the main findings of this chapter.

3.2 State Relatives in HDI

Table 3,1 gives the regression equations with the state relative in per capita HDI as the dependent variable and RIID and RPBPL as possible explanatory variables for different points of time

Table 3.1 Regression Equations with State Relative in HDI as the dependent variable *				
Sl.No.	Period	Equation	R squared	R bar squared
1	Pre-reform beginning	RHDI = 60.04 + 0.46 **RIID** - 0.06 RPBPL (24.33) (0.12) (0.15) [2.47] [3.90] [-0.42]	0.66	0.6
2	Pre-reform end	RHDI = 47.29 + 0.04 RPBPL + 0.49 **RIID** (26.23) (0.15) (0.13) [1.80] [0.26] [3.75]	0.65	0.59
3	Post reform end	RHDI = 61.20 + 0.36 **RIID** - 0.04 RPBPL (14.72) (0.09) (0.06) [4.16] [4.14] [-0.57]	0.78	0.75
4	Post reform end with Yoko Kijima and Peter Lanjouw estimates of PBPL	RHDI = 59.38 + 0.37 **RIID** - 0.03 RPBPL (16.58) (0.09) (-0.08) [3.58] [4.25] [-0.37]	0.78	0.74

Note : 1. The values of variables are from other tables elsewhere in the report.In this and subsequent tables, variables in bold font have

The explanatory powers of the equations seem quite high as shown by the values of R bar square. The regression coefficient of RIID is positive and significant indicative of the salutary impact that the relative position in terms of infrastructural development has on the relative position of a state in terms of overall development as shown by As regards the impact of % people below the poverty line, no inferences seem possible because neither is the regression coefficient for the relative in terms of the variable significant nor are the signs of the coefficient the same all through.

3.3 Relatives in Per Capita NSDP

Table 3.2 gives the regression equations with the state relative in per capita NSDP as the dependent variable and such relatives in IID and PBPL as possible explanatory variables.

Table 3.2 . Regression Equations with state relative in per capita NSDP as the dependent variable*

Period	Equation	Rsq	AdjRsq
Early 80's	99.82 + 0.36 RIID** – 0.42 RBPL** (23.00) (0.11) (0.14) {4.34} {3.18} {-2.96}	0.77	0.73
Late 80's	101.53 + 0.38 RIID – 0.48 RBPL** (35.28) (0.18) (0.20) {2.88} {2.12} {-2.38}	0.70	0.65
Late 90's	112.37 + 0.22 RIID – 0.45 RBPL** (40.11) (0.23) (0.17) {2.80} {0.96} {-2.58}	0.66	0.60

*Variables are defined and sources of data, given in the text. In the equations,

The high value for R bar square indicates that the explanatory power of the equation is high, though this seems to go down over time. But the interesting thing is that the coefficient for RPBPL is significant in all the three periods considered. The sign of the coefficient is negative indicating that the less the relative poverty, the higher the relative position in per capita NSDP. As regards RIID, while the signs of the coefficients are along expected lines it is significant only in one of the three periods considered.

3.4 State Relatives in IID

Tables 3.3 and 3.4 give the values of RIID for the pre-reform and the post-reform periods respectively. The tables also contain the changes in these in each period.

Table 3.3 State Relatives in the Index of Infrastructural Development,1980-81 & 1990-91*

		State Relatives in		
S. No	State	1980-81	1990-91	% change
(1)	(2)	(3)	(4)	(5)
1	Madhya Pradesh	62.1	69.7	12.2
2	Rajasthan	74.4	79.2	6.5
3	Assam	77.7	84	8.1
4	Orissa	81.5	93.5	14.7
5	Bihar	83.5	79.7	-4.6
6	Himachal Pradesh	83.5	95.9	14.9
7	Karnataka	94.8	96.4	1.7
8	Uttar Pradesh	97.7	103.6	6.0
9	Andhra Pradesh	98.1	97	-1.1
10	West Bengal	110.6	93.8	-15.2
11	Maharashtra	120.1	111.5	-7.2
12	Gujarat	123	122	-0.8
13	Haryana	145.5	139.7	-4.0
14	Kerala	158.1	157.4	-0.4
15	Tamil Nadu	158.6	145.5	-8.3
16	Punjab	207.3	192.6	-7.1

Note : *States are arranged in ascending order of the value of the state relative in the initial year, which refers to 1980-81.

Source : CMIE

		State Relatives for		
S.No	State	Early 90's	Late 90's	% change
(1)	(2)	(3)	(4)	(5)
1	Madhya Pradesh	65.9	75.8	15.0
2	Rajasthan	70.5	75.9	7.7
3	Orissa	74.5	81.0	8.8
4	Himachal Pradesh	80.9	95.0	17.4
5	Assam	81.9	77.7	-5.2
6	Bihar	92.0	81.3	-11.6
7	Andhra Pradesh	99.2	103.3	4.1
8	Karnataka	101.2	104.9	3.6
9	Uttar Pradesh	111.8	101.2	-9.5
10	Maharashtra	121.7	112.8	-7.3
11	Gujarat	123.0	124.3	1.1
12	West Bengal	131.7	111.3	-15.5
13	Tamil Nadu	149.9	149.1	-0.5
14	Haryana	158.9	137.5	-13.4
15	Kerala	205.4	178.7	-13.0
16	Punjab	219.2	187.6	-14.4

Table 3.4 State Relatives in the Index of Infrastructural Development, in early and late 90's.*

Note : *States are arranged in ascending order of the value of the state relative in the initial period, which refers to early 90's.Infact the initial and terminal periods are 1990-95 & the year 1999 respectively.

Source : Tenth & Eleventh Finance Commission Reports

It is clear from table 3.3 that inter-state disparities in IID seem to be in the convergent phase. In fact seven of the nine states of group one undergo positive changes in RIID while all the seven states of group two experience negative changes in this regard in the pre-reform era. Actually the second largest increase in this regard occurred in Orissa one of the least developed states of India The largest decline in this regard occurred in West Bengal making the state move from group one to group two during the period. Panjab and Maharashtra, which are developed states, experience the third and fourth largest declines on this count. All this is substantiated by the fact that there is a negative and significant correlation of - 0.62 between RIID in the initial year and its % change during the pre-reform era.

A similar picture emerges for the post-reform era from table 3.4. Substantial increases take place in this regard in less developed states like Madhya Pradesh - ranking number two in this regard - Orissa and Rajasthan. Five of the seven states of group one undergo positive changes and seven of the nine states of group two experience negative ones in the post-reform era. Andhra Pradesh actually shifts from group one to group two as a result of positive changes of this kind. The evidence in this regard gets further corroborated by the fact that the coefficient of correlation between RIID and the % change in it during the post-reform era is both negative and significant. Its value is -0.70, a shade higher than the corresponding value in the pre-reform period.

3.5 State Relatives in VAA

Tables 3,5 and 3.6 give the values of RVAA in the pre and the post-reform periods respectively. The tables also give the values of the % change in RVAA in each of the periods

Table 3.5 State Relatives of Per Capita Value Added in Agriculture at 1980-81 Prices for the Pre-reform period*.					
			State Relatives for		
	S.No	State	1980-81 to 1982-83	1989-90 to 1991-92	% change
	(1)	(2)	(3)	(4)	(5)
	1	Tamil Nadu	61.78	72.47	17.31
	2	Bihar	66.17	62.55	-5.47
	3	West Bengal	78.33	96.19	22.80
	4	Kerala	86.64	86.57	-0.07
	5	Assam	95.21	87.83	-7.76
	6	Rajasthan	98.31	112.75	14.69
	7	Uttar Pradesh	101.80	96.05	-5.65
	8	Maharashtra	102.25	102.38	0.13
	9	Orissa	102.28	89.77	-12.23
	10	Andhra Pradesh	106.49	97.70	-8.26
	11	Karnataka	109.24	105.60	-3.33
	12	Madhya Pradesh	109.37	96.38	-11.87
	13	Gujarat	123.09	94.58	-23.16
	14	Himachal Pradesh	128.21	122.31	-4.60
	15	Haryana	192.40	212.52	10.46
	16	Punjab	215.66	255.82	18.62
Note :	*States are arranged in ascending order of the value of the state relative in the initial period, which refers to 1980-81 to 1982-83 . The terminal period refers to 1987-88 to 1989-90. Agriculture covers Agriculture, Forestry and Logging and Fishing.				
Source :	Calculated from Economic and Political Weekly Research Foundation (EPWRF) (2002): Domestic Product of States of India 1960-61 to 2000-01				

Table 3.6 State Relatives of Per Capita Value Added in Agriculture at 1993-94 Prices for the Post-reform period*.

| S.No | State | State Relatives for | | % change |
		1993-94 to 1995-96	1998-99 to 2000-2001	
(1)	(2)	(3)	(4)	(5)
1	Bihar	60.53	54.58	-9.83
2	Uttar Pradesh	79.85	75.97	-4.87
3	Orissa	81.60	70.87	-13.14
4	Tamil Nadu	89.66	87.76	-2.12
5	Assam	91.64	85.57	-6.62
6	West Bengal	93.93	96.05	2.26
7	Rajasthan	94.87	92.81	-2.18
8	Maharashtra	95.14	84.85	-10.81
9	Madhya Pradesh	100.36	92.74	-7.59
10	Andhra Pradesh	102.20	104.52	2.26
11	Kerala	102.29	96.17	-5.98
12	Himachal Pradesh	106.11	95.41	-10.08
13	Gujarat	109.40	92.70	-15.27
14	Karnataka	111.07	126.52	13.91
15	Haryana	183.11	171.28	-6.46
16	Punjab	233.94	224.74	-3.93

Note: *States are arranged in ascending order of the value of the state relative in the initial period, which refers to 1993-94 to 1995-96 . The terminal period refers to 1998-1999 to 2000-2001. Agriculture covers Agriculture, Forestry and Logging and Fishing

Source : Calculated from Economic and Political Weekly Research Foundation (EPWRF) (2002): Domestic Product of States of India 1960-61 to 2000-01

There are some indications of inter-state convergence in the pre-reform period. This is brought out if we examine the signs of change in table 3.5. The largest positive change is in West Bengal, which belongs to group one and the largest negative change is in Gujarat, which is in group two. Further three of the six states of group one undergo positive changes while seven of ten states of group two experience negative ones during the period. Five states of group two in the beginning undergo negative changes to form part

of group one towards the end of the period with the reverse happening to Rajasthan as a result of a positive change. No definite inferences can however be drawn in this regard because though the coefficient of correlation between RVAA and its % change during the period is positive, its value is only 0.16 which is not significant.

As regards the post-reform period, signs of change in table 3.6 give no indication of inter-state convergence or divergence. The highest positive change as well as the highest negative change takes place in states of group two. Madhya Pradesh experiences a positive change to go from group two at the beginning to group one at the end of the period. All this is further substantiated by the fact that the coefficient of correlation between RVAA and its % change during the period is only 0.09, which is not significant.

3.6. Growth and Employment

Tables 3.7 and 3.8 give the annual rates of growth of NSDP and of employment in the sixteen states of India considered here for the pre and the post-reform periods respectively.

Table 3.7 Percent Compound Annual Growth in NSDP and employment during the period 1983-84 to 1993-94				
			Growth in	
	Sl.No.	States	NSDP	Employment
	(1)	(2)	(3)	(4)
	1	Andhra Pradesh	6.3	2.4
	2	Assam	3.1	1.6
	3	Bihar	2.2	0.9
	4	Gujarat	4.7	2.1
	5	Haryana	6.1	3.1
	6	Himachal Pradesh	5.6	2.9
	7	Karnataka	5.6	2.3
	8	Kerala	5.2	0.9
	9	Madhya Pradesh	4.8	2.2
	10	Maharashtra	7.3	2.2
	11	Orissa	3.0	2.1
	12	Punjab	5.1	1
	13	Rajasthan	5.9	2.5
	14	Tamil Nadu	5.7	1.8
	15	Uttar Pradesh	4.4	2
	16	West Bengal	4.6	2.4
		All India	5.1	2.1
Note :	1. Growth in NSDP has been estimated as the Exponential			

	growth rate at 1980-81 prices				
	2. Growth in employment has been estimated as Compound annual growth in the persons employed in the age group 15 years and above on the usual principal and subsidiary status.				
Source :	1. Calculated from Economic and Political Weekly Research Foundation (EPWRF) (2002): Domestic Product of States of India 1960-61 to 2000-01				
	2. The 38th & 50th Rounds of the NSSO on Employment and Unemployment Situation in India.				

Table 3.8   Percent Compound Annual Growth in NSDP and employment during the period 1993-94 to 1999-2000

			Growth in		
	Sl.No.	States	NSDP	Employment	
	(1)	(2)	(3)	(4)	
	1	Andhra Pradesh	5.1	1.1	
	2	Assam	2.1	2.5	
	3	Bihar	3.9	2.5	
	4	Gujarat	6.2	2.1	
	5	Haryana	5.4	0.6	
	6	Himachal Pradesh	6.4	1.4	
	7	Karnataka	7.7	1.6	
	8	Kerala	4.8	1.6	
	9	Madhya Pradesh	4.7	1.8	
	10	Maharashtra	5.4	1	
	11	Orissa	2.8	1.3	
	12	Punjab	4.6	2.6	
	13	Rajasthan	8.2	1.5	
	14	Tamil Nadu	6.1	0.8	
	15	Uttar Pradesh	4.0	1.7	
	16	West Bengal	7.0	1.1	
		All India	6.3	1.6	
Note :	1. Growth in NSDP has been estimated as the Exponential growth rate at 1993-94 prices				
	2. Growth in employment has been estimated as Compound annual growth in the persons employed in the age group 15 years and above on the usual principal and subsidiary status.				
Source :	1. Calculated from Economic and Political Weekly Research Foundation (EPWRF) (2002): Domestic Product of States of India 1960-61 to 2000-01				
	2. The 50th and the 55th Rounds of the NSSO on Employment and Unemployment Situation in India.				

It is apparent from the table that at the all India level while growth of NDP was much more in the post-reform era in comparison to the pre-reform one, the growth of employment was much less giving credence to the usual arguments in this regard. The tables clearly indicate that there are considerable inter-state variations in this regard. In order to have a better picture of this, the coefficient of correlation between the rates of growth of NSDP and of employment was worked out for the pre and the post-reform periods respectively. The value for this for the pre-reform period is positive and is significant – the value being 0.49. But for the post-reform era the value becomes negative and is – 0.39, which is however not significant.

3.7 Main Findings

The exploratory exercises here at explaining inter-state disparities in the levels of economic and social development seem to throw up some interesting hypotheses, which need much more detailed and in-depth examination. Evidence here suggests that growth in NSDP has been accompanied at the regional level by much higher growth in employment in the pre-reform era than in the post-reform one. To the extent that growth in employment is related to the development of agriculture, this seems a natural outcome because while there are some indications of inter-state convergence in the pre-reform era, there is no evidence of this in the post-reform one. The evidence here also suggests that at the regional level in India, reduction of poverty has a beneficial impact on per capita NSDP though the same is not true if we consider human development as a whole. Infrastructural development seems to have beneficial effects on human development in particular and there are some indications that the impact was similar at the regional level on per capita NSDP too, specially in the pre-reform period. In view of this, a very welcome finding of the study is the tendency of inter-state convergence in terms of the index of infrastructural development in both the pre and the post-reform periods.

Chapter 4: Inter-State Disparities in Industrial Development in India

4.1 Introduction

Critical surveys of regional policy including the one by Nair(1982) had highlighted the fact that like all parts of the world, India too had focused on the regional balancing of industrial development in order to lessen regional disparities in levels of living. In view of this, the chapter here examines the issue regarding inter-state disparities in industrial development in India. Attention is focused on per capita value added in manufacturing on the basis of the comparable data at constant prices brought out by the EPWRF. The analysis is confined to fifteen major states of India excluding Himachal Pradesh and is carried out in three parts. The first part deals with unregistered manufacturing which is somewhat synonymous with small manufacturing in terms of employment. It includes all manufacturing other than of factories employing 10 or less workers using power or 20 or less workers not using power. The second analyses registered manufacturing, which can be taken as large scale manufacturing in terms of employment. It is taken to mean manufacturing from factories employing 10 or more workers using power or 20 or more workers not using power. The third part looks at manufacturing as a whole including both registered and unregistered manufacturing.

The study is carried out with three major objectives in mind. The first aim is to see whether the manner of change has been such as to lead to convergence or divergence in this regard. The relative development experience of the different regions is studied by looking at the manner in which these region relatives undergo change over time.. Secondly an attempt is also made to decipher possible factors to explain inter-state differences in per capita value added in manufacturing. It is usually argued that agricultural development is a basic pre-requisite for the development of industry and there is universal agreement that the development of infrastructure helps industrial development. These developments are generally taken to affect the development of industry with a lag. Analysis of data here revealed that the coefficient of correlation between per capita value added in manufacturing in a particular year – irrespective of whether we consider unregistered, registered or total manufacturing - and the possible explanatory variables for the previous year to be positive in all the years studied. These correlation

coefficients were also significant in the case of variables indicative of infrastructural development. As regards per capita value added in agriculture, this was so only when unregistered manufacturing was considered and that too for the later years of the pre-reform period. In the light of economic logic and empirical indications, multiple linear regression equations are fitted with per capita value added in manufacturing in a particular year as the dependent variable and three possible explanatory variables - per capita value added in the previous year, in agriculture proper, in transport, storage and communication (considered here as a proxy for economic infrastructure) and in banking and insurance(considered here as a proxy for financial infrastructure). Actually in both the pre-reform and the post-reform periods, there seems to be a significant positive correlation between two of the possible explanatory variables considered- per capita value added in transport, storage and communication and in banking and insurance. In view of this, regression equations are tried only with per capita value added in agriculture and one of the two variables indicative of infrastructural development as independent variables. Thirdly, the purpose of the study is also to compare both the pattern of change and the possible explanatory factors for inter-state differences in per capita value added in manufacturing in the pre and the post-reform periods. The study then goes on to find out whether there are differences in these regards between the two periods.

4.2 Unregistered Manufacturing

4.2.1 Relative Importance

There appear to be considerable regional variations in this regard irrespective of whether we look at this from the point of % share in net domestic product or in terms of % share in value added in total manufacturing.

At the all-India level, the value added from unregistered manufacturing in NDP increased very slightly from 7.96% in the beginning of the period to 8.04% at the end. There were however considerable inter-state variations in this regard. At the beginning of the period, it varied from 2.25% in Assam to as high as 11.93% in the case of Tamil Nadu. Towards the end of the period, while Assam continued to have the smallest value as low as 1.59%, West Bengal had the highest figure in this regard of 7.99%. As regards the post-reform period, the all-India value in this regard was lower compared to the

pre-reform period. It however increases very slightly from 5.55% at the beginning of the post-reform period to 5.76% in the end of the period. The regional variations in this regard continued to exist in this period too. Assam persists with the lowest value in this regard both at the beginning and at the end of the period - the values being 2.03% and 2.11% respectively. The top position in this regard for the beginning of the period goes to Tamil Nadu with a figure of 9.66%. By the end of the post-reform period considered, the top position in this regard goes to Gujarat with a figure of 9.94%.

The share of value added in unregistered manufacturing in value added in total manufacturing declined from 45.55% in the beginning of the pre-reform period to 39.51% at the end of it at the all-India level. Among the states, while Gujarat had the lowest value of 27.25% at the beginning of the period , Orissa had the highest figure of 59.74% in this regard. At the end of the pre-reform period, the highest value in this regard is 44.77% for West Bengal, while the lowest is of 24.46% for Karnataka. In contrast, the post-reform period witnesses a slight increase in this regard at the all India level. The all India figure increases from 35.36% at the beginning to 38.89% towards the end of the period. It is interesting to note that the lowest position in this connection continues to be occupied by Bihar at both the beginning and at the end of the post-reform era. The relative importance of unregistered manufacturing actually undergoes a slight decline during the period. The figure in this regard for Bihar decreases from 19.71% at the beginning of the period to 16.07% at the end of it. The highest figures in this regard at the beginning and at the end of the period are of West Bengal and of Orissa with figures 52.95% and 58.93% respectively.

4.2.2 Manner of change

Table 4. 1 gives the values of the state relatives in per capita value added in unregistered manufacturing in the pre-reform period.

Table 4.1

	S.No	State	State Relatives for		
			1980-81 to 1982-83	1989-90 to 1991-92	% change
	(1)	(2)	(3)	(4)	(5)
	1	Assam	23.26	13.77	-40.80
	2	Orissa	51.54	39.71	-22.95
	3	Uttar Pradesh	52.96	51.30	-3.14
	4	Bihar	54.14	45.60	-15.77
	5	Madhya Pradesh	57.31	51.94	-9.37
	6	Andhra Pradesh	57..32	62.17	8.46
	7	Karnataka	58.47	50.99	-12.79
	8	Rajasthan	59.50	47.97	-19.38
	9	Kerala	78.15	67.22	-13.98
	10	Haryana	78.53	151.78	93.27
	11	Gujarat	86.19	93.80	8.84
	12	Panjab	114.01	144.34	26.61
	13	West Bengal	115.23	96.69	-16.09
	14	Tamil Nadu	139.63	88.13	-36.88
	15	Maharashtra	146.30	139.12	-4.91

Table 4.1   State Relatives of Per Capita Value Added in Unregisterd Manufacturing at 1980-81 Prices for the Pre-reform period*.

Note   : *States are arranged in ascending order of the value of the state relative in the initial period, which refers to 1980-81 to 1982-83 . The terminal period refers to 1987-88 to 1989-90. Source of data is EPWRF

It is interesting to note that only four of the fifteen states considered here belong to group two at the beginning of the pre-reform period. This excludes states like Haryana and Gujarat that are considered to be among the richer states of India and includes West Bengal. The states of Haryana and West Bengal, however, switch groups between the beginning and the end of the pre-reform era with the former going to group two and the latter receding to group one by the end of the period. The maximum increase in the relative position during the period is that of Haryana and the maximum decline, that of Assam. The second largest decline is that of Tamil Nadu which actually

declines sufficiently to go from the second position in group two at the beginning to group one at the end of the period. It is also true that three of the four states of group two at the beginning of the period undergo negative changes during the period in the values of their relatives. But as against this only three of the eleven states, of group one, undergo positive changes during the period. There seems however to have been no clear tendency towards convergence or divergence on this count during the period. This is substantiated by the fact that the coefficient of correlation between the value of the state relative in this regard at the beginning of the period and the change in it over the period, is too small. The value turns out to be just 0.11 and cannot hence be considered significant of any tendency towards regional change in this period.

The post- reform period, the results for which are given in table 4.2, provides a striking contrast to this[5].

Table 4.2	State Relatives of Per Capita Value Added in Unregistered Manufacturing at 1993-94 Prices for the Post-reform period*.				
			State Relatives for		
	Sno.	State	1993-94 to 1995-96	1998-99 to 2000-2001	% change
	(1)	(2)	(3)	(4)	(5)
	1	Bihar	18.17	14.17	-19.78
	2	Orissa	23.94	17.99	-24.86
	3	Assam	25.50	21.50	-15.68
	4	Uttar Pradesh	62.97	54.58	-13.33
	5	Andhra Pradesh	84.07	83.99	-0.09
	6	Rajasthan	85.25	76.77	-9.96
	7	Madhya Pradesh	87.74	79.39	-9.51
	8	Kerala	115.73	86.73	-25.06
	9	Karnataka	121.33	120.08	-1.03
	10	West Bengal	130.05	132.89	2.19
	11	Panjab	134.12	129.93	-3.13
	12	Haryana	160.25	151.72	-5.33
	13	Gujarat	203.39	224.84	10.55
	14	Tamil Nadu	204.84	174.79	-14.67
	15	Maharashtra	214.57	209.06	-2.56
Note :	*States are arranged in ascending order of the value of the state relative in the initial period, which refers to 1993-94 to 1995-96 . The terminal period refers to 1998-1999 to 2000-2001				

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[5] Also due to changes in the methodology of estimation, it has to be noted that the number of states in group two in the beginning of the post-reform period has more than doubled from three in grouptwo to eight in the beginning of the post-reform one. The data given by the EPWRF has not made sadjustments for this at the disaggregared level

The maximum increase in the relative position in this regard during this period is that of Gujarat and the maximum decline, that of Kerala. In fact the relative decline in Kerala has been so marked that the state changes from group two at the beginning of the period to group one by the end of it. A look at the signs of change does give an indication of the direction of regional change in this regard during the period. Actually all states of group one in the beginning undergo negative changes and two of the eight states of group two undergo positive changes during the period. There are thus clear indications of regional divergence. This is substantiated by the fact that the coefficient of correlation between the value of the state relative in the beginning of the period and the per cent change in it during the period is as high as 0.58, which is both positive and significant.

4.2.3. Possible Explanation

The results of the regression equations tried in this regard for the pre-reform era are given in tables 4.3 and 4.4.

Table 4.3 Regression Equations to explain inter-state differences in PCVAURM in the Pre-reform period*							
Sl.No.	Dependent Variable	Equation Details	Constant	Independent Variables		R-squared	Adjusted R-squared
				PCVAA(t-1)	PCVAFI(t-1)		
1	PCVAURM 1981	Coefficient	34.31	0.02	**1.18**	0.60	0.53
		Std. Error	26.98	0.03	0.28		
		t-Statistic	1.27	0.46	4.19		
2	PCVAURM 1982	Coefficient	34.40	0.02	**1.07**	0.66	0.60
		Std. Error	23.42	0.03	0.23		
		t-Statistic	1.47	0.71	4.69		
3	PCVAURM 1983	Coefficient	45.15	0.01	**0.99**	0.63	0.57
		Std. Error	24.03	0.03	0.22		
		t-Statistic	1.88	0.30	4.51		
4	PCVAURM 1984	Coefficient	31.14	0.03	**0.88**	0.55	0.48
		Std. Error	31.04	0.04	0.24		

		t-Statistic	1.00	0.83	3.75		
5	PCVAURM 1985	Coefficient	-5.62	**0.09**	**0.89**	0.68	0.63
		Std. Error	28.26	0.03	0.22		
		t-Statistic	-0.20	2.64	4.03		
6	PCVAURM 1986	Coefficient	-13.76	**0.09**	**0.90**	0.73	0.68
		Std. Error	26.17	0.03	0.20		
		t-Statistic	-0.53	3.30	4.57		
7	PCVAURM 1987	Coefficient	-5.19	**0.08**	**0.82**	0.70	0.65
		Std. Error	27.44	0.03	0.19		
		t-Statistic	-0.19	2.68	4.31		
8	PCVAURM 1988	Coefficient	-11.80	0.07	**1.06**	0.67	0.62
		Std. Error	32.09	0.04	0.27		
		t-Statistic	-0.37	1.71	3.88		
9	PCVAURM 1989	Coefficient	-34.72	**0.11**	**0.79**	0.78	0.74
		Std. Error	27.13	0.03	0.17		
		t-Statistic	-1.28	4.00	4.55		
10	PCVAURM 1990	Coefficient	-20.34	**0.11**	**0.64**	0.73	0.69
		Std. Error	30.37	0.03	0.18		
		t-Statistic	-0.67	3.56	3.54		
11	PCVAURM 1991	Coefficient	-35.49	**0.12**	**0.65**	0.83	0.81
		Std. Error	24.11	0.02	0.13		
		t-Statistic	-1.47	5.05	5.05		
12	PCVAURM 1992	Coefficient	-29.49	**0.11**	**0.67**	0.86	0.84
		Std. Error	24.07	0.02	0.10		
		t-Statistic	-1.23	4.71	7.01		
13	PCVAURM 1993	Coefficient	-35.65	**0.14**	**0.56**	0.90	0.88
		Std. Error	21.67	0.02	0.08		
		t-Statistic	-1.65	6.09	7.51		
Note :	Coefficients in bold font are the significant ones						

Table 4.4 Regression Equations to explain inter-state differences in PCVAURM in the Pre-reform period*							
Sl.No.	Dependent Variable	Equation Details	Constant	Independent Variables		R-squared	Adjusted R-squared
				PCVAA(t-1)	PCVAEI(t-1)		
1	PCVAURM 1981	Coefficient	15.05	0.00	**1.67**	0.71	0.66
		Std. Error	24.36	0.03	0.31		
		t-Statistic	0.62	0.12	5.37		
2	PCVAURM 1982	Coefficient	21.78	0.01	**1.39**	0.66	0.61
		Std. Error	24.63	0.03	0.29		
		t-Statistic	0.88	0.32	4.74		
3	PCVAURM 1983	Coefficient	34.47	0.01	**1.23**	0.61	0.55
		Std. Error	26.09	0.03	0.29		
		t-Statistic	1.32	0.19	4.33		
4	PCVAURM 1984	Coefficient	21.21	0.02	**1.18**	0.60	0.53
		Std. Error	30.21	0.03	0.29		
		t-Statistic	0.70	0.63	4.15		
5	PCVAURM 1985	Coefficient	-20.29	**0.08**	1.21	0.76	0.71
		Std. Error	25.82	0.03	0.24		
		t-Statistic	-0.79	2.93	4.97		
6	PCVAURM 1986	Coefficient	-34.32	**0.09**	1.22	0.84	0.81
		Std. Error	21.14	0.02	0.18		
		t-Statistic	-1.62	4.45	6.66		
7	PCVAURM 1987	Coefficient	-34.36	**0.10**	1.20	0.82	0.79
		Std. Error	23.35	0.02	0.19		
		t-Statistic	-1.47	4.14	6.21		
8	PCVAURM 1988	Coefficient	-37.19	**0.12**	1.22	0.76	0.72
		Std. Error	29.81	0.03	0.25		
		t-Statistic	-1.25	3.66	4.96		

9	PCVAURM 1989	Coefficient		-34.21	**0.11**	**1.05**		0.79	0.75	
		Std. Error		26.71	0.03	0.23				
		t-Statistic		-1.28	4.00	4.63				
10	PCVAURM 1990	Coefficient		-29.42	**0.11**	**1.04**		0.83	0.80	
		Std. Error		23.99	0.02	0.20				
		t-Statistic		-1.23	4.56	5.22				
11	PCVAURM 1991	Coefficient		**-44.33**	**0.11**	**1.17**		0.91	0.90	
		Std. Error		17.73	0.02	0.15				
		t-Statistic		-2.50	6.46	7.65				
12	PCVAURM 1992	Coefficient		-35.81	**0.09**	**1.34**		0.77	0.73	
		Std. Error		32.37	0.03	0.27				
		t-Statistic		-1.11	2.80	5.03				
13	PCVAURM 1993	Coefficient		-63.24	**0.13**	**1.24**		0.81	0.78	
		Std. Error		32.86	0.03	0.25				
		t-Statistic		-1.92	4.31	4.99				
Note :	Coefficients in bold font are the significant ones									

Table 4.3 contains equations with financial infrastructure as the second explanatory variable, while table 4.4 gives equations with economic infrastructure as the second independent variable. The signs of the coefficients being along expected lines coupled with the fact that the values of R bar square are high, indicate that the equations can be used to explain inter-state disparities in per capita value added in unregistered manufacturing. The most significant variable seems to be the one indicative of the development of infrastructure. In most of the years, economic infrastructure seems to be slightly more significant than financial infrastructure. Towards later years of the period however the tables seem to be turning against economic infrastructure and in favour of financial infrastructure. As regards agricultural development, while it is not a significant variable in the earlier part of the pre-reform period, it becomes so

significant in the later years of the period that it is almost as important as infrastructural development.

Similar regression equations for the post-reform period are given in tables 4.5 and 4.6.

Table 4.5 Regression Equations to explain inter-state differences in PCVAURM in the Post-reform period*							
Sl. No	Dependent Variable	Equation Details	Constant	Independent Variables		R-squared	Adjusted R-squared
				PCVAA(t-1)	PCVAFI(t-1)		
1	PCVAURM1994	Coefficient	148.55	0.06	**0.52**	0.58	0.51
		Std. Error	138.89	0.05	0.14		
		t-Statistic	1.07	1.28	3.76		
2	PCVAURM1995	Coefficient	51.61	0.09	**0.59**	0.68	0.63
		Std. Error	137.05	0.04	0.13		
		t-Statistic	0.38	1.99	4.54		
3	PCVAURM1996	Coefficient	56.25	0.09	**0.57**	0.68	0.63
		Std. Error	141.89	0.05	0.13		
		t-Statistic	0.40	1.82	4.53		
4	PCVAURM1997	Coefficient	11.09	0.05	**0.81**	0.84	0.81
		Std. Error	100.10	0.03	0.12		
		t-Statistic	0.11	1.64	6.99		
5	PCVAURM1998	Coefficient	-50.32	0.07	**0.78**	0.80	0.76
		Std. Error	120.84	0.04	0.13		
		t-Statistic	-0.42	1.70	5.98		
6	PCVAURM1999	Coefficient	-95.88	0.10	**0.73**	0.78	0.75
		Std. Error	150.36	0.05	0.12		
		t-Statistic	-0.64	2.02	5.91		
Note	Coefficients in bold font are the significant ones						

Table 4.6 Regression Equations to explain inter-state differences in PCVAURM in the Post-reform period*

Sl. No	Dependent Variable	Equation Details		Constant	Independent Variables		R-squared	Adjusted R-squared	
					PCVAA(t-1)	PCVAEI(t-1)			
1	PCVAURM1994	Coefficient		-34.19	0.02	**1.28**	0.74	0.69	
		Std. Error		122.18	0.04	0.23			
		t-Statistic		-0.28	0.64	5.50			
2	PCVAURM1995	Coefficient		-95.37	0.05	**1.25**	0.78	0.74	
		Std. Error		124.00	0.04	0.21			
		t-Statistic		-0.77	1.35	5.89			
3	PCVAURM1996	Coefficient		-99.39	0.05	**1.16**	0.78	0.74	
		Std. Error		128.76	0.04	0.20			
		t-Statistic		-0.77	1.35	5.87			
4	PCVAURM1997	Coefficient		-51.33	0.04	**1.08**	0.83	0.80	
		Std. Error		107.29	0.03	0.16			
		t-Statistic		-0.48	1.29	6.71			
5	PCVAURM1998	Coefficient		-92.38	0.08	**0.91**	0.80	0.77	
		Std. Error		122.55	0.04	0.15			
		t-Statistic		-0.75	1.91	6.06			
6	PCVAURM1999	Coefficient		-68.70	0.03	**1.08**	0.80	0.76	
		Std. Error		144.20	0.05	0.18			
		t-Statistic		-0.48	0.71	6.14			
Note	Coefficients in bold font are the significant ones								

Table 4.5 contains equations with financial infrastructure as the second explanatory variable, while table 4.6 gives equations with economic infrastructure as the second independent variable. The signs of the coefficients are along expected lines and this coupled with the high values of R bar square indicates that the equations can be used to explain inter-state disparities in per capita value added in unregistered manufacturing. The only significant variable seems to be the one indicative of the development of infrastructure. In all years except one, economic infrastructure seems to be slightly more significant than financial infrastructure. But in striking contrast

with the pre-reform period, agricultural development does not seem to be a significant variable in any of the years considered.

4.3. Registered manufacturing

4.3.1 Manner of change

Table 4.7 gives the values of the state relatives in per capita value added in registered manufacturing in the pre-reform period.

| | S.No | State | State Relatives for | | % change | |
			1980-81 to 1982-83	1989-90 to 1991-92		
	(1)	(2)	(3)	(4)	(5)	
	1	Orissa	29.59	39.69	34.14	
	2	Bihar	36.79	40.80	10.89	
	3	Rajasthan	39.07	43.19	10.54	
	4	Uttar Pradesh	39.32	54.41	38.37	
	5	Assam	39.37	2723	-30.84	
	6	Madhya Pradesh	58.22	50.92	-12.54	
	7	Andhra Pradesh	61.43	79.39	29.24	
	8	Kerala	75.36	58.10	-22.90	
	9	Karnataka	84.01	102.50	22.00	
	10	Panjab	117.42	126.65	7.86	
	11	West Bengal	132.56	77.58	-41.48	
	12	Tamil Nadu	148.60	127.23	-14.38	
	13	Haryana	154.07	143.59	-6.80	
	14	Gujarat	192.65	184.34	-4.32	
	15	Maharshtra	280.11	255.79	-8.68	

Table 4.7 State Relatives of Per Capita Value Added in Registered Manufacturing at 1980-81 Prices for the Pre-reform period*.

Note : *States are arranged in ascending order of the value of the state relative in the initial period, which refers to 1980-81 to 1982-83 . The terminal period refers to 1987-88 to 1989-90. Source of data is EPWRF..

The four better off states - Punjab, Haryana, Gujarat and Maharashtra belong to group one in this regard at both the beginning and the end of the period considered. Tamil Nadu is also in this category in the pre-reform era. West

Bengal and Karnataka change their respective groups during the period. West Bengal moves from group two to group one while Karnataka changes in the reverse direction. If we consider the signs of change, there are some indications of convergence during the period. Six out of nine states of group one at the beginning of the period experience positive changes. The two largest positive changes are both in less developed states - Uttar Pradesh and Orissa in that order. Five out of the six states of group two experience negative changes, the largest such change being in the state of West Bengal, with Kerala quite close on West Bengal's heels in this regard. One cannot however draw definite inferences on this count because while the coefficient of correlation between the value of the state relative at the beginning of the period and its % change during the period is negative, the value is only -0.37, which is too small to be considered significant.

The position is slightly different if we consider the post-reform period, results for which are given in Table 4.8.

| | Sno | State | State Relatives for | | % change |
			1993-94 to 1995-96	1998-99 to 2000-2001	
	(1)	(2)	(3)	(4)	(5)
	1	Orissa	36.99	6.21	-83.22
	2	Bihar	40.71	46.38	13.92
	3	Assam	44.97	48.83	8.58
	4	Uttar Pradesh	51.78	44.32	-14.41
	5	Rajasthan	58.62	65.46	11.66
	6	Kerala	61.24	70.57	15.23
	7	West Bengal	63.14	71.42	13.12
	8	Madhya Pradesh	66.00	79.62	20.64
	9	Andhra pradesh	77.85	89.19	14.57
	10	Karnataka	106.42	123.02	15.59
	11	Punjab	152.76	157.40	3.03
	12	Haryana	175.63	201.89	14.95
	13	Tamil Nadu	192.20	177.85	-7.47
	14	Gujarat	246.19	250.90	1.91
	15	Maharashtra	246.94	248.88	0.79

Table 4.8   State Relatives of Per Capita Value Added in Registered Manufacturing at 1993-94 Prices for the Post-reform period*.

Note   : *States are arranged in ascending order of the value of the state relative in the initial period, which refers to 1993-94 to 1995-96 . The terminal period refers to 1998-1999 to 2000-2001.

Source : Calculated from Economic and Political Weekly Research

	Foundation (EPWRF) (2002):Domestic Product of States of India 1960-61 to 2000-01.

There is no inter-group change between the states considered during the period. There are however some slight indications of divergence. A very large negative change - the largest for the period - occurs in the case of Orissa, which is in group one. Further five of the six states of group two also experience positive changes in their relatives during the period. But as against this, seven out of nine states of group one undergo positive changes during the period in the value of their relatives. It is also true that the largest positive change in this regard occurs in the case of Madhya Pradesh of group one. Nothing very definite can be said in this regard because while the coefficient of correlation between the value of the state relative at the beginning of the period and the % change in it during the period is positive, its value is only +0.11, which is not significant.

The regression results for registered manufacturing for the pre-reform era are in tables 4.9 and 4.10.

Table 4.9 Regression Equations to explain inter-state differences in PCVARM in the Pre-reform Period*

Sl. No	Dependent Variable	Equation Details	Constant	Independent Variables		R-squared	Adjusted R-squared
				PCVAA(t-1)	PCVAFI(t-1)		
1	PCVARM 1981	Coefficient	-47.57	0.08	**2.91**	0.77	0.73
		Std. Error	46.41	0.06	0.48		
		t-Statistic	-1.02	1.43	6.03		
2	PCVARM 1982	Coefficient	-43.36	0.08	**2.79**	0.74	0.70
		Std. Error	51.00	0.06	0.50		
		t-Statistic	-0.85	1.38	5.62		
3	PCVARM 1983	Coefficient	-33.33	0.07	**2.78**	0.71	0.66
		Std. Error	58.41	0.07	0.53		
		t-Statistic	-0.57	1.03	5.23		
4	PCVARM 1984	Coefficient	-31.09	0.09	**2.42**	0.71	0.66
		Std. Error	61.55	0.07	0.47		
		t-Statistic	-0.51	1.22	5.19		
5	PCVARM 1985	Coefficient	-57.87	0.11	**2.59**	0.71	0.66
		Std. Error	65.06	0.08	0.51		

		t-Statistic	-0.89	1.40	5.08				
6	PCVARM 1986	Coefficient	-60.32	0.09	**2.63**		0.69	0.64	
		Std. Error	69.62	0.07	0.52				
		t-Statistic	-0.87	1.22	5.03				
7	PCVARM 1987	Coefficient	-25.59	0.07	**2.21**		0.72	0.67	
		Std. Error	59.54	0.07	0.41				
		t-Statistic	-0.43	1.03	5.33				
8	PCVARM 1988	Coefficient	0.40	-0.08	**3.14**		0.75	0.71	
		Std. Error	61.47	0.07	0.52				
		t-Statistic	0.01	-1.04	6.00				
9	PCVARM 1989	Coefficient	-63.14	0.06	**2.67**		0.83	0.81	
		Std. Error	56.09	0.06	0.36				
		t-Statistic	-1.13	1.10	7.43				
10	PCVARM 1990	Coefficient	-85.29	0.06	**2.62**		0.84	0.82	
		Std. Error	58.55	0.06	0.35				
		t-Statistic	-1.46	0.96	7.53				
11	PCVARM 1991	Coefficient	-71.75	0.07	**2.10**		0.87	0.85	
		Std. Error	46.69	0.05	0.25				
		t-Statistic	-1.54	1.62	8.43				
12	PCVARM 1992	Coefficient	-26.21	0.07	**1.76**		0.79	0.76	
		Std. Error	66.31	0.07	0.26				
		t-Statistic	-0.40	1.09	6.68				
13	PCVARM 1993	Coefficient	-46.42	**0.14**	**1.47**		0.85	0.82	
		Std. Error	56.67	0.06	0.20				
		t-Statistic	-0.82	2.34	7.48				
Note	Coefficients in bold font are the significant ones								

Sl. No	Dependent Variable	Equation Details	Constant	Independent Variables		R-squared	Adjusted R-squared
				PCVAA(t-1)	PCVAEI(t-1)		
1	PCVARM 1981	Coefficient	-85.61	0.05	**3.91**	0.81	0.78
		Std. Error	43.84	0.05	0.56		
		t-Statistic	-1.95	1.08	7.01		
2	PCVARM 1982	Coefficient	**-90.00**	0.05	**3.92**	0.86	0.84
		Std. Error	39.59	0.04	0.47		
		t-Statistic	-2.27	1.14	8.32		
3	PCVARM 1983	Coefficient	-67.48	0.06	**3.56**	0.72	0.67
		Std. Error	60.95	0.07	0.67		
		t-Statistic	-1.11	0.91	5.34		
4	PCVARM 1984	Coefficient	-73.24	0.06	**3.53**	0.89	0.88
		Std. Error	38.21	0.04	0.36		
		t-Statistic	-1.92	1.41	9.76		
5	PCVARM 1985	Coefficient	**-110.17**	0.10	**3.68**	0.89	0.87
		Std. Error	41.47	0.05	0.39		
		t-Statistic	-2.66	2.09	9.43		
6	PCVARM 1986	Coefficient	-111.54	0.10	**3.46**	0.79	0.76
		Std. Error	60.53	0.06	0.53		
		t-Statistic	-1.84	1.61	6.58		
7	PCVARM 1987	Coefficient	-91.32	0.11	**3.05**	0.81	0.77
		Std. Error	54.21	0.06	0.45		
		t-Statistic	-1.68	2.02	6.82		
8	PCVARM 1988	Coefficient	-65.85	0.07	**3.49**	0.85	0.83
		Std. Error	51.52	0.05	0.42		
		t-Statistic	-1.28	1.24	8.23		
9	PCVARM 1989	Coefficient	-69.32	0.06	**3.67**	0.90	0.88
		Std. Error	43.55	0.04	0.37		
		t-Statistic	-1.59	1.29	9.92		

Table 4.10 Regression Equations to explain inter-state differences in PCVARM in the Pre-reform period*

10	PCVARM 1990	Coefficient		-87.92	0.07	**3.71**		0.86	0.84	
		Std. Error		54.18	0.06	0.45				
		t-Statistic		-1.62	1.32	8.26				
11	PCVARM 1991	Coefficient		-62.05	0.06	**3.20**		0.77	0.73	
		Std. Error		62.55	0.06	0.54				
		t-Statistic		-0.99	1.05	5.91				
12	PCVARM 1992	Coefficient		-23.93	0.01	**3.25**		0.58	0.51	
		Std. Error		99.25	0.10	0.82				
		t-Statistic		-0.24	0.11	3.98				
13	PCVARM 1993	Coefficient		-101.72	0.13	**3.01**		0.64	0.58	
		Std. Error		96.68	0.09	0.73				
		t-Statistic		-1.05	1.44	4.12				
Note	Coefficients in bold font are the significant ones									

Table 4.9 contains equations with financial infrastructure as the second explanatory variable, while table 4.10 gives equations with economic infrastructure as the second independent variable. As in the case of unregistered manufacturing, the signs of the coefficients are along expected lines. This coupled with the high values of R bar square indicates the fact that the equations can be used to explain inter-state disparities in per capita value added in registered manufacturing. The most significant variable here also seems to be the one indicative of the development of infrastructure. In most of the years, economic infrastructure seems to be slightly more significant than financial infrastructure. Towards later years of the period however the tables seem to be turning against economic infrastructure and in favour of financial infrastructure. If we consider agricultural development, however, the results are slightly different in the case of registered manufacturing. It is not a significant variable in all equations except one in the entire period

Regression results for the post-reform era are given in tables 4.11 and 4.12.

Table 4.11 Regression Equations to explain inter-state differences in PCVARM in the Post-reform period*								
SI No	Dependent Variable	Equation Details	Constant	Independent Variables		R-squared	Adjusted R-squared	
				PCVAA(t-1)	PCVAFI(t-1)			
1	PCVARM1994	Coefficient	44.14	0.16	**1.12**	0.65	0.59	
		Std. Error	264.28	0.09	0.26			
		t-Statistic	0.17	1.84	4.27			
2	PCVARM1995	Coefficient	-110.57	**0.19**	**1.31**	0.73	0.68	
		Std. Error	271.82	0.09	0.26			
		t-Statistic	-0.41	2.24	5.05			
3	PCVARM1996	Coefficient	-57.54	0.18	**1.22**	0.62	0.56	
		Std. Error	339.90	0.11	0.30			
		t-Statistic	-0.17	1.59	4.03			
4	PCVARM1997	Coefficient	-142.07	0.15	**1.45**	0.72	0.67	
		Std. Error	271.95	0.09	0.32			
		t-Statistic	-0.52	1.70	4.58			
5	PCVARM1998	Coefficient	-253.67	0.16	**1.47**	0.73	0.69	
		Std. Error	278.28	0.09	0.30			
		t-Statistic	-0.91	1.68	4.87			
6	PCVARM1999	Coefficient	-313.31	**0.24**	**1.13**	0.72	0.67	
		Std. Error	301.53	0.10	0.25			
		t-Statistic	-1.04	2.44	4.56			
Note	Coefficients in bold font are the significant ones							

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Sl.No.	Dependent Variable	Equation Details	Constant	Independent Variables		R-squared	Adjusted R-squared
				PCVAA(t-1)	PCVAEI(t-1)		
1	PCVARM1994	Coefficient	-241.77	0.10	**2.38**	0.64	0.59
		Std. Error	298.51	0.09	0.57		
		t-Statistic	-0.81	1.08	4.20		
2	PCVARM1995	Coefficient	-378.37	0.12	**2.57**	0.74	0.69
		Std. Error	288.86	0.09	0.50		
		t-Statistic	-1.31	1.40	5.19		
3	PCVARM1996	Coefficient	-365.66	0.12	**2.41**	0.68	0.63
		Std. Error	340.57	0.11	0.52		
		t-Statistic	-1.07	1.09	4.59		
4	PCVARM1997	Coefficient	-287.65	0.12	**2.03**	0.77	0.73
		Std. Error	254.08	0.08	0.38		
		t-Statistic	-1.13	1.56	5.35		
5	PCVARM1998	Coefficient	-352.68	0.17	**1.76**	0.77	0.73
		Std. Error	263.70	0.09	0.32		
		t-Statistic	-1.34	1.95	5.45		
6	PCVARM1999	Coefficient	-305.95	0.13	**1.78**	0.80	0.77
		Std. Error	250.19	0.09	0.30		
		t-Statistic	-1.22	1.48	5.87		
Note :	Coefficients in bold font are the significant ones						

Table 4.12. Regression Equations to explain inter-state differences in PCVARM in the Post-reform period*

Table 4.11 contains equations with financial infrastructure as the second explanatory variable, while table 4.12 gives the results with economic infrastructure as the second independent variable. The signs of the coefficients are along expected lines and this coupled with the high values of R bar square indicates that the equations can be used to explain inter-state disparities in per capita value added in registered manufacturing in the post-reform era. The more significant variable seems to be the one indicative of the development of infrastructure. In all years except one, economic infrastructure seems to be slightly more significant than financial infrastructure. But in striking contrast with the pre-reform period, agricultural development does not seem to be a significant variable in ten of the twelve equations presented.

4.4 Total Manufacturing

4.4.1 Manner of Change

State relatives in per capita value added in total manufacturing in the pre-reform period are given in Table 4.13

table 4.13

Table 4.13 State Relatives of Per Capita Value Added in Total Manufacturing at 1980-81 Prices for the Pre-reform period*.				
		State Relatives for		
Rank	States	1980-81 to 1982-83	1989-90 to 1991-92	% change
(1)	(2)	(3)	(4)	(5)
1	Assam	32.03	21.92	-31.56
2	Orissa	39.59	39.70	0.29
3	Bihar	44.69	42.69	-4.48
4	Uttar Pradesh	45.53	53.18	16.80
5	Rajasthan	48.38	45.07	-6.83
6	Madhya Pradesh	57.81	51.32	-11.22
7	Andhra Pradesh	59.56	72.60	21.90
8	Karnataka	72.38	82.19	13.56
9	Kerala	76.63	61.70	-19.49
10	Punjab	115.86	133.62	15.33
11	Haryana	119.66	146.82	22.69
12	West Bengal	124.66	85.11	-31.73
13	Gujarat	144.16	148.64	3.11
14	Tamil Nadu	144.52	111.81	-22.63
15	Maharashtra	219.16	209.79	-4.28

Note: *States are arranged in ascending order of the value of the state relative in the initial period, which refers to 1980-81 to 1982-83 . The terminal period refers to 1989-90 to 1991-92. Total Manufacturing covers Registered and Unregistered Manufacturing.

Source: Calculated from Economic and Political Weekly Research Foundation (EPWRF) (2002): Domestic Product of States of India 1960-61 to 2000-01

The most noticeable feature here seems to be the relative decline in this regard of the state of West Bengal, which shifts from group two in the

beginning to group one towards the end of the period. In fact West Bengal experiences the largest decline of this kind, with Assam, which has the lowest value for the state relative in the entire period, a very close second. Four out of nine states of group one experience increases in their relatives while three out of six states of group two in the beginning of the period undergo negative changes.The largest increase however occurs in the case of Haryana which is in group one in both the periods. Nothing very definite can be inferred about convergence or divergence because the coefficient of correlation between the relative at the beginning of the period and its % change is just - 0.03 and is not significant.

The picture in this regard for the post-reform period can be obtained from the data given in table 4.14 and is slightly different from the pre-reform one.

		Table 4.14 State Relatives of Per Capita Value Added in Total Manufacturing at 1993-94 Prices for the Post-reform period*.				
				State Relatives for		
	S.no	State	1993-94 to 1995-96	1998-99 to 2000-2001	% change	
	(1)	(2)	(3)	(4)	(5)	
	1	Orissa	32.40	10.79	-66.70	
	2	Bihar	32.76	34.01	3.82	
	3	Assam	38.11	38.20	0.24	
	4	Uttar Pradesh	55.78	48.31	-13.40	
	5	Rajasthan	68.09	69.85	2.58	
	6	Madhya Pradesh	73.75	79.53	7.84	
	7	Andhra Pradesh	80.11	87.17	8.81	
	8	Kerala	80.58	76.85	-4.63	
	9	West Bengal	86.87	95.32	9.72	
	10	Karnataka	111.78	121.87	9.03	
	11	Punjab	146.28	146.72	0.30	
	12	Haryana	170.32	182.38	7.08	
	13	Tamil Nadu	196.82	176.66	-10.25	
	14	Gujarat	231.23	240.76	4.12	
	15	Maharashtra	235.67	233.40	-0.96	
Note :		*States are arranged in ascending order of the value of the state relative in the initial period, which refers to 1993-94 to 1995-96 . The terminal period refers to 1998-1999 to 2000-2001.Total Manufacturing covers Registered and Unregistered Manufacturing.				

The six states that are in group two at the beginning of the period continue to remain so at the end too. Four of the six states of this group actually experience positive changes in their relatives during the period. Further Orissa, which occupies the lowest position in terms of the value of its relative during the entire period, undergoes a phenomenal decline in the value of its relative during the period. There thus appear to be some indication of divergence. Actually, the coefficient of correlation between the value of the relative at the beginning of the period and the % change in it is positive and comes to 0.26. No definite inferences can however be drawn on this count because the coefficient is not significant.

In the case of total manufacturing, there is a view that the structure of industry in the sense of the relative importance of unregistered manufacturing may have an impact in explaining inter-state disparities. Actually, the structure of industry defined this way has a negative coefficient of correlation with per capita value added in total manufacturing at the state level in India in both the pre and post-reform periods, though this is significant only in the first few years of the pre-reform period. We therefore consider value added in unregistered manufacturing as a per cent of value added in total manufacturing in the concerned year as another possible independent variable to explain inter-state disparities in per capita value added in total manufacturing.

Table 4.15 Regression Equations to explain inter-state differences in PCVATM in the Pre-reform period*

Sl.No.	Dependent Variable	Equation Details	Consta nt	Independent Variables			R-squared	Adjusted R-squared
				%URM(t)	PCVAA(t-1)	PCVAFI(t-1)		
1	PCVATM 1981	Coefficient	136.50	-2.58	0.07	**3.67**	0.79	0.73
		Std. Error	165.73	2.62	0.08	0.79		
		t-Statistic	0.82	-0.98	0.86	4.64		
2	PCVATM 1982	Coefficient	190.12	-3.52	0.07	**3.40**	0.82	0.77
		Std. Error	136.22	2.17	0.07	0.65		
		t-Statistic	1.40	-1.63	0.92	5.22		
3	PCVATM 1983	Coefficient	180.13	-3.07	0.05	**3.40**	0.79	0.73
		Std. Error	149.96	2.44	0.08	0.68		
		t-Statistic	1.20	-1.26	0.60	5.02		

4	PCVATM 1984	Coefficient		197.80	-4.13	0.10	**2.96**	0.76	0.70
		Std. Error		176.75	3.32	0.09	0.65		
		t-Statistic		1.12	-1.24	1.08	4.56		
5	PCVATM 1985	Coefficient		150.73	-4.60	0.19	**3.05**	0.78	0.72
		Std. Error		179.42	3.45	0.09	0.71		
		t-Statistic		0.84	-1.33	2.08	4.33		
6	PCVATM 1986	Coefficient		131.32	-4.50	0.19	**3.13**	0.77	0.70
		Std. Error		182.25	3.54	0.09	0.71		
		t-Statistic		0.72	-1.27	2.08	4.43		
7	PCVATM 1987	Coefficient		90.61	-2.97	0.16	**2.86**	0.76	0.70
		Std. Error		187.07	4.14	0.09	0.60		
		t-Statistic		0.48	-0.72	1.78	4.75		
8	PCVATM 1988	Coefficient		50.16	-1.80	0.01	**4.11**	0.76	0.69
		Std. Error		184.12	4.64	0.12	0.79		
		t-Statistic		0.27	-0.39	0.05	5.19		
9	PCVATM 1989	Coefficient		-36.83	-1.79	**0.18**	3.36	0.85	0.81
		Std. Error		170.29	4.47	0.08	0.54		
		t-Statistic		-0.22	-0.40	2.21	6.23		
10	PCVATM 1990	Coefficient		-11.57	-2.34	0.18	**3.11**	0.85	0.81
		Std. Error		181.49	4.07	0.08	0.55		
		t-Statistic		-0.06	-0.58	2.13	5.70		
11	PCVATM 1991	Coefficient		-44.85	-1.68	**0.21**	2.68	0.89	0.86
		Std. Error		137.50	3.31	0.07	0.37		
		t-Statistic		-0.33	-0.51	3.12	7.26		
12	PCVATM 1992	Coefficient		75.84	-3.56	**0.20**	2.34	0.85	0.81
		Std. Error		180.26	4.31	0.08	0.35		
		t-Statistic		0.42	-0.83	2.39	6.72		
13	PCVATM 1993	Coefficient		58.94	-3.62	**0.29**	1.93	0.91	0.88
		Std. Error		153.50	3.63	0.07	0.24		
		t-Statistic		0.38	-1.00	4.11	7.92		
Note	Coefficients in bold font are the significant ones								

Sl. No.	Dependent Variable	Equation Details		Constant	Independent Variables			R-squared	Adjusted R-squared
					%URM(t)	PCVAA(t-1)	PCVAEI(t-1)		
Table 4.16 Regression Equations to explain inter-state differences in PCVATM in the Pre-reform period*									
1	PCVATM 1981	Coefficient		-40.08	-0.50	0.05	**5.46**	0.84	0.80
		Std. Error		158.73	2.40	0.07	0.94		
		t-Statistic		-0.25	-0.21	0.78	5.80		
2	PCVATM 1982	Coefficient		-197.82	2.07	0.07	**5.87**	0.88	0.84
		Std. Error		150.56	2.25	0.06	0.87		
		t-Statistic		-1.31	0.92	1.21	6.71		
3	PCVATM 1983	Coefficient		14.53	-0.81	0.06	**4.63**	0.76	0.70
		Std. Error		185.15	2.86	0.09	1.01		
		t-Statistic		0.08	-0.28	0.68	4.58		
4	PCVATM 1984	Coefficient		-148.01	1.88	0.09	**5.00**	0.89	0.86
		Std. Error		144.73	2.62	0.06	0.66		
		t-Statistic		-1.02	0.72	1.43	7.60		
5	PCVATM 1985	Coefficient		-219.31	1.78	**0.18**	**5.18**	0.91	0.88
		Std. Error		142.67	2.63	0.06	0.67		
		t-Statistic		-1.54	0.68	2.95	7.72		
6	PCVATM 1986	Coefficient		-48.60	-2.01	**0.20**	**4.42**	0.85	0.81
		Std. Error		159.43	2.96	0.07	0.72		
		t-Statistic		-0.30	-0.68	2.71	6.10		
7	PCVATM 1987	Coefficient		-103.71	-0.51	**0.21**	**4.21**	0.86	0.82
		Std. Error		158.15	3.32	0.07	0.63		
		t-Statistic		-0.66	-0.15	3.05	6.72		
8	PCVATM 1988	Coefficient		-189.89	2.31	0.17	**4.88**	0.86	0.82
		Std. Error		153.83	3.66	0.08	0.65		
		t-Statistic		-1.23	0.63	2.11	7.49		
9	PCVATM 1989	Coefficient		-247.80	4.08	0.13	**5.09**	0.90	0.88
		Std. Error		150.15	3.89	0.07	0.62		
		t-Statistic		-1.65	1.05	1.91	8.21		
10	PCVATM 1990	Coefficient		-80.14	-0.92	**0.19**	**4.66**	0.90	0.88
		Std. Error		147.22	3.29	0.07	0.61		
		t-Statistic		-0.54	-0.28	2.82	7.58		
11	PCVATM 1991	Coefficient		69.13	-4.91	**0.21**	**4.10**	0.88	0.84
		Std. Error		137.20	3.35	0.07	0.61		
		t-Statistic		0.50	-1.46	3.03	6.74		

12	PCVATM 1992	Coefficient		204.19	-7.22	0.14	**4.28**	0.69	0.61
		Std. Error		250.58	5.95	0.12	1.04		
		t-Statistic		0.81	-1.21	1.13	4.10		
13	PCVATM 1993	Coefficient		107.17	-6.90	**0.29**	**3.89**	0.75	0.69
		Std. Error		251.89	5.71	0.11	0.93		
		t-Statistic		0.43	-1.21	2.55	4.17		
Note: Coefficients in bold font are the significant ones									

Tables 4.15 and 4.16 give the results for the pre-reform era with three possible explanatory variables indicative of the structure of industry, and the development of agriculture and infrastructure respectively, with table 4.15 considering the financial aspect and table 4.16 considering the economic aspect as defined here. The results indicate that infrastructural development has a salutary impact on industrial development. In fact it is the most significant explanatory variable with economic infrastructure being by and large more so than financial infrastructure. As regards agricultural development as considered here, it also has a favourable impact on industry. Actually this variable seems to become also significant in the later years of the pre-reform period. If we consider the structure of industry as indicated by the relative importance of unregistered manufacturing in total manufacturing, it is not a significant explanatory variable in any of the equations nor are the signs of the coefficient of this variable the same at different points of time in the pre-reform period

Tables 4.17 and 4.18 give similar for the post-reform period, with table 4.17 considering the financial aspect and table 4.18 considering the economic aspect as defined here.

Table 4.17 Regression Equations to explain inter-state differences in PCVATM in the Post-reform period*								
Sl. No.	Dependent Variable	Equation Details	Constant	Independent Variables			R-squared	Adjusted R-squared
				%URM(t)	PCVAA(t-1)	PCVAFI(t-1)		
1	PCVATM1994	Coefficient	99.85	2.49	0.22	**1.64**	0.66	0.56
		Std. Error	782.22	18.02	0.13	0.39		
		t-Statistic	0.13	0.14	1.68	4.17		
2	PCVATM1995	Coefficient	-31.06	-0.81	**0.28**	**1.90**	0.75	0.68
		Std. Error	642.59	14.84	0.13	0.38		
		t-Statistic	-0.05	-0.05	2.24	5.06		

Sl. No.	Dependent Variable	Equation Details		Constant	%URM(t)	PCVAA(t-1)	PCVAEI(t-1)		R-squared	Adjusted R-squared
3	PCVATM1996	Coefficient		517.65	-14.56	0.27	**1.81**		0.68	0.59
		Std. Error		915.94	22.08	0.16	0.42			
		t-Statistic		0.57	-0.66	1.72	4.32			
4	PCVATM1997	Coefficient		727.27	-22.79	0.18	**2.33**		0.81	0.76
		Std. Error		685.64	15.86	0.11	0.39			
		t-Statistic		1.06	-1.44	1.66	5.91			
5	PCVATM1998	Coefficient		197.04	-11.58	0.22	**2.20**		0.80	0.74
		Std. Error		559.99	9.69	0.12	0.40			
		t-Statistic		0.35	-1.19	1.74	5.46			
6	PCVATM1999	Coefficient		85.88	-13.16	**0.32**	**1.91**		0.78	0.72
		Std. Error		706.19	14.89	0.14	0.36			
		t-Statistic		0.12	-0.88	2.33	5.34			
Note: Coefficients in bold font are the significant ones										

Table 4.18 Regression Equations to explain inter-state differences in PCVATM in the Post-reform period*										
Sl. No.	Dependent Variable	Equation Details		Constant	Independent Variables				R-squared	Adjusted R-squared
					%URM(t)	PCVAA(t-1)	PCVAEI(t-1)			
1	PCVATM1994	Coefficient		280.89	-16.20	0.11	**3.83**		0.73	0.65
		Std. Error		689.73	16.47	0.12	0.77			
		t-Statistic		0.41	-0.98	0.88	4.98			
2	PCVATM1995	Coefficient		-136.03	-10.45	0.17	**3.91**		0.80	0.74
		Std. Error		579.41	13.47	0.12	0.67			
		t-Statistic		-0.23	-0.78	1.50	5.87			
3	PCVATM1996	Coefficient		425.03	-25.96	0.17	**3.69**		0.78	0.71
		Std. Error		766.86	18.62	0.13	0.66			
		t-Statistic		0.55	-1.39	1.28	5.61			
4	PCVATM1997	Coefficient		594.79	-25.10	0.14	**3.24**		0.86	0.82
		Std. Error		603.90	13.98	0.10	0.47			
		t-Statistic		0.98	-1.80	1.47	6.96			
5	PCVATM1998	Coefficient		257.77	-16.84	**0.23**	**2.67**		0.86	0.82
		Std. Error		466.78	8.13	0.10	0.39			
		t-Statistic		0.55	-2.07	2.16	6.81			
6	PCVATM1999	Coefficient		219.97	-15.83	0.14	**2.97**		0.85	0.81
		Std. Error		586.21	12.45	0.12	0.44			
		t-Statistic		0.38	-1.27	1.16	6.79			

	Note: Coefficients in bold font are the significant ones										

The results indicate that in the post-reform period too, infrastructural development has a salutary impact on industrial development. It continues to remain the most significant explanatory variable with economic infrastructure being clearly more so than financial infrastructure. If we look at the signs of the coefficients, agricultural development seems to have a favourable impact on industry The coefficient of this variable is however not significant in most of the years of the post-reform period nor is there any tendency for it to increase in significance over time. The structure of industry as defined here continues to be a variable that is not significant, but the signs of the coefficients are in all cases except one negative indicating that the states with a larger share in value added in small scale manufacturing seem to be the ones which are less developed in terms of total manufacturing in the post-reform period.

4.5 Inferences

As regards unregistered manufacturing, the study here indicates that while there are no clear signs of convergence or divergence of inter-state disparities of per capita value added in the pre-reform era, there are some indications of divergence in the post-reform period. Particularly interesting are the relative declines in West Bengal and in Kerala in the pre and post reform periods respectively making the states switch groups during these periods. The phenomenal improvement in Haryana in the pre-reform period also deserves special notice. If we consider the possible explanatory factors for inter-state differences in per capita value added in unregistered manufacturing, infrastructural development emerges as the most important one. Within infrastructure, economic infrastructure in terms of transport, communication and storage seems to play a more important role in most of the years considered As regards the development of agriculture as reflected by per capita value added in agriculture proper, it does seem to have a salutary effect on per capita value added in unregistered manufacturing, particularly in the later years of the pre-reform era. But this explanatory variable pales into insignificance in comparison with variables indicative of infrastructural development in the post-reform period.

In the case of registered manufacturing, there are some indications of convergence in inter-state disparities in per capita value added in the pre-

reform period. West Bengal undergoes relative decline in this regard so much so that it switches from group two at the beginning to group one at the end with the reverse happening in the case of Karnataka. But the state of Kerala belonging to group one actually experiences the largest decline. The net result is that the signs of convergence are not very definite ones. In contrast, in the post-reform period, there are hardly any indications of convergence or divergence, other than the noticeable relative improvement in the case of the state of Madhya Pradesh. There is no shift in states between groups during the period. Infrastructural development again comes out to be the more significant of the explanatory variables considered in both the pre and post-reform periods. Within infrastructural development economic infrastructure seems slightly more effective in this regard than financial infrastructure except in the later years of the pre-reform era. Agricultural development does not seem to be an important variable in explaining inter-state disparities in registered manufacturing in both the periods.

If we consider total manufacturing, taking into account both unregistered and registered manufacturing together, there is no noticeable tendency towards convergence or divergence in per capita value added in total manufacturing. This is true irrespective of whether we consider the pre-reform or the post-reform period. The noticeable features seem to be the big decline in the relative position of West Bengal in the pre-reform period and that of Orissa in the post-reform one. As regards the factors explaining inter-state differences in per capita value added in manufacturing, such differences in infrastructural development as indicated by value added in the sector, seems the most important one. Within infrastructure, transport and communication seem more important in this regard than banking and insurance. While there are indications of agricultural development having a favourable and significant impact on industrial development at the state level particularly in the later part of the pre-reform era, there is no such indication in this regard in the post-reform years. As regards the structure of industry in terms of value added in unregistered manufacturing as per cent of value added in total manufacturing, there are no indications of any definite impact of this on industrial development in the pre-reform era, there are some signs in the post-reform years that the more developed total manufacturing is in a state, the less the relative importance of unregistered manufacturing

Chapter 5: Main Findings / Conclusions

The preliminary analysis here on the basis of the latest available data gives some broad indications regarding India's regional development experience in the two decades since the eighties. It seems to substantiate the view that the pattern of regional economic change depends upon the indicator of economic development considered as has been argued in the multi-pattern hypothesis in this regard. As regards per capita NSDP, while there are no definite indications of either divergence or convergence at the regional level in the pre-reform era whereas if we consider indicators of levels of living, there are signs of inter-state convergence in the pre-reform period. If we consider the post-reform period, the evidence here points towards some indications of inter-state divergence in terms of per capita NSDP along with very definite evidence in this regard in terms of the indicators of levels of living. It has of course to be borne in mind that we have looked at convergence and divergence in a non-econometric sense and not examined sigma or beta convergence which involve inter-temporal analysis of sinle summary measures of inter-regional dispersion and relationship between rates of growth and base year values of the indicator under study for the different regions respectively. Besides lending credence to findings on the basis of much earlier data by many including Nair (1982) from the fifties to the eighties, the evidence here seems to be in line also with the results of some detailed studies using data for recent years like the ones by Dholakia(2003), Shetty (2003) and Bhattacharya and Sakthivel (2004). Recent econometric studies using data for much longer periods also seem to lead to similar inferences. Das (2002) compares interstate movements in real wage rates in agriculture between the years 1956-57 to 1992-93 to infer that there are no indications of continued divergence with some indications also of convergence. Shaban (2002) on the other hand finds clear indications of divergence on the basis of his analysis of data on per capita NSDP between the years 1960-61 to 1996-97.
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A broad comparison between the pre and post-reform periods in our study also reveals some interesting facets of regional change. If we consider per capita NSDP, there is evidence about these diverging in a much more

noticeable manner between the states considered here in the post-reform period in striking contrast with that in the pre-reform era. According to some, including Cassen (2002), this need not cause much concern since regional divergence in per capita NSDP has been a tendency prevalent in India since the 50's. One is however constrained to dispute such a contention. This is so because on the basis of very detailed regional analysis, many in India, including Dholakia (1985) and Nair (1982) hold the view that India had almost reached the turning point of the concentration-cycle hypothesis in this regard by the late 70's. Further, there is some evidence in this study to prove that there has not been much regional divergence in this regard between the 80's and the 90's.In view of all this, the noticed regional divergence in per capita NSDP the post-reform period since the 90's should be a matter of some concern.

The disaggregated sectoral analysis of regional change here seems to hold some insights in this regard. Manufacturing industry has, almost since times immemorial, been looked upon as the panacea for the development of the backward regions in all parts of the world including India. Attention in this regard often gets focused on large scale industry or registered manufacturing value added in which forms around 60% of the value added in total manufacturing at the all India level. In the case of registered or large scale manufacturing, while there were some indications of inter-state convergence in the pre-reform period, there is no definite evidence either way for the post-reform one. If we consider small scale or unregistered manufacturing, while there are no signs of convergence or divergence in the pre-reform period, there are more definite signs of divergence in the post-reform one. As regards, regional disparities in agriculture and allied sectors, while there seems to have been some inter-state convergence in the pre-reform era, there are no indications of either kind in the post-reform era

A matter of even greater concern is the evidence here that the tendency towards regional convergence in levels of living in the pre-reform period has been arrested and in some cases even reversed in the post-reform period. This is all the more so because one of the strongest theoretical arguments put forth in favor of liberalizing the Indian economy was that though economic growth did take place in the Indian economy, it did not trickle down adequately in both inter-regional and inter-personal terms. It is true that there is some evidence of reduction in inequalities and of poverty at the personal level and also at the sub-state level as pointed out by Singh etc. al (2003) and Sunderam and Tendulkar(2003). Some consolation may emerge

from the fact that if we consider the HDI, the tendency seems to be of convergence in both the pre and post-reform periods. A closer look at the evidence in this regard, however, offers poor solace since there are large declines in relatives in HDI in those states of India, that are at the bottom from the point of view of almost all indicators of economic development.

There seems to be a link between the overall pattern of regional change and the sectoral results in this regard. The comparison of the results regarding the relationship between the growth of NSDP and employment at the regional level, between the pre and the post-reform periods gives a broad indication about such a logical connection. While growth of employment and of NSDP had a positive and significant correlation in the pre-reform era, there is some evidence almost pointing to the contrary for the post-reform era. This need not lead to any raised eyebrows because agriculture and unregistered manufacturing are the two sectors having a tremendous impact on the growth of employment of people in the region and hence on income accruing to people in most state economies in India. In the agricultural sector, there is no evidence of any inter-state convergence in the post-reform era. As regards unregistered manufacturing, there seems on the contrary a definite tendency towards inter-state divergence in the post-reform period. Of course much more detailed and in-depth work needs to be done possibly along the lines of Datt and Ravillion (2002) before more definite inferences can be drawn in this connection..

There is evidence in the study to suggest that infrastructural development is of great help in promoting regional development. This is particularly true if we consider an indicator of level of living like HDI and seems true to some extent also in the case of per capita NSDP. A detailed analysis of the development of industry at the state level in India also indicates that infrastructural development is particularly helpful for the development of both registered and unregistered manufacturing There are also two other indications with interesting policy implications. One is the already accepted finding that agricultural development is beneficial for the development of unregistered manufacturing at the regional level. The other is the interesting hint here that measures to reduce poverty in a region do not always go against the objective of improving the relative position of a region in terms of its per capita net domestic product. Much more work possibly with the help of causality tests and along the lines also of Datt and Ravilion(2002) needs to be done before more definite policy inferences can be drawn in this regard.

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