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PATTERNS AND DETERMINANTS OF ECONOMIC GROWTH
IN INDIAN STATES

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Foreword

The study begins with a review of literature on economic growth and its determinants. It brings out the difference between the patterns of growth of developing and developed countries, since instability and volatility characterize the former. The author reviews various studies to quantitatively and qualitatively assesses the determinants of economic growth.

The study focuses on issues of growth variability and volatility in Indian states. The coefficient of variation of year-to-year growth rates for a state is used as a measure of volatility. Four most volatile states in India were Orissa, Rajasthan, Gujarat and Uttar Pradesh while the three least volatile states were Punjab, Maharastra and Kerala. However the volatility has been declining on the national level since the 1980s. The author notes that the dispersion of growth rates of states increased considerably in the post reform period (from 15% in 1980s to 27% in 1990s). Further analysis shows that agriculture has a positive impact on industrial and service sector growth. Also, social infrastructure in an important determinant of the investment decisions. The author however stresses that there is a need for exploring other approaches to explain economic growth from all perspectives.

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Director & Chief Executive
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1.   Introduction[*]

While Economists have been interested in the issues of economic growth for more than two hundred years, there has been an explosion of research on the empirics of economic growth during the last 15 years or so. There is now a better understanding of growth fundamentals. Some stylized facts about growth based on recent research have been documented. The patterns of the growth of the group of developed countries and the group of developing countries have been found to be quite different. The growth of most developing countries is found to be characterized by instability and volatility.

The literature on the sources of growth of nations has grown since mid 1950s, and the issue of determinants of growth has occupied the attention of economists for the last 15 years or so. However, our understanding of the determinants of growth is very incomplete. There is growing scepticism about the methodology of cross-country regressions employed in the analysis of determinants. Although high frequency panel data used in recent growth research provides many more observations and permits experimentation with better specifications and estimation methods, it cannot be claimed that the resulting parameter estimates are necessarily better estimates or closer to the true values of the parameters.

This paper deals with the literature on the patterns and determinants of economic growth in major Indian states during the past four decades, 1960-2000. To place the issues in a proper perspective, we attempt, in Section 2 a very synoptic overview of major recent developments in empirical growth research. In the next section, while reviewing the literature on the inter-state differentials in levels and growth of per capita state domestic product (SDP), we present the evidence on the patterns of growth in 14 major states during the four decades of 1960s, 1970s, 1980s and 1990s. We pay particular attention to the issues of instability and volatility of growth at the state level, and comment on the relative position of each state at the end of 1990s in regard to level and growth of per capita SDP. Section 4 reviews the available studies on determinants of growth of Indian states, after referring to two major recent

contributions on sources of growth in the Indian economy. We offer some concluding remarks in Section 5.

Researchers on economic growth in Indian states have to depend on the available data compiled by official agencies. While the quality of official data has improved over time, there is considerable scope for further improvement. SDP data for different states may not be strictly comparable, on account of differences in coverage, methodology and quality of basic data. Lack of suitable price deflators for arriving at comparable SDP data in constant prices is a major problem faced by researchers. It is high time that the official agencies at the centre and states pay more attention to the issue of generating estimates of SDP comparable between states and over time. A continuous data series for all the major states for the post-Independence period will be of immense value. The importance of the quality of SDP data cannot be over emphasized at the present juncture. Attempts should be made to build continuous and comparable data series on growth correlates. A beginning should be made with the compilation of data series on labour and capital stock at the state level.

2.   Empirics of Growth Research

Since the time of Adam Smith's classic Inquiry into the Nature and Causes of the Wealth of Nations (1776), economists have paid considerable attention to the issue of understanding economic growth. The empirics of growth has been an important area of research since mid 1950s when Abramovitz (1956) and Solow (1957) highlighted the large contribution of total factor productivity (TFP) to output growth. The large body of literature on sources of growth in different countries using the Aggregate Growth Accounting Framework has enhanced our understanding of the relative roles of factor accumulation and TFP growth in economic growth. Very recently the Global Research Project (GRP) "Explaining Growth" supported by the Global Development Network (GDN) has attempted a comprehensive assessment of growth experiences of some 80 developing and transition economies belonging to six geographical regions of the world. The first phase of GRP, already completed, consisted of thematic reviews on Sources of Growth, Markets and Growth, Microeconomics of Growth and Political Economy of Growth, undertaken at the regional level. [See Squire and McMohan (2002)]. The second phase of GRP, now in progress, consists of nearly 70 individual country studies on economic growth during the period 1950-

2000. The first theme of GRP Phase I dealing with sources and determinants of aggregate growth is of particular interest in the context of the study of growth in Indian states. Soludo and Kim (2002) attempt a critical overview of research on sources and determinants of growth both by reference to the existing literature on the subject and by drawing upon the results of the just completed six regional papers on this theme. Ahluwalia and Williamson (2003) put together three thematic papers for the South Asian region with an introduction.

The key issue of growth accounting is the role of TFP growth in economic growth. TFP growth being obtained as a residual, its estimate crucially depends on the assumptions of the growth accounting framework and the quality of the data on output and inputs. It is well known that quality of data on capital input is not very satisfactory in the case of developing countries, in general.

In the regional studies of GRP and the other literature, both factor accumulation and TFP growth have been found to be important. However, their relative importance depends on the weights of capital and labour in growth accounting and, many growth "puzzles" still remain.

Easterly and Levine (2001) document five stylized facts of economic growth research during the past decade. These are:

1) TFP, rather than factor accumulation, accounts for most of the cross country differences in the level or growth rate of GDP per capita.
2) GDP per capita shows divergence across countries over the long run.
3) Factor accumulation is persistent while growth is not, and the growth paths of countries exhibit remarkable variation. The correlation between per capita growth rates in 1960-76 and 1977-92 across 135 countries is only 0.08.
4) Economic activity is highly concentrated, with all factors of production flowing to the richest areas. The role of economic geography in economic growth needs greater attention.
5) National policies are closely associated with long-run economic growth rates. However, there is no consensus as to which policies are most important for

economic growth. The policies examined refer to openness to trade, fiscal policy, financial development and macroeconomic policy.

These facts do not support models with diminishing returns, CRTS, some fixed factor of production, or an emphasis on factor accumulation. However, empirical work does not yet decisively distinguish among the different theoretical conceptions of TFP growth. Easterly and Levine suggest that economists should devote more effort toward modelling and quantifying TFP. More research is needed on determinants of growth, such as technology and externalities.

The literature on the major determinants of per capita growth rates, based on the general framework of cross-country regressions is also quite voluminous. The theoretical foundations of this approach can be traced to the neo-classical Solow-Swan-Ramsey model of growth as extended to incorporate government policies, human capital, fertility decisions and the diffusion of technology. According to the model, economies converge to the steady state where the growth rates of the economies are determined only by TFP growth. If all the economies in a group have the same steady state, poorer economies in the group should grow faster, which is called <u>absolute convergence</u>. Baumol (1986) found evidence in support of absolute convergence among developed economies. For economies which differ in their steady states, Barro (1991) suggested the possibility of <u>conditional convergence</u>, which states that the farther away an economy is from its steady state, the faster it should grow. The typical equation for a cross-country growth regression is of the following form:

$$\tfrac{1}{T}\ln(y_{Ti} / y_{Oi}) = \alpha + \beta \ln(y_{oi}) + \gamma x_i + \varepsilon_i$$

The dependent variable is the annual growth rate of per capita income (y) over the period (o, T) for country i, and the explanatory variables are $\log y_{Oi}$, y_{Oi} being initial level of per capita income, and x_i where x_i is a set of variables that are supposed to determine country i' s steady state level of per capita income and ε_i the disturbance term for country i. For conditional convergence to hold, the estimate of β shouls be significantly negative.

Empirical studies on the determinants of cross-country differneces in growth performance have encountered various fundamental difficulties (See Soludo and Kim, 2002). These include the lack of clear guidance from economic theory on the vector of variables to be included in 'x'; specification uncertainity and lack of robustness of the parameter estimates; and estimation method.

The variables included in 'x' in regional studies of GRP are of four broad categories: initial conditions, exogenous shocks, policy and institutions, and human resources.

One major conclusion of Soludo and Kim after a careful review of the literature is that "we know as much as we don't in terms of what determines the differences in cross national growth performances". It is not clear from the accumulated evidence as to which factor is the most dominant and how the various factors affect economic growth. Another important conlusion is that the methodology of cross national growth regressions is in need of careful scrutiny. Detailed country case studies need much more attention in future for a better understanding of the factors behind growth.

Growth variability and volatility is one of the central issues. This aspect was somewhat ingnored so far. Pritchett (2000) provides evidence to show that "a single time trend does not adequately characterize the evolution of GDP per capita in most developing countries". Instability in growth rates over time for a single country and volatility of growth are the general features of growth in developing countries. These stylized facts about the instability and volatility of growth rates have implications for the use of high-frequency (yearly) panel data in cross-country growth research. The use of such data particularly with fixed effects for countries, to investigate long-run growth correlates appears to be fraught with problems. Use of annual data in conjunction with country-specific fixed effects eliminates long-period variation and confounds dynamics, specification, endogeneity and statistical power.

Pritchett (2000) classifies potential growth correlates according to three features: time series persistence, exogeneity and model rationale. Variables with high persistance are usually exogenous, with little feedback from growth. Volatile variables can be either

exogenous (terms of trade shocks) or endogenous (foreign investment). Model rationale refers to the information relevant to the extent of exogeneity and the component of growth affected and the expected time scale of the impact.

Pritchett draws attention to four problems with growth regressions using higher frequency data, particulary those with country specific effects. These problems are lower statistical power, greater measurement error, endogeneity and dynamic misspecification. In view of these four problems, it cannot be asserted that the higher frequency data regressions give better results than time-averaged cross section regressions. The nature of the difference between the two coeffecient estimates for any growth correlate cannot be predicted apriori. For this reason panel data regression results may not be of much help in undestanding long term growth.

Pritchett (2000) makes the important point that growth regressions as a tool for analysing long-term growth determinants has reached the point of diminishing returns. He is sceptical of the use of even the dynamic generalized method of moments (GMM) estimators as a fruitful approach for analysing the determinants of economic growth. He offers some suggestions on approaches for future research on the determinants of growth:

1.   Analysis of the episodes of growth acceleration or the onset of growth deceleration. It will be worthwhile to examine the economic, political, institutional and policy conditions that accompany such break points.
2.   Analysis of discrete episodes in the evolution of potential growth determinants.
3.   Cross-sectional analysis of <u>changes</u> in growth rates over time. This approach has been explored by Rodrik (2000), for the first time.

To summarise this section, the literature on the sources and determinants of economic growth is indeed vast. A great deal has been learnt from this literature. But our understanding of the economic growth of countries is still very incomplete. There is considerable scope for the exploration of new approaches suggested by Pritchett (2000).

Some recent contributions to growth literature suggest that the focus should be on levels instead of growth rates. Differences in growth rates across countries may be largely transitory. Recent models of idea flows across countries such as Barro and Sala-i-Martin (1995) imply that all countries growth at a common rate in the long-run. In these models, long-run differences in levels are to be explained. Hall and Jones (1999) attempt an explanation of cross-country differences in output per worker in terms of differences in institutions and government policies, which they call social infrastructure.

Much of what has been stated above about the analytics of cross-country differences in growth and levels has considerable relevance to the analysis of inter-state differences in a given country.

3. Patterns of Economic Growth in Indian States: 1960-2000

There is a vast amount of literature dealing with economic growth in Indian states. The study by Nair (1983) alone covers the decade of 1950s. Almost all other studies cover the later decades. There is considerable overlap in regard to the time periods covered in these studies. We shall review these studies and present in the process the patterns of growth in the major states of India over the period 1960-2000. Our discussion of most of the studies will be brief.

Nair's (1983) pioneering analysis covered 14 major states. He had put together data on SDP for the years 1950-51, 1955-56, 1960-61 to 1975-76 from different official and unofficial sources. The study showed that inter-state disparities in per capita NSDP, as measured by the coefficient of variation (CV), had declined over the period 1950-51 to 1964-65, but increased between 1964-65 and 1976-77. The CV was about 24 per cent in 1950-51, 18 per cent in 1964-65 and 28 per cent in 1976-77. Punjab (including Haryana), Gujarat and West Bengal were the high income states in 1950-51, 1960-65 and 1971-76. Bihar, Orissa and Uttar Pradesh were at the bottom of the income scale.

Roychoudhury (1993) reported that the CV of per capita in NSDP in current prices had increased between 1967-68 and 1977-78, but declined between 1977-78 and 1985-86.

However, the CV in terms of constant price data showed a persistent increase during the entire period 1967-68 to 1985-86.

Das and Barua (1996) examined several dimensions of regional economic disparities among 23 states / union territories during the period 1970-92. Theil's entropy measure of inequality was computed for economy wide NSDP and NSDP in different sectors for each of the years 1970 to 1992. It was found that inter-state inequality increased in almost all sectors.

Mathur (2001) in continuation of his earlier work, analysed several facets of national and regional economic growth since 1950s, but with a specific focus on the 1980s and 1990s. The study reported a steep acceleration in the coefficient of variation of per capita incomes in the post-reform period of 1991-96. A tendency towards convergence was noticed within the group of middle income states, while divergence was evident within the groups of high and low income states.

Kurian (2000) attempted a comparative analysis of 15 major states in respect of a variety of indicators bearing on social and economic development. He classified the states into two groups; "Forward" group consisting of Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala, Maharastra, Punjab and Tamil Nadu, while the "backward" group consists of Assam, Bihar, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal. In some parts of his analysis he compared the indicators for the two groups of states.

Kurian taking a holistic view of development drew attention to inter-state disparities by presenting recent data for states on demographic characteristics, social characteristics, magnitude and structure of SDP, poverty ratio, developmental and non-developmental revenue expenditures, Eighth Plan outlay and its sectoral distribution, disbursal of financial assistance for investment, indicators of physical infrastructure development and indicators of financial infrastructure. The paper pointed out that a sharp dichotomy between the forward and backward groups of states had emerged.

Kurian inferred that governmental efforts during 1950-80 achieved only partial success in mitigating regional disparities. The enhanced role of the private sector since the early 1980s seemed to have aggravated the disparities. It was argued that focussed

investments in social and infrastructural sectors and purposeful decentralisation of decision making and financial powers with accountability would facilitate faster socio-economic development of the backward regions.

A single time trend may not adequately characterize the evolution of SDP per capita over time in most of the Indian states. Instability in growth rates over time is often a reality. Pritchett (2000) found considerable evidence of instability in growth rates in his analysis of patterns of economic growth in developing countries over the period 1960-92. Dholakia (1994) in his analysis of inter-state disparities in growth rates of 20 Indian states over the 30-year period 1960-61 to 1989-90 identified empirically the optimal year of shift in growth trend separately for each state, through the estimation of kinked exponential trend curve model. The results of this exercise are presented in Table 1. Earlier, Ganesh Kumar (1992) found through a similar exercise that over the period 1950-51 to 1989-90 the growth rate at the all India level recorded a shift of 1.6 percentage points in the year 1981-82. These results for All India are shown in the last row of Table 1.

In only five out of 20 states shown in Table 1 the growth rate remained stable over the 30-year period. These states were Haryana, Punjab, Rajasthan, Tamil Nadu and Arunachal Pradesh. In four states it decelerated at different time points; in Orissa as early as in 1967-68 and in Kerala in 1972-73. The implausibly high growth rate for Orissa during 1960-61 to 1967-68 could be due to date inaccuracy.

In the remaining 11 states, the growth rate accelerated from different years: for example, in Bihar the growth rate accelerated from 1967-68 by 3.6 percentage points and in West Bengal from 1982-83 by 2.6 percentage points.

Table 1
SDP Growth Acceleration / Deceleration in Indian States
during 1960-61 to 1989-90

State	Year of Shift	Growth Rate (%) in the First Sub Period	Increase / Decrease in Growth Rate	R^2 of the Kinked Trend Curve
(1)	(2)	(3)	(4)	(5)
Cases of Acceleration				
Andhra Pradesh	1968/69	1.6	2.1	0.970
Assam	1979/80	3.2	2.8	0.985
Bihar	1967/68	0.2	3.6	0.980
Gujarat	1973/74	3.0	1.8	0.954
Himachal Pradesh	1985/86	2.9	2.5	0.981
Karnataka	1985/86	3.7	2.6	0.987
Madhya Pradesh	1979/80	2.5	3.4	0.944
Maharastra	1972/73	2.9	2.0	0.992
Tripura	1972/73	2.4	2.4	0.986
Uttar Pradesh	1974/75	2.1	2.3	0.976
West Bengal	1982/83	2.5	2.6	0.985
Cases of Deceleration				
Jammu and Kashmir	1985/86	4.2	-3.0	0.987
Kerala	1972/73	3.9	-2.0	0.990
Manipur	1977/78	5.6	-1.5	0.986
Orissa	1967/68	10.1	-7.2	0.969
Cases of Unchanged Growth				
Arunachal Pradesh	--	7.1	--	0.990
Haryana	--	5.4	--	0.976
Punjab	--	5.1	--	0.995
Rajasthan	--	3.5	--	0.914
Tamil Nadu	--	2.8	--	0.963
All India	**1981/82**	**3.5**	**1.6**	**0.997**

Notes : (i) The period begins with 1970-71 for Assam and Arunachal Pradesh, with 1965-66 for Haryana and Punjab, with 1967-68 for Himachal Pradesh.

(ii) For Andhra Pradesh the period ends with 1988-89, and for Manipur the period ends with 1990-91.

(iii) For All India, the period extends from 1950-51 to 1989-90.

Source : Dholakia (1994), Table 1 and Table 3.

The results in Table 1 convey the impression that the patterns of SDP growth in Indian states over the 30-year period 1960-90 were indeed very diverse. Majority of the states experienced shift in the growth rate either in later 1960s or in early 1970s, many years ahead of the shift in the growth rate at the national level in 1981-82. Only three states, Himachal Pradesh, Karnataka and West Bengal registered improvement in growth rates after 1981-82. Allowance for a second shift in the growth rate in the methodology might have uncovered another shift for some of the states in the second half of the 30-year period.

It must be stated at this point that the growth rates for the different states calculated by Dholakia and reported in Table 1 are not consistent with the growth rates presented later in Table 3. The price deflators used by Dholakia for obtaining constant price series appear to be different from the ones used by Chaudhuri (2000) and others. The absence of appropriate state-specific price deflators is a serious problem faced by users of SDP data series for Indian states.

Chaudhuri (2000) in a comprehensive and insightful study traces the overall economic growth experience of 19 Indian states over the four decades: 1960s, 1970s, 1980s and 1990s. The analysis makes use of three data series, Central Statistical Organisation (CSO) being the data source in each case. The first series for the years 1960-61 to 1979-80 relates to net SDP. The second series, for the period 1980-81 to 1997-98, incorporated improvements in methodology and extension of coverage. The third series with base 1993-94 with significant extensions / changes in the coverage of economic activities was available at the time of the study for the years 1993-94 to 1997-98. The second and third series relate to gross SDP and GDP. As noted by Chaudhuri, the data for the different states and all-India may not be entirely comparable and this fact has to be kept in mind in any analysis using these data bases.

Income Level Differentials :

For the analysis of income level differentials, SDP per capita of each state for each year is expressed as a precentage of all India GDP per capita. These relatives are calculated separately for data in current and constant prices. For each state, Chaudhuri presents 3-year averages of the income relatives centred on the years 1961-62, 1965-66, 1970-71, 1975-76,

1981-82, 1985-86, 1990-91 and 1997-98 in Table 2 of his paper (data in current prices) and Table 3 of the paper (data in constant prices). The index of per capita SDP for the states for the years 1961-62, 1970-71, 1981-82, 1990-91 and 1997-98 with all India = 100 is presented in Table 2.[1]

In 1961-62, the leading states in terms of per capita income level in descending order were Maharastra (with income relative of 125), West Bengal (118), Gujarat (116) and Punjab (115); states in the vicinity of the national average were Tamil Nadu (102), Harayana (101), Assam (99) and Karnataka (96); states substantially below the national average were Rajasthan (90), Andhra Pradesh (88), Jammu and Kashmir (83), Kerala (80), Himachal Pradesh (79), Uttar Pradesh (77), Madhya Pradesh (75), Orissa (75) and Bihar (68).

In 1990-91, on the eve of the introduction of the major economic reforms in the country, Punjab (169), Haryana (152), Maharastra (152) and Gujarat (118), in descending order, enjoyed the highest levels of per capita income, Tamil Nadu (99), Himachal Pradesh (99), West Bengal (95) and Karnataka (95) were quite close to the national average. The rest of the states were appreciably below the national average.

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[1] Chaudhuri's analysis included two small states, Goa and Delhi. These states had the highest per capita income levels throughout the period 1960-98.

Table 2

Index of Per Capita State Domestic Product at Constant Prices
(All India =100): Selected Years

(Three year average centred on)

STATE	1961-62		1970-71		1981-82		1990-91		1997-98	
Andhra Pradesh	88	(11)	89	(12)	89	(12)	80	(10)	91	(10)
Assam	99	(8)	90	(11)	80	(14)	68	(15)	63	(14)
Bihar	68	(16)	63	(16)	58	(18)	53	(16)	48	(17)
Gujarat	116	(4)	126	(4)	123	(6)	118	(5)	147	(5)
Haryana	101	(7)	135	(3)	146	(4)	152	(4)	137	(6)
Himachal Pradesh	79	(14)	104	(7)	102	(8)	99	(6)	91	(10)
Jammu & Kashmir	83	(12)	86	(13)	106	(7)	79	(11)	72	(13)
Karnataka	96	(9)	102	(8)	94	(10)	95	(7)	110	(8)
Kerala	80	(13)	92	(10)	91	(11)	83	(8)	100	(9)
Madhya Pradesh	75	(15)	75	(14)	82	(13)	74	(12)	77	(12)
Maharastra	125	(2)	124	(5)	145	(5)	152	(4)	169	(3)
Orissa	75	(15)	89	(12)	73	(17)	69	(14)	59	(16)
Punjab	115	(5)	162	(2)	170	(3)	169	(3)	150	(4)
Rajasthan	90	(10)	89	(12)	76	(16)	81	(9)	84	(11)
Tamil Nadu	102	(6)	95	(9)	94	(10)	99	(6)	123	(7)
Uttar Pradesh	77	(14)	74	(15)	78	(15)	73	(13)	62	(15)
West Bengal	118	(3)	115	(6)	101	(9)	95	(7)	84	(11)
Delhi	211	(1)	200	(1)	249	(1)	248	(1)	197	(2)
Goa	N.A		162	(2)	211	(2)	224	(2)	209	(1)
Coefficient of variation	18.2%		24.1%		28.7%		33.1%		35.4%	

Source: Chaudhuri (2000), Table 3.
Note: Figures in parenthesis are ranks

YEAR	Correlation Matrix for the Index Series in Table 2									
1961-62	1.00		0.89		0.90		0.89		0.81	
1970-71	--		1.00		0.96		0.96		0.89	
1981-82	--		--		1.00		0.98		0.91	
1990-91	--		--		--		1.00		0.94	

By 1997-98, six years or so after the introduction of reforms, Tamil Nadu (123) and Karnataka (110) substantially improved their relative status in per capita income terms and joined the ranks of the group of four advanced states – Maharastra, Gujarat, Punjab and Haryana; Kerala reached the national average. Andhra Pradesh, Himachal Pradesh, West Bengal and Rajasthan too improved their relative status and moved closer to the national average. Assam, Uttar Pradesh, Orissa and Bihar suffered a further decline in relative status. The relative status of Madhya Pradesh, improved marginally, although it lagged far behind the national average throughout the period.

The coefficient of variation given in the last row of the table shows that interstate disparities widened steadily over time and this was inspite of the policy of balanced regional development pursued right from 1950-51.

The correlations between the index series for different years are given beneath Table 2. All the correlations are quite high. Most of them are equal to greater that 0.89. The implication of high positive correlations is that relative positions of the states did not undergo too many changes.

Growth Differentials :

We shall now analyse the inter-state growth differentials in the four successive decades, namely 1960s, 1970s, 1980s and 1990s for the group of 14 major states listed in Table 3. For the first decade, the NSDP figures are in 1960-61 prices, for the second decade in 1970-71 prices and for the subsequent periods in 1993-94 prices. The state-wise annual rates of growth of SDP per capita for the different periods are given in Table 3. In the last row of the table the rates of growth per capita GDP for all India are given.

The all India per capita GDP growth rate for the 1960s was 0.8 per cent per annum. The inter-state variation of per capita SDP growth rate was very pronounced with the coefficient of variation taking the value 258 per cent. Some of the initially high-income states like Maharastra and Gujarat registered very low growth rates, the low income state of Orissa registered the highest growth rate of 7.3, and this high figure may partly be a reflection of the poor quality of the data. Five large states showed negative growth. Two northern states, namely Punjab and Haryana achieved impressive growth rates. Kerala and Karnataka had growth rates above the national growth rate.

Table 3
Annual Growth Rates (%) of SDP Per Capita for 14 Major States :
1960s, 1970s, 1980s and 1990s

STATE / ALL INDIA	1960-61 to 1969-70	1970-71 to 1979-80	1981-82 to 1989-90	1990-91 to 1999-2000	1991-92 to 1995-96	1996-97 to 1999-2000
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	-0.4	1.1	4.4	3.8	4.0	4.0
Bihar	-1.3	0.6	2.2	0.8	-2.9	4.0
Gujarat	0.1	2.0	4.3	4.6	6.5	3.2
Haryana	2.6	2.2	3.8	2.7	0.9	3.8
Karnataka	1.2	1.8	3.6	5.2	5.1	6.7
Kerala	1.4	-0.2	2.0	4.7	5.3	4.2
Madhya Pradesh	-1.1	-1.0	1.9	3.2	1.9	2.9
Maharastra	0.4	3.3	3.9	4.6	5.7	3.8
Orissa	7.3	0.3	3.4	1.0	3.9	1.6
Punjab	3.5	3.2	3.8	2.5	2.4	3.5
Rajasthan	-1.1	0.2	4.6	3.4	1.8	3.0
Tamil Nadu	0.1	1.6	4.0	5.4	5.6	5.1
Uttar Pradesh	-0.2	0.4	2.6	2.1	0.9	3.4
West Bengal	0.0	0.7	2.0	5.0	4.8	5.7
Coeff. of Var. (%)	258	94	29	44	79	32
All India	**0.8**	**1.2**	**3.4**	**3.9**	**3.5**	**4.4**

PERIOD	**Correlation Matrix for Growth Rate Series in Table 3**					
1960-70	1.00	0.17	0.12	-0.36	0.17	-0.34
1970-80	--	1.00	0.54	0.35	0.26	0.19
1981-90	--	--	1.00	0.32	0.30	0.10
1990-2000	--	--	--	1.00	0.72	0.64
1991-96	--	--	--	--	1.00	0.26

Sources : (i) Growth rates for 1960s and 1970s are trend growth rates taken from Chaudhuri (2000).
(ii) Growth rates for 1980s and 1990s are annual averages based on SDP data in 1993-94
prices.

During 1970s, the all India growth rate improved to 1.2 per cent (from 0.8 per cent). Maharastra and Punjab and to a lesser extent Haryana and Gujarat achieved high growth rates. Karnataka and Tamil Nadu too achieved growth rates higher than the all India average. The growth rate for Andhra Pradesh, which showed negative growth in the previous decade, was slightly below average. Madhya Pradesh persisted in showing a negative growth rate of the order of 1.0 per cent. Kerala too showed a negative growth rate, albeit of a small magnitude. Growth rate for Orissa plummeted to 0.3 per cent. The coefficient of variation of the growth rates was much less (94%) compared to 1960s.

During the period 1980-81 to 1990-91, the all India growth rate accelerated steeply to 3.4 per cent from 1.2 per cent in the previous decade. All 14 states achieved growth rates above 1.9 per cent and improved their performance compared to the previous decade. The performance of Rajasthan (4.6 per cent), Andhra Pradesh (4.4 per cent), Gujarat (4.3 per cent), Tamil Nadu (4.0 per cent) was impressive. Haryana (3.8 per cent), Maharastra (3.9 per cent), Punjab (3.8 per cent) and Karnataka (3.6 per cent) too surpassed the all India average. Bihar, Kerala, Madhya Pradesh, Uttar Pradesh and West Bengal registered growth rates far below the all India average. The coefficient of variation of growth rates was the least (29 per cent) in this decade.

During the 1990s, when the all India growth rate accelerated further to 3.9 per cent, Tamil Nadu (5.4 per cent), Karnataka (5.2 per cent), West Bengal (5.0 per cent) and Kerala (4.7 per cent) fared exceedingly well. Gujarat (4.6 per cent) and Maharastra (4.6 per cent) further improved their performance. However, Haryana and Punjab suffered marked deceleration. Other states which decelerated in 1990s relative to 1980s were Andhra Pradesh (from 4.4 to 3.8 per cent), Bihar from (2.2 to –0.8 per cent), Orissa (from 3.4 to 1.0 per cent), Rajasthan (from 4.6 to 3.4 per cent) and Uttar Pradesh (from 2.6 to 2.1 per cent). The inter-state variability of growth rates in this period increased. The cross-state correlation of growth rates between 1980s and 1990s is rather small (+0.32), indicating instability of growth rates.

While in the 1980s all states improved their growth performance relative to the previous two decades, the performance in the 1990s was quite uneven.

States taking advantage of the reforms of the 1990s which allowed much latitude in policy making at the state level seemed to have performed better at the expense of the other states. In columns (6) and (7) of Table 3, growth rates for 1991-92 to 1995-96 and 1996-97 to 1999-2000 are compared. The differences between these two sub periods are quite considerable. At the all India level, the second sub period marked an improvement of 0.9 percentage points. Karnataka and West Bengal which had achieved high growth rates of 5.1 per cent and 4.7 per cent in the first sub period further improved to 6.7 per cent and 5.7 per cent, respectively. Gujarat and Maharastra decelerated considerably, from 6.5 per cent to 3.2 per cent and 5.7 per cent to 3.8 per cent, respectively. Six other states, namely, Bihar, Haryana, Madhya Pradesh, Punjab, Rajasthan, and Uttar Pradesh improved their performance in the second sub period relative to the first sub period. There was steep deceleration in the case of Orissa from 3.9 per cent to 1.6 per cent and in the case of Kerala form 5.3 per cent to 4.2 per cent. Andhra Pradesh maintained a moderate growth rate of 4.0 per cent, in the two sub periods and in relative terms the state's growth rate showed deterioration. The correlation of the growth rates for the two sub periods, though positive, is rather low (0.26), again pointing to instability of growth rates.

The growth patterns of the 14 major states are quite diverse. Growth was characterised by considerable instability. All the states improved their growth performance considerably in the 1980s. During the first five years of the reform period i.e. during 1991-92 to 1995-96, only Gujarat, Karnataka, Kerala, Maharastra, Orissa, Tamil Nadu and West Bengal further improved their growth record. Of these seven states, Gujarat, Maharastra, Kerala, Orissa and Tamil Nadu received a setback in the second half of the 1990s, while Karnataka and West Bengal forged ahead with better growth performance. Bihar, Haryana, Madhya Pradesh, Punjab, Rajasthan and Uttar Pradesh fared much better in the second half of the 1990s. At the end of the 1990s, the fourteen major states could be classified as follows :

Category		**States**
High income and high growth	:	Maharastra, Gujarat, Tamil Nadu and Karnataka
High income and low growth	:	Punjab and Haryana
Low income and high growth	:	West Bengal and Kerala
Low income and low growth	:	Andhra Pradesh, Madhya Pradesh, Rajasthan, Orissa, Bihar, and Uttar Pradesh

Volatility of Growth

Apart form instability, volatility appears to be a dominant characteristic of the economic growth of Indian states. In this paper the coefficient of variation of year-to-year growth rates for a state is taken as the measure of volatility. Dasgupta et al. (2000) computed this measure for the period 1970-71 to 1995-96. We have computed this measure for 1980s, 1990s and the two sub periods of 1990s. The figures are presented in Table 4.

Over the long period of 1970-71 to 1995-96, the four most volatile states were Orissa (631 per cent), Rajasthan (625 per cent), Gujarat (424 per cent) and Uttar Pradesh (413 per cent). The three least volatile states were Punjab (84 per cent), Maharastra (158 per cent) and Kerala (178 per cent).

The volatility of growth at the national level was lower in the 1990s (49 per cent) than in the 1980s (68 per cent). During 1980s, Gujarat (297 per cent), Rajasthan (291 per cent), Madhya Pradesh (276 per cent) and Orissa were the most volatile states. Punjab (64 per cent), Karnataka (100 per cent), Maharastra (113 per cent) and Uttar Pradesh (119 per cent) were the least volatile states.

Table 4
Volatility Measures of SDP Per Capita Growth for 14 Major States : 1970-95, 1980s and 1990s

State / All India	Coefficient of Variation of year-to-year growth rates				
	1970-71 to 1995-96	1981-82 to 1989-90	1990-91 to 1999-2000	1991-92 to 1995-96	1996-97 to 1999-2000
(1)	(2)	(3)	(4)	(5)	(6)
Andhra Pradesh	358	150	113	109	135
Bihar	327	221	706	197	80
Gujarat	424	297	227	216	198
Haryana	261	205	134	290	107
Karnataka	277	100	69	65	44
Kerala	178	204	47	51	49
Madhya Pradesh	N.A.	276	154	317	66
Maharastra	158	113	99	104	82
Orissa	631	272	856	114	463
Punjab	84	64	74	39	59
Rajasthan	625	291	256	580	218
Tamil Nadu	255	126	52	72	26
Uttar Pradesh	413	119	141	210	124
West Bengal	194	167	30	39	11
All India	**N.A.**	**68**	**49**	**72**	**29**

Sources : (i) The figures for 1970-71 to 1995-96 are from Dasgupta et al. (2000).
(ii) The figures for 1980s and 1990s are based on SDP data in 1993-94 prices.

During 1990s, while volatility at the national level declined, states like Orissa (856 per cent) and Bihar (706 per cent) experienced extreme volatility. Economic growth in West Bengal (30 per cent), Kerala (47 per cent), Tamil Nadu (52 per cent) and Karnataka (69 per cent) was least volatile.

Most of the 14 states were characterised by instability and volatility of growth rates during the period 1970-2000. Only a few states recorded almost steady improvement in growth performance during the last two decades. Several states continued to lag behind others. Raising the growth rates in such states is the major policy imperative in the coming decades.

4.   Determinants of Growth in Indian States

At the outset, we shall briefly comment on the sources of growth at the national level. We have two sets of estimates, one by Sivasubramonian and the other by Dholakia. Sivasubramonian (2004) recently undertook a very careful analysis of the sources of growth in the Indian economy during the period 1950-2000, and showed that TFP accounted for 32 per cent of GDP growth. The relative importance of TFP varied over time; TFP's contribution was highest (43%) during 1950-64 and least (13%) during 1965-80 and relatively moderate (35%) during 1980-2000. Dholakia (2002), a veteran in productivity analysis, showed that TFP accounted for about 22% of GDP growth during the pre-liberalisation period 1960-85, and for about 48% during the liberalisation period 1985-2000. The two sets of estimates, which of course need to be reconciled, highlight the importance of TFP in Indian economic growth.

Qualitative Assessment of Determinants :

Sachs et al (2002) attempt a detailed qualitative assessment of the factors behind inter-state growth differentials. Others argue that the manufacturing sector rather than the agriculture sector is a more consistent engine of growth and it is likely to play a growing role in a liberalised economy. The most suitable sites for sustained manufacturing growth in India as in China are along the coast, especially at the four large port cities of Mumbai (Maharastra), Kolkata (West Bengal), Chennai (Tamil Nadu) and Kandla (Gujarat). High-tech

services or financial services are much less dependent on coastal locations. The most important state for service sector activities is Maharastra. Other key states include Tamil Nadu, Karnataka, Delhi and Andhra Pradesh.

Urbanisation is likely to be a key determinant of growth. A 10-percentage-point higher rate of urbanisation is associated with 1.3 percentage points a year higher annual growth.

Sachs et al note that these are major differences across Indian states in the area of policy reform. Maharastra, Tamil Nadu, Gujarat, Karnataka and Andhra Pradesh have been more reform-oriented; Haryana, Kerala, Orissa, Madhya Pradesh, Punjab, Rajasthan, and West Bengal are somewhat behind in undertaking policy reform. Bihar and Uttar Pradesh are far behind. With the exception of Andhra Pradesh, the reform oriented states are also the fastest growing states in the post-reform period.

Sachs et al list several possible hypotheses for the lack of unconditional convergence among Indian states:

(1)   the geographical differences in India are larger than in the US, Europe and Japan.
(2)   population movements in India do respond very slowly to income differentials.
(3)   policies of the national or state governments do not facilitate convergence and
(4)   economic convergence is slower at lower levels of economic development as in India (or China).
Coastal access and climate are also factors in convergence.

The Indian states vary considerably in social indicators such as infant mortality rate and adult literacy. The simple correlation between growth and literacy is positive, but disappears once we control for urbanisation which is correlated both with growth and with the degree of literacy.

Sachs et al observe that there is much more growth potential in India than has been achieved to date. While in India, per capita growth rates of states have ranged between 2 and 8 per cent per annum, China's provinces have achieved between 8 and 13 per cent a year growth during 1992-98.

Many coastal cities (Thiruvanthapuram, Kochi, Bhubaneshwar, and Visakhapatnam) have not so far attracted FDI. Continuing control of the central government over regional infrastructure have frustrated the efforts of the reform-oriented state government. A careful balance will have to be struck between two kinds of investments in the rural hinterland: physical infrastructure and human capital-mainly education and health to raise the productivity of the rural population.

Quantitative Assessment of Determinants :

Several recent studies attempted a quantitative assessment of determinants of growth in the states of India. Some studies have attempted to test the hypothesis of β-convergence. Both types of studies will be reviewed in this section.

A very perceptive and influential paper by Ahluwalia (2000) analysed the growth performance of 14 major Indian states in the post reform period 1991-92 to 1998-99 and compared it with the performance in the previous decade. The paper attempted to analyse the causes of the growth disparities and to identify the policy measures needed for the acceleration of future growth in the slow growing states.

The paper noted that the dispersion of growth rates of states increased considerably in the post-reform period: the coefficient of variation of growth rates increased from 15 per cent in the 1980s to 27 per cent in the 1990s. Growth accelerated in the richest states of Gujarat and Maharashtra, while it decelerated in the poorest states of Bihar, Uttar Pradesh and Orissa.

In regard to determinants of growth in the post-reform period, private investment rate, literacy rate, tele density, proportion of villages electrified and per capita energy consumption were found to be individually positively correlated with SDP growth.

Shand and Bhide (2000) analyse the sources of economic growth in 15 major states over the period 1970-1 to 1995-6. The paper presents useful data, in a comparative framework, for each state on sectoral distribution of NSDP for triennia ending (TE) in 1972, 1982, 1990 and 1995, average annual growth rates of aggregate NSDP and sectoral NSDP in constant (1980-81) prices for the periods 1971-80, 1981-90, 1991-95 and 1992-95.

By way of analysing the determinants of growth, the authors present rank correlation coefficients between NSDP growth rate and (i) alternative measures of size of state (ii) relative sizes of sectors, (iii) life expectancy and literacy, and (iv) Banking infrastructure and social expenditures.

Panel data regressions from data for 15 states over three time periods, 1972-82, 1982-90, and 1992-95, suggest agricultural growth has positive impacts on industrial growth and service sector growth. Agricultural growth is affected positively by land productivity in agriculture and negatively by the share of agriculture. The regression results are useful in understanding growth. However, careful attention to issues of specification and estimation of the relationships may yield more convincing results. The study suggests that reform in the agriculture sector will yield very beneficial results as growth in this sector is found to have a positive and significant impact on overall growth. The importance of infrastructure and human development has also been brought out.

In a related study, Bhide and Shand (2000) bring out the stark differentiation between "progressive" and "backward" states. In the 1990s, the four fastest growing states of Maharastra, Gujarat, Tamil Nadu and West Bengal together accounted for 56 per cent of the growth in real NSDP, the share of Maharastra alone being 28 per cent. Good performers such as Maharastra achieved high growth in all three sectors of agriculture, industry and services. Poor performers such as Orissa and Assam fared badly in all the three sectors. Infrastructure appears to have a facilitating role. Growth appears to be negatively related to the size of public administration.

Karnik et al (2000) examined the role of institutional and political factors in the economic performance of Indian states. A Gallup organisation's opinion poll of CEOs of about 100 companies, some Indian and rest transitional, covering the years 1995, 1997 and 1999 constituted the data base for the analysis. This data set is similar to that employed by Knack and Keefer (1995) in their cross-country study on institutions and economic performance. The poll asked respondents to rank 27 Indian states on the basis of their perceptions regarding infrastructural, institutional and political conditions in the states in order to explain the attractiveness of these states as investment destinations.

A two equation model consisting of an investment equation and social infrastructure equation was estimated from cross-sectional data for each year (1995, 1997, 1999) and from pooled data for 21 states. The results suggest that rather than physical infrastructure social infrastructure as determined by institutional and political factors is an important determinant of the attractiveness of state as an investment destination.

Ghosh, Marjit and Neogi (1998) used the data for 26 states for 35 years, 1960-61 to 1994-95 to test the hypothesis of absolute convergence and found strong evidence for divergence. The coefficient of variation of per capita SDP declined mildly between 1961-62 and 1981-82 from 33.9% to 31.8%. The CV increased steadily after 1981-82 reaching the value of 43.4% in 1993-94. The study used the consumer price Index Number for Agricultural labourers available for 15 states for deflating the nominal net SDP figures to obtain the real SDP figures. This was an improvement over studies which used some all-India level deflator.

In an important contribution, Rao et al (1999) analysed the determinants of growth of per capita SDP with data for the 14 major states. Growth rates of per capita SDP were estimated from semi log trend equations for six different periods all ending in 1994-95: 1965-94, 1970-94, 1975-94, 1980-94, 1985-94 and 1990-94. The growth rate so estimated was the dependent variable in the regressions for the different periods. The explanatory variables were (a) initial level of per capita GDP ($\ln y_o$), (b) literacy rate in the initial year as a proxy for human capital stock (ln literacy), (c) ratio of state government expenditure to SDP (G/ Y) averaged for the period, private industry investment in the state proxied by the ratio of loans given by all India fiancial institutions to SDP (ln AIFI) and (d) adoption of technological

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change in the agriculture sector proxied by the consumption of fertilisers per hectare of sown area (ln FERT).

The coefficient on the initial income variable was significantly positive in the regressions for longer periods 1965-94, 1970-94 and 1975-94, indicating β-divergence. The coefficient was negative for the shorter periods 1980-94, 1985-94 and 1990-94. However, it wass significant only in the case of the growth regression for the 15 year period 1980-94. Thus the evidence in support of convergence hypothesis was quite weak and the evidence for divergence was strong.

The variable proxying private investment was found to be the most important determinant of growth. Next in importance was the literacy variable. However, its coefficient had a perverse sign in some regressions. Other variables were not significant.

It is not very clear why growth over six different periods, the lengths of the period varying between 5 and 30 years, were considered for the analysis.

The authors went into the possible reasons for divergence and found that the skewed distribution of public expenditures attracted larger flows of investments to more affluent regions of the country. Affirmative measures to correct imbalances in the spread of infrastructure were needed. The authors argued that the impact of explicit centre-state transfers on regional inequalities was moderate and these effects were outweighed by implicit transfers through subsidized lending and through tax-exportation.

Subrahmanyam and Rao (2000) used per capita NSDP data for 17 major states for the years 1965-66 to 1996-97. The study distinguished between the "Green Revolution" period of 1965-84 and the "Liberalization" period of 1985-97 and tested the hypothesis of absolute convergence. No evidence of convergence was found in either period. The tendency for divergence was strong in the liberalization period, while it was mild in the green revolution period. The performance of the manufacturing sector was found to be highly divergent in the liberalization period.

Dasgupta et al (2000) used per capita NSDP data in 1980-81 prices over the period 1960-61 to 1995-96 for 21 states to analyse inter-state disparities in growth. However, much of the analysis related to the period 1970-71 to 1995-96. One interesting feature of this study was that it highlighted the inter-state diversity in volatility of year-to-year growth rates, with the coefficient of variation ranging between 84 per cent for Punjab and 630 per cent for Orissa. In addition to Orissa, Rajasthan, Gujarat, UP, and Delhi displayed high volatility of growth rates.

The study compared for each state four estimates of the growth rate over the period 1970-71 to 1995-96: the arithmetic mean, the geometric mean, the median of year-to-year growth rates and the trend exponential growth rate. There were considerable differences among the four estimates, though the ranking of the states in terms of the alternative estimates was not much different. The arithmetic mean of year-to-year growth rate and the trend exponential growth rate were found to be close to each other.

σ-convergence was analysed with respect to aggregate SDP, SDP in agriculture, manufacturing, service sector and infrastructure sector. Convergence was found only in the service and in the infrastructure sectors.

There was evidence of absolute divergence. No test of conditional convergence was reported.

The analysis of Nagaraj et al (2000) used panel data for 17 states including Assam, Himachal Pradesh, and Jammu and Kashmir, for the years 1960-94. The growth regression included, apart from lagged per capita SDP, the share of agriculture, the relative price of agricultural and manufactured goods, several infrastructure indicators and fixed effects for states as explanatory variables. Evidence for conditional convergence was found. The results of the study suggested that focusing investment efforts on physical infrastructure (electricity irrigation and railways) social infrastructure (human development) would raise the overall effectiveness of public investment and raise growth. The paper drew attention to the issue of fiscal federalism in implementing public investment programmes.

In the light of Pritchett's (2000) strictures against the use of high frequency data for growth regressions, the econometric results of the study have to be interpreted with due caution.

In a recent study, Aiyar (2001) followed the panel data regression approach with data for a sample of 19 states over the period 1971-96 and used the Last Squares with Dummy Variable (LSDV) method of estimation. He maintained a clear distruction between absolute and conditional convergence and estimated the corresponding models. The dependent variable in each model was the growth rate over a five year period. Literacy rate (LIT) and private capital investment (PVK) the latter proxied by the amount of bank credit per capita were the explanatory variables. The assumption was that these variables had a bearing on the state's state growth rate.

Two regressions were computed. For regression 1 which assumed a common steady state, the estimated convergence rate was <u>minus</u> 0.013, implying absolute divergence at the rate of 1.3 per cent over a five year period. For regression 2 which included LIT and PVK and fixed effects for the 19 states, the estimated convergence coefficient was very high at 0.199. Thus the results of the study provide strong evidence for absolute divergence and conditional convergence. The estimated partial elasticities with respect to LIT and PVK were statistically significant with values equal to 0.76 and 0.15 implying strong effects of the conditioning variables on growth of per capita SDP. The results are interesting. But they are subject to the serious limitations of the use of high-frequency panel data in the context of analysis of growth determinants highlighted by Pritchett (2000).

Singh and Srinivasan (2000) refers to 1990s. It attempted to analyse inter-state differences in the growth of per capita SDP in 1998-99 over that in 1990-91. 14 major states were in the sample. The major focus of this part of the paper was to examine the role of capital flows in explaining inter-state differences in growth rate. Three financial variables were explored: FDI approvals per capita during the decade 1991-2000, per capita bank credit as a proxy for private investment) in 1990 and credit-deposit ratio for 1990.

The evidence for convergence or divergence was found to be inconclusive. The results suggested complementarity between domestic and foreign capital flows.

The study made an important point that the SDP measure excluded remittances by internal and external migrants, and to this extent, it was not a suitable measure of income accruing to residents of the state.

The paper considered possible reforms in intergovernmental relations. In this regard its approach is similar to that of Rao et al (1999).

Mathur (2001) analyses some facets of national and regional economic growth since 1950s, but with a specific focus on the eighties and nineties. During 19991-96, a steep acceleration in the rise of the coefficient of variation of per capita incomes is noticeable.

Within the group of middle income states a tendency towards convergence is noticed; there is evidence of divergence within the groups of high and low income states.

The studies reviewed above have differed in regard to the sample of states covered, period (s) of analysis, and the explanatory variables used to represent the steady state in the growth regressions. While most of the studies have achieved some success in accounting for the differences in growth rate differences across states (and over time in the case of panel regressions), they have not helped in reaching a consensus on convergence or divergence or in identifying the growth determinants. The Nagaraj et al, study brought out the importance of physical and social infrastructure in addition to that of terms of trade (between industry and agriculture) and the share of the agriculture sector in SDP. But this result cannot be accepted at its face value in the light of the limitations of the panel data approach highlighted by Pritchett (2000).

The finding of Rao et al (1999) that private investment and literacy are significant determinants of growth appears plausible. The finding of conditional divergence also appears credible.

In conclusion of this section, it must be added that there is need for exploring other approaches to explaining growth, as suggested by Pritchett (2000).

5.   Concluding Remarks

This paper has attempted a somewhat preliminary account of the patterns and determinants of growth in Indian states during the period 1960-2000. Much of the paper has covered 14 major states which together account for a little over 90 per cent each of the population and the GDP of the country.

It has been found that growth in the different states during 1960-2000 was charcterized by instability and volatility. The degree of volatility was very high in some states. It would be instructive to extend the analysis to sectoral growth rates and identify the sectors contributing to volatility and instbility.

Inter-state disparities in income levels and growth rates as measured by the coefficient of variation increased over time. However, the relative positions of many states remained unchanged.

Although the evidence was not conclusive, several of the studies pointed to conditional divergence, implying that long term growth rate and initial income level displayed negative association when allowance was made for differences in steady state levels.

The growth regressions based on cross-section data or panel data left much to be desired, as is true of growth regressions in general. Detailed case studies of the growth experiences of individual states need to be explored in future on the lines suggested by Pritchett (2000).

This paper has had a narrow scope in the context of studying economic performance of Indian states. It is worthwhile to extend it in various directions. Some illustrative areas are :

a)   Sectoral aspects of SDP growth – agriculture industry and service sectors. (This has been attempted by Bhide, Shand and Mathur)

b)   Human Development

c)   Infrastructure Development

d)   Poverty Reduction

e)   Fiscal Viability

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