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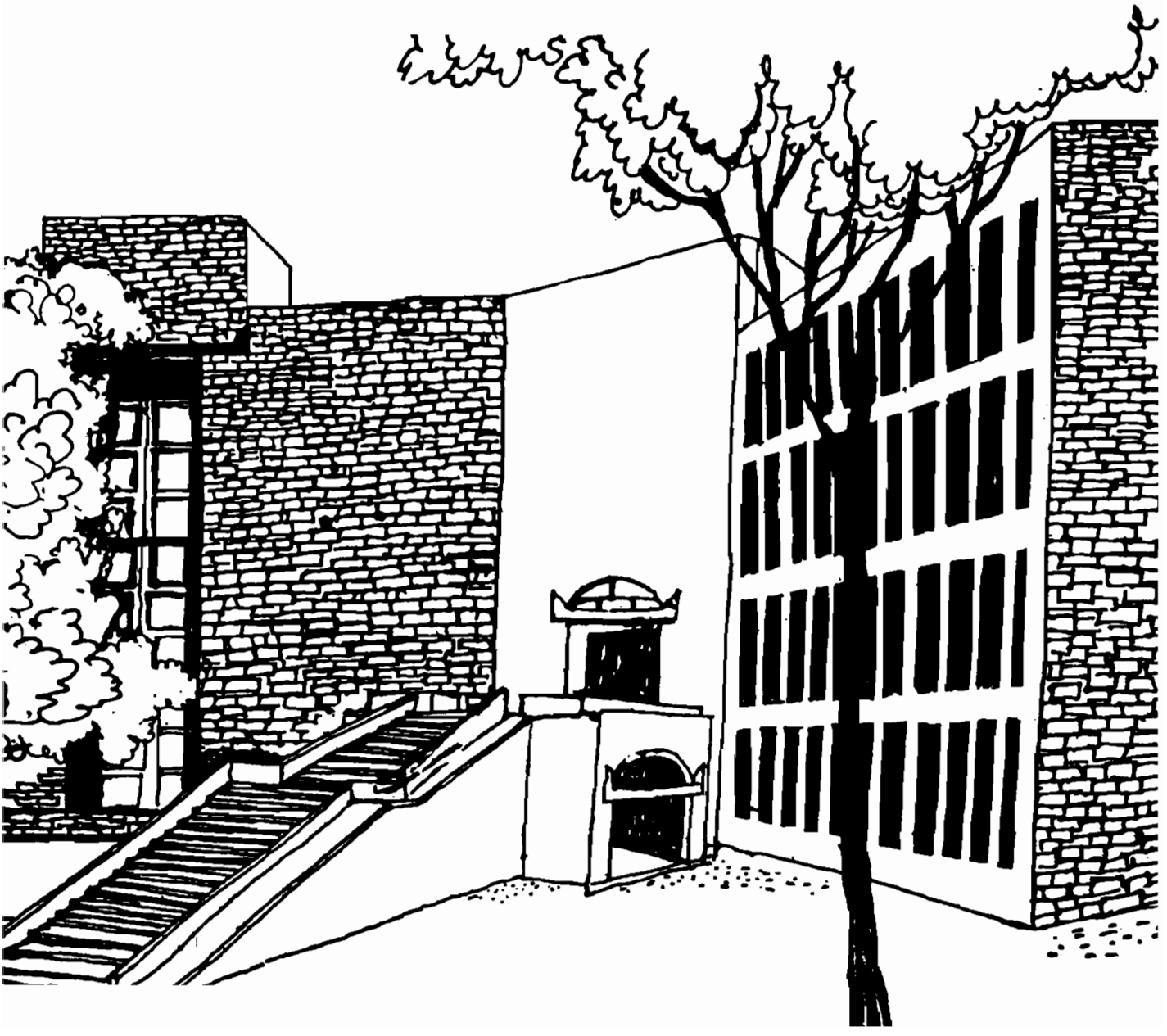

SPATIAL DIMENSION OF THE ACCELERATION OF ECONOMIC GROWTH IN INDIA

By

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The study of 20 state economies of India over the period 1960-61 to 1989-90 reveals that the phenomenon of acceleration in economic growth is spatially dispersed and covers about two-thirds of the national economy. The study also finds that most of the states experiencing growth acceleration are relatively less well off. There are marked tendencies for convergence of long term economic growth rate among Indian states. The growth experience and development strategies differ significantly among states. The leading states also show different patterns of growth. In the Indian industrial sector, the existence of a sharp north-south divide is further corroborated. The spatial dimension of economic growth in India needs further exploration and explanation.

Spatial Dimension of the Acceleration of Economic Growth in India

I. Introduction

India has experienced marked acceleration in economic growth around the late seventies and early eighties. A sharp increase in the long term growth rate of real domestic product from less than 3.5 per cent in the earlier period to more than 5 per cent in the later period is reported in several studies [e.g. Nagraj, 1990 and 1991; Bhargava and Joshi, 1990; Ganesh, 1992; etc.]. Ganesh (1992) has examined the sectoral dimension of such acceleration in India's growth rate. He considered the standard three sector classification of the primary, secondary and tertiary sectors. Goldar and Seth (1989) considered spatial variations in the growth of the registered manufacturing sector of 12 major state economies. Their findings reveal considerable variation in the growth experience of state economies in India. They also traced the deceleration in industrial growth after the mid-sixties and the recovery after the mid-seventies to the intertemporal variations in industrial growth experienced by 5 state economies of Bihar, West Bengal, Orissa, Rajasthan and Uttar Pradesh which account for about one-third of India's registered manufacturing sector. However, there is hardly any effort to address the question of identifying the regions which might have triggered the acceleration in overall growth. It would also be informative and important to examine whether the acceleration in the Indian growth rate is on account of the economically better off states or economically poorer states. Similarly, it needs to be investigated whether the phenomenon of acceleration is confined only to a small geographical region or covers a large region; whether it is concentrated in some specific parts of the country or is geographically widespread. In the present paper, an attempt is made to investigate these questions.

The next section is devoted to the discussion of the methodology followed and data used in the present study. In the third section, we examine the question of the regional spread of the phenomenon of acceleration of the overall growth of real domestic product in India. The question of identifying the state economies which might have led the acceleration in the Indian growth rate is investigated in the fourth section. There we also examine the behaviour of growth paths of individual state economies in the primary, secondary and tertiary sectors separately. The fifth section is devoted to the discussion of growth experience of the lagging state economies. The sixth and final section summarises the main findings of the study.

II. Methodology and Data

Methodologically there are two distinct questions which one can address: (a) To establish that the time trend has shifted from a given year. It involves dividing the time series into sub-periods with the given year as a dividing line and establishing that the trend rates of growth in the two sub-periods differ significantly. In this case, the given year or the dividing line is chosen exogenously of the data set. Generally, in practice, it is chosen quite arbitrarily. (b) The other question is to identify the exact year in which the time-trend has shifted, if at all. In this case, the year of shift in the trend is treated endogneously and the year is identified with the help of the given time series data only. In the case of India, most of the studies investigating the acceleration in the growth rate have addressed the first question of establishing whether India experienced a shift in her time-trend during the exogenously chosen year which differed from study to study. (See, Nagraj, 1990 and 1991; Bhargava and Joshi, 1990; Goldar and Seth, 1989; etc.) Only Ganesh (1992) attempted the second question of identifying the year of shift in the time trend from the given time series data.

The standard methodology adopted to address the question (a) of establishing a shift in the trend during the chosen year is to fit a kinked trend line with the kink occurring at the chosen year. This is accomplished by fitting the following regression equation (See, Gujarati, 1988, p.455):

$$(1) \qquad \text{Ln } Y_t = a + bt + c\,(t-t^*)\,D + u_t$$

where Ln Yt represents natural logarithm of income (or dependent variable) in the year t, t^* is the chosen year of shift in the trend, D is the dummy variable which takes value 1 for years after t^* and zero otherwise, u_t is the error term, and a,b and c are coefficients to be estimated. The coefficient b represents the growth rate and the coefficient c can be interpreted as the magnitude of the shift in the growth rate after the chosen year t^*. The statistical significance of the coefficient c would, thus, establish whether the time trend shifted during the chosen year. The sign and value of c would establish respectively the direction and magnitude of the shift if found statistically significant.

In order to investigate question (b) of identifying the year of shift, the usual procedure would be to apply the switching regression technique and then carry out the test suggested by Quandt (1958). Ganesh (1992) followed the same procedure but following Moschos (1989), applied a test equivalent to the one suggested by Quandt (1958). The whole procedure consists of estimating regression equation (1) given above separately for alternative values of t^* around the likely point of shift in the trend. The most appropriate year of break is then identified as the optimal value of t^* for which the corresponding regression has maximum r-square (See Silber, 1974) or has maximum t-value of the coefficient c in the above-mentioned equation (1) (See, Moschos, 1989). We have used the same procedure with switching regression technique but after correcting for the first order autocorrelation through Cochrane-Orcutt iterative method. (For details, See Gujarati, 1988, p.383-384).

While considering the regional aspects of growth acceleration, it may be of interest to establish whether state economies also experienced the shift in their growth path during the same year in which the nation as a whole experienced the acceleration in the growth. This exercise which is carried out in the following section, would help to examine the geographical spread of the phenomenon of growth acceleration. Obviously, one does not expect that the phenomenon would be spread over all the state economies in the country. By establishing the regions experiencing the growth acceleration simultaneously with the national economy, it would be possible to test the hypotheses about the proportion of the economy, the geographical concentration in the economy, and the nature of the state economies (rich or poor) experiencing the phenomenon of growth acceleration. However, in order to identify the state economies, or a part thereof, which triggered forces ultimately leading to the growth acceleration of the national economy, we have to identify the years of break of time trend in different sectors of each economy. By considering the sequencing of the optimal time points showing the break in the time trend of different sectoral incomes in different states, valuable insights in the process of growth acceleration of the national economy can be gained. Both these exercises have been carried out and the results are discussed in the following two sections.

The basic data used in the present study are obtained from the various volumes of the CSO publication on *Estimates of State Domestic Product*. It is possible to get a comparable set of reasonably long time series of data on SDP for 20 state economies in India. These 20 states are mentioned in the first column of all the tables given here. The concept of SDP used in the present study is a net domestic product concept and is based on income originating in the state rather than income accruing to the state. The three-sector classification is also considered in the study. The primary sector consists of agriculture and allied activities, fishery, forestry, and mining & quarrying sub-sectors. The secondary sector includes manufacturing, construction, and electricity, gas & water supply. The tertiary sector comprises the rest of the sub-sectors. The CSO publications on SDP do not provide data on SDP at uniform constant price figures for a given state over the whole period from 1960-61 to 1989-90. In order to have a consistent set of data on SDP and its sectoral break up for each of the state economies at 1980-81 constant prices, the usual procedure of linking the indices by changing the base of constant prices is followed. For Madhya Pradesh, however, the SDP estimates are at 1970-71 prices. *Table-1* provides the basic information on the period for which SDP data are obtained for each state for the present study.

[[[Table 1 somewhere here]]]

III. Regional Spread of Acceleration of Growth

Ganesh (1992) has identified the year 1981-82 as the most appropriate year of break in the time trend of real income in the Indian economy. His finding is based on a long time series of gross domestic product (GDP) at 1980-81 prices from the year 1950-51 to 1989-90. In order to examine the question of regional spread of the phenomenon of acceleration in the overall growth of real income in India, therefore, the year 1981-82 may be considered as the given point of break in the trend rate of growth for each of the state economies. Following the kinked trend line (equation 1) method described in the previous section, it is possible to estimate the regression with the help of overall real SDP for every state economy. The results are reported in *Table-2*.

[[[Table-2 somewhere here]]]

The results reported in *Table-2* indicate that the kinked trend line equation fits very well to the state level real SDP series. The goodness of the fit revealed by the r-square statistic is excellent in the case of every state economy without exception. Similarly, the basic trend rate of growth (coefficient b in the equation 1 above) is also statistically highly significant in all the 20 state economies. It is only the shift parameter c of equation (1) above indicating the extent of acceleration or deceleration that turns out to be statistically significant only in a few state economies. In as many as 14 out of the 20 state economies, the shift parameter does not turn out to be statistically significant even at 10 per cent level of significance. Thus, the phenomenon of the break in the trend rate of growth observed for the Indian economy in the year 1981-82 is not evenly spread regionally but has occurred only in some parts. The states where clear acceleration in the growth is established in the year 1981-82 are Karnataka (1.14%), Madhya Pradesh (3.68%), Maharashtra (1.74%), Tripura (1.70%), Uttar Pradesh (2.61%), and West Bengal (2.17%). Bihar (1.67%) and Assam (1.87%) also experienced acceleration in their trend rate of growth but the level of statistical significance of the shift parameter is somewhat less satisfactory in their cases, though with more than 85% level of confidence one may conclude about the positive shift in their time trend during 1981-82. All these states except Karnataka experienced the acceleration in their growth rate at a rate well above the one experienced by the Indian economy (1.63%). This is not surprising because a large number of states did not experience any shift in their trend rate of growth during 1981-82. Hence the national average gets pulled down as compared to the states where the shift in the trend can be established during 1981-82.

Once it is accepted that the phenomenon of growth acceleration from 1981-82 can be established only in 6 to 8 states out of 20 state economies in India, it is interesting to examine the characteristics of those 6 to 8 state economies. Firstly, it is worth noting that these states are geographically spread and cover a large area. In terms of the zones, these states cover all the five zones, viz. North, East, West, South and Central. Secondly, most of these state economies are large in terms of population, geographical area, employment and income. They in aggregate, account for approximately 60 to 70 per cent share in the Indian economy. Thus, although the phenomenon of growth acceleration from 1981-82 in the Indian economy was not evenly spread geographically, it is reasonably widespread. Thirdly, all these states except Maharashtra are not economically very well off as compared to the national average. In fact, Bihar, Madhya Pradesh and Uttar Pradesh are among the poorest states in terms of per capita income in the country. Moreover, these states had the basic trend rate of growth much below the national average of 3.52% prior to 1981-82. The extent of acceleration experienced by these states in their growth rate is also phenomenal. The growth acceleration in the Indian economy seems to have been regionally more equitous ultimately.

Several of the lagging states have started growing relatively rapidly after 1981-82 as compared to the earlier phase. On the other hand, the states which grew rapidly during the period prior to 1981-82 have not experienced significant increase or decrease in their long term growth rates. The interstate variation in the long term economic growth in India seems to have reduced considerably after 1981-82. The tendency for equality in the overall growth rate of incomes among states has interesting implications on factor efficiency and hence

on factor rewards and resource allocation across states. Assuming that the richer states are saving and investing a greater proportion of their income than the poorer states, equality of their growth implies one of the following: (i) the incremental capital-output ratio (ICOR) is higher for the richer states and lower for the poorer states; or (ii) capital moves from the richer states to the poorer states. If capital flows from the richer to the poorer states, the labour migration in the reverse direction would reduce because more jobs would be created in the poorer states and less in the richer states. If, however, capital does not flow from the richer to the poorer states, the capital would be earning the same rate of return in the richer states as in the poorer states. But, then, higher ICOR in the richer states would imply a lower labour cost per unit of investment in the richer states than in the poorer states.[1] Thus, the richer states would be specializing in more capital intensive commodities and the poorer states in more labour intensive commodities. Such a pattern of growth would also check the labour migration from the poorer to the richer region because the relative factor prices would also tend to equalize among states. What is more important to note is that under such conditions of growth, the globalization and liberalization of the Indian economy would impose much higher burden and pain of structural adjustment and restructuring on the richer states as compared to the poorer states. It is quite possible that the poorer states would stand to gain significantly out of the opening up of the Indian economy. In order to examine detailed implications of the reduced interstate variations in economic growth in India after the growth acceleration of the eighties, it is necessary to undertake an indepth inquiry relating to factor growth, factor incomes, technical progress and comparative advantage of state economies which is beyond the purview of the present study.

IV. Leaders of the Growth Acceleration

In order to identify the year in which different state economies experienced a significant shift in the time trend of their income, the technique of switching regression described in the section II above was followed. As noted there, all regressions were corrected for the first order autocorrelation by following the Cochrane-Orcutt interative procedures. If the shift parameter c turned out to be statistically insignificantly different from zero even at 10% level of significiance in all the alternative regressions tried, the shift variable was dropped and the simple log-linear time trend equation was fitted. This exercise was carried out for incomes of all the 20 states in the three broad sectors and the total of all sectors. The results are reported in *Tables 3 to 6.*

[[[Table-3 somewhere here]]]

Table-3 presents the optimal year of shift, and the estimates of the basic trend rate of growth as well as the shift parameter for total real income (SDP) in all the 20 state economies and all India. It can be seen from the table that Arunachal Pradesh, Haryana, Punjab, Rajasthan, and Tamil Nadu did not experience any significant shift in their time trend over the period under consideration (See, *Table-1*). Out of these, Arunachal Pradesh, Haryana and Punjab can be considered as 'high growth' states since their trend rate of growth is in excess of the basic growth rate of the Indian economy until 1981-82 (3.52%) by more than 25% of it. Out of the remaining 15 state economies which experienced significant shift in their time trend of income at some year during the period under consideration, as many as nine states turned from low or medium growth economies to the high growth economies. These states in the alphabetical order are: Assam, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Tripura, Uttar Pradesh, and West Bengal. Out of the remaining states, Andhra Pradesh and Bihar experienced significant acceleration during the late sixties to turn into medium growth states from low growth states. However, after 1981-82, they have again slided down the relative scale since the national growth rate got accelerated, too. Jammu & Kashmir and Kerala were medium growth states but experienced significant deceleration in their growth to become low growth state of late. Manipur and Orissa started off as high growth states but experienced considerable deceleration in their growth with the result that Orissa became medium growth and now a low growth state and Manipur turned into a medium growth state. Thus, growth experience differs considerably among states in India during the period under consideration.

Another important observation from *Table-3* is that different state economies experienced shift in their time trend of income in different years spread over the whole time span under consideration. There is hardly any appreciable clustering of states in any year during the period experiencing shifts, particularly acceleration. This essentially captures the location and nature of growth impulses experienced over time in the Indian economy. Considerable gains in terms of higher growth with equity could be obtained by strategically concentrating efforts in the states like Kerala, Jammu & Kashmir, Manipur, Orissa, Rajasthan and Tamil Nadu. These states could be turned into high growth states with planned efforts.

The sequencing of the optimal years of shift experienced by different states as revealed by *Table-3* suggests about the states which might have led the process that culminated into growth acceleration of the Indian economy during the eighties. As noted earlier, Arunachal Pradesh, Punjab and Haryana were already the high growth states and continued to be so throughout the period under consideration. The states which might have triggered the process of growth acceleration in the Indian economy are the ones which experienced significant acceleration in their growth rates to turn into high growth states. Maharashtra and Tripura were the first to experience such an acceleration in the year 1972-73, followed closely by Gujarat in 1973-74 and Uttar Pradesh in 1974-75. After a considerable lag, Assam and Madhya Pradesh also turned into high growth states in 1979-80. On margin, this would have tilted the balance (or the national average) also to shift to the high growth path. The roots of India's growth acceleration, however, can be traced to the growth exprience of Maharashtra, Gujarat and Uttar Pradesh. It is interesting to note that all these three states experienced very different growth impulses. The forces responsible for their turning into high growth states from the medium or low growth states are also substantially different.

Sectoral growth paths and possible shifts therein in different state economies of India as reported in *Tables 4 to 6* provide useful insights into their growth experience. It can be seen from these tables that Maharashtra, the first Indian State to turn into a high growth state in 1972-73 from a moderately growing state did not experience any shift in the growth path of either primary or secondary sector during the entire period under consideration. The shift in the growth path of the tertiary sector in Maharashtra came as late as 1984-85. This apparently puzzling case can be resolved if we consider the magnitude of the long term growth rates of Maharashtra's three sectors. Maharashtra's primary sector grew at less than half the rates of its secondary and tertiary sectors. Significant structural changes in the economy would have, therefore, led Maharashtra to turn into a high growth economy around 1972-73. Once the economy settled down, again it would become a moderately growing economy as compared to the national average. However, in 1984-85, it experienced a major shift in its tertiary sector growth. If it is due to increased activities on infrastructural front, the secondary sector would experience a shift in its growth path in subsequent years. It was not possible to verify this because our series is only upto 1989-90.

[[[Tables 4 to 6 somewhere here]]]

The experience of Gujarat, another important state to trigger acceleration in the economy is very different from Maharashtra's. Gujarat turned into a high growth state in 1973-74 when its tertiary sector experienced a sharp increase of 3.11 percentage points in its growth. In the following year its secondary sector experienced a substantial rise in the growth by 3.05 percentage points to firmly put the state economy on the accelerated growth path. It is well known that Gujarat emphasised the strategy of physical infrastructural development leading to industrialization. The empirical evidence suggests that the strategy has been successful. Gujarat, however, slided down the relative scale and became only a moderately growing state after the national average rose in 1981-82 largely because it experienced a sharp deceleration in its agricultural growth by 6.94 percentage points in 1982-83. Water shortage and lack of adequate irrigation facilities accounted for such a disaster. Since the industrial base of the state was considerably diversified by then, the long term growth in the secondary and tertiary sector could be sustained in the face of substantial negative growth in the primary sector. Now is the time for Gujarat to concentrate on the infrastructural investments in the primary sector.

If it can somehow regain its previous trend rate of growth in the primary sector, it has the potential to again turn into a high growth state.

The case of Uttar Pradesh (U.P.) yet another important state to lead the growth acceleration in the national economy, is different from both Maharashtra and Gujarat. U.P. turned into a high growth state in the year 1974-75 experiencing a more than 100% rise in its overall trend rate of growth. It would have given a substantial boost to the national economy but not sufficient to shift its growth path. The growth strategy of U.P. was based on emphasisng primary production which would, in turn, lead to industrialization and growth of services would then follow. The primary sector in U.P. experienced a more than 125% rise in its trend rate of growth in the year 1973-74. Such a sharp rise in the long run growth rate would not have been possible unless it was accompanied by significant resource productivity increase. It would, therefore, imply that the primary sector in U.P. could release resources for the growth of the other sectors in the economy apart from providing increased supply of raw materials. The secondary sector in U.P. experienced a significant acceleration of 2.61 percentage points in its growth in the next year, i.e. 1974-75 turning the whole state economy into a high growth state. The service sector in U.P. responded later again with a remarkable rise in its long run growth rate by 2.70 percentage points in the year 1976-77. It is interesting to note that the same sequencing of the sectoral growth acceleration can be observed for the national economy later during 1979-80 to 1982-83. U.P., therefore, again slided back to a moderately growing economy relatively to the national average after 1981-82. A significant shift in the growth strategy is needed if U.P. has to turn again into a high growth state.

The growth experience of Assam and Madhya Pradesh (M.P.) is again different from the ones of Maharashtra, Gujarat and U.P. Both these states turned into high growth states in 1979-80 and were responsible on margin in shifting the national average growth to a higher level in 1981-82. Neither of them experienced any significant shift in their primary sector growth over the period under consideration. Both, Assam and M.P. experienced spurt in their industrial growth and then in the tertiary sector growth. Assam turned into a high growth state in 1979-80 with a sharp increase in its secondary sector growth of the order of 10.62 percentage points accompanied by 1.61 percentage point increase in its tertiary sector growth in the same year. Considering the magnitudes of the shift in the time trend of the two sectors, it can be argued that predominant influence in Assam is likely to be the growth in secondary sector which would have led to expansion in the service sector in the state economy. In M.P., the increase in industrial growth of a relatively small magnitude of 0.85 percentage points occurred in 1978-79. It was followed by a remarkable 150% increase in the long run growth rate of tertiary sector in 1979-80. The secondary and tertiary sectors of M.P. are likely to be the beneficiary of the spurt of activities in the neighbouring states of Maharashtra, Gujarat and U.P. over continued period of time. The linkage theory appears to have worked considering the time lag involved and geography of the states involved. The Assam phenomenon, however, seems to be more on account of the oil discovery and the development related with it. Thus, while M.P. can be considered a follower or a net beneficiary of increasing growth elsewhere, Assam represents a new impulse of growth in the national economy.

Sequentially, the next state to experience significant increase in its overall growth rate is West Bengal (W.B.) in 1982-83 followed by Himachal Pradesh (H.P.) and Karnataka in 1985-86. All these three states experienced a very similar magnitude of about 2.5 percentage points increase in their long term growth rates. W.B. achieved an early break through in the growth of its tertiary sector in the year 1972-73. However, it was not sufficient to match the national average in the sector. It was only when it achieved a spectacular increase in the growth rate of its primary sector in 1982-83 that it showed equivalent performance in overall growth as the national average. Although spurt in the primary sector growth of W.B. represents fresh stimulus to the national economy, it is surprising to find its secondary and tertiary sectors not responding unlike in the case of U.P. While H.P. represents a case of exclusive tertiary sector led acceleration in the overall growth in the economy, the case of Karnataka resembles the one of Maharashtra. Karnataka also experienced a significant increase in its tertiary sector growth in 1975-76 with no significant shifts in the remaining sectors of the state

economy. However, only after the break- through in the tertiary sector growth, the long term growth of primary sector became less than half the ones in the other sectors in the economy. Long term structural changes in the economy made their impact on the overall growth and turned the state into a high growth state in 1985-86. Like Maharashtra in 1972-73, Karnataka in 1985-86 could emerge as a leader of the future shift in the national growth.

The cases of Punjab and Haryana are interesting. Both were high growth states and both scaled down relatively to the national average when the latter rose in 1981-82. Both the states have been high growth states in the primary sector and both have achieved a break-through in their industrial growth during early eighties to become high growth states even in the secondary sector. In the tertiary sector, the growth of Haryana has been very high but Punjab experienced a sharp deceleration in 1979-80 perhaps on account of the beginning of the elongated political disturbance. If the tertiary sector growth can be properly managed in these states, they can still achieve their high growth states status. In terms of the growth pattern, they resemble the case of U.P. Similarly, Arunachal Pradesh has been a high growth state and its pattern of growth is also primary production based. It is surprising why it has not experienced acceleration in its secondary sector growth after it achieved a major break-through in its primary sector growth in 1979-80.

V. The Lagging States

In terms of acceleration in growth of incomes, the results reported in *Table-3* suggest that 8 states viz., Andhra Pradesh (A.P.), Bihar, Jammu & Kashmir (J & K), Kerala, Manipur, Orissa, Rajasthan, and Tamil Nadu (T.N.) are seriously lagging behind the rest. Geographically, these states are spread all over the country. Similarly, they also include states from both the rich and the poor categories. It would be interesting to examine their growth experiences as well from the results reported in *Tables 3 to 6*.

The cases of Bihar and Rajasthan indicate problems in their development strategy. The tertiary sector growth in both these states increased remarkably during the early seventies. However, it took almost 8 years for their secondary sector to respond with higher growth unlike the case of Gujarat where the response of the secondary sector was very quick. The primary production in both these states, moreover, is highly fluctuating as can be inferred from a relatively low r-square in their regressions. Thus, the strategy of concentrating first on the tertiary sector growth which succeeded in Gujarat to make it a leader, did not succeed to the same extent in Bihar and Rajasthan. It could be due to problems of planning and implementation coupled with political will to bring about necessary changes in the policies.

Out of the states showing stagnation in their growth over long period at relatively low level, T.N. stands out as a peculiar case. Its agriculture has been widely fluctuating with practically no sustained growth over the period under consideration. Its secondary sector registered a sharp deceleration of 2.05 percentage point in 1979-80 around which time states like M.P., Assam and Bihar achieved substantial acceleration in their secondary sector growth. However, in 1983-84, T.N. experienced a sharp increase of more than 100% in its tertiary sector growth. The growth strategy of T.N. of late appears to resemble the one adopted in states like Gujarat, Bihar and Rajasthan. If it succeeds, although somewhat late, it can achieve a turn-around in its secondary sector growth. Its future performance, therefore, like Gujarat, Rajasthan and Bihar, critically hinges on its primary sector performance.

The experience of another stagnant growth state of Andhra Pradesh (A.P.) represents again the same strategy of tertiary sector led growth. In 1972-73, tertiary sector in A.P. experienced a major increase in its long term growth rate. However, the strategy could not succeed to bring about any significant break through in the growth rates of its secondary or primary sectors. It needs to be investigated as to why the strategy failed in A.P. when it succeeded in Gujarat, Bihar and Rajasthan.

Among the states experiencing significant deceleration in their growth rate over time, the case of Kerala, another state from the South India, is very puzzling. Kerala experienced a marked deceleration of 2.05 percentage point in the growth of total SDP in the year 1972-73. In the same year, it also experienced significant deceleration in its tertiary and secondary sectors. Whereas it is acknowledged widely that Kerala opted for a growth strategy based on human capital development, it is difficult to explain a significant downward shift in its long term growth rate in the tertiary sector in 1972-73. Deindustrializing processes again initiated from 1972-73 in a major way is also difficult to explain.

The cases of Manipur, J & K and Orissa appear to be very similar. They all experienced significant deceleration in their overall growth rate around the time when their primary sector also went down sharply. However, in early seventies, Orissa and J & K experienced a marked decline in the growth rate of their tertiary sector while Manipur experienced a moderate increase in its tertiary sector growth in 1979-80. Manipur also experienced a more than 100% increase in its secondary sector growth rate in 1969-70 which was perhaps due to its high level of growth in the primary sector in the initial phase. Even after it experienced a marked decline in its primary sector in 1977-78, its secondary sector has not responded adversely so far. This could have been on account of increasing efforts on infrastructure development which would have shifted the growth in its tertiary sector in 1979-80 by 0.96 percentage points. The growth experience of these states reveals that growth of primary sector is a driving force. It is left to the vagaries of weather, it can destabilize the whole economy. Prudent policies and sound planning with emphasis on agricultural infrastructure development can only provide hope for the future in such economies.

Before concluding this section, it may be noted that in terms of secondary sector growth, there is a very sharp geographical divide in the country. From *Table-5*, it can be observed that almost all of the states experiencing significant increase or acceleration in their industrial growth during the period under consideration belong to the northern part of the country. On the other hand, most of the southern states have experienced either a significant slow down (deceleration) in their industrial growth (e.g. Kerala and T.N.) or no significant change in their long run growth in the industrial sector (e.g. Karnataka, Andhra Pradesh and Orissa). An earlier study on the regional aspects of Indian industrialization also clearly brought out a similar finding of the north-south divide (see Dholakia, 1989). It suggested that political factors might be very important in explaining the phenomenon. While the present study corroborates the finding of the north-south divide in the Indian industrialization with the help of a much longer time series data, it questions the dominant role of only political factors in explaining the phenomenon. Since the finding of the present study is based on the growth experience of state economies over a long time series data extending more than 25 to 30 years, more deep rooted economic factors or deliberate government policies might be at work. In any case, the phenomenon suggests the existence of basic maladies in the economic life or in the way it is organised in the country. An indepth inquiry into this phenomenon is required to gain further insights.

VI. Summary of Main Findings

The present study analyses the available time series data on real state income and its classification into the primary, secondary and tertiary sectors for 20 state economies in India over the period 1960-61 to 1989-90. It employs the techniques of kinked trend line and switching regression to examine the phenomenon of acceleration of growth and identifying the year of break in the time trend in different state in the three broad sectors. The main findings of the study can be summarised as follows:

1) The phenomenon of the sharp increase in the long term growth rate of the Indian economy achieved in 1981-82 is not observed in all the states but only in 6 to 8 state economies.

2) The state economies where the growth acceleration can be established in 1981-82 cover all the five zones in the country. Thus, the phenomenon is not geographically concentrated but dispersed.

3) The state economies where growth acceleration was felt in 1981-82 together accounted for about two-third of the national economy in terms of most of the important variables like population, employment, area and income.

4) Most of the states experiencing growth acceleration in 1981-82 belonged to the category of relatively less well off or poorer states as compared to the national average.

5) The interstate variation in the trend rate of economic growth seems to be considerably reduced after 1981-82 as compared to the period before 1981-82. The implications of such a tendency for the long term growth equalization among Indian states would be an interesting area of further research.

6) Maharashtra, Gujarat and U.P. turned into high growth states in three consecutive years from 1972-73 to 1974-75 triggering the forces ultimately leading to growth acceleration in the Indian economy.

7) The factors and growth strategy followed in these three states were entirely different from one another. Even among other states, the growth strategies followed seem to differ considerably.

8) On margin, the turn around of Assam and M.P. into high growth states played an important role in the process of growth acceleration in the national economy. Oil in Assam and linkages with neighbouring high growth economies for M.P. could be the critical factors.

9) Emphasis on improving growth performance of primary sector in states like Gujarat, Rajasthan, Bihar, Tamil Nadu, Manipur, Jammu & Kashmir, Orissa, etc. can pay rich dividends if properly planned and implemented.

10) The present study corroborates the finding of an earlier study (See, Dholakia, 1989) about the existence of a sharp north-south divide in the Indian industrialization. The causes and consequences of the phenomenon is an interesting field of further enquiry.

Notes

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1. This is implied by considering the reciprocal of the ICOR and breaking it up into three additive components, viz. the marginal product of capital, labour cost per unit of investment and the rate of technological progress per unit of investment. For details, see Dholakia (1993).

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Table-1

Time Series Data on SDP by States Considered in the Study

States	Time Period	No.of Observations
1	2	3
1. Andhra	(1960-61 to 1988-89)	29
2. Arunachal	(1970-71 to 1989-90)	20
3. Assam	(1970-71 to 1989-90)	20
4. Bihar	(1960-61 to 1989-90)	30
5. Gujarat	(1960-61 to 1989-90)	30
6. Haryana	(1965-66 to 1989-90)	25
7. H.P.	(1967-68 to 1989-90)	23
8. J & K	(1960-61 to 1988-89)	29
9. Karnataka	(1960-61 to 1989-90)	30
10. Kerala	(1960-61 to 1989-90)	30
11. M.P.	(1960-61 to 1989-90)	30
12. Maharashtra	(1960-61 to 1989-90)	30
13. Manipur	(1960-61 to 1990-91)	31
14. Orissa	(1960-61 to 1989-90)	30
15. Punjab	(1965-66 to 1989-90)	25
16. Rajasthan	(1960-61 to 1988-89)	29
17. T.N.	(1960-61 to 1989-90)	30
18. Tripura	(1960 61 to 1989-90)	30
19. U.P.	(1960-61 to 1989-90)	30
20. W.Bengal	(1960-61 to 1988-89)	29

Source: CSO: *Estimates of State Domestic Product* different Volumes.

Table-2

Estimates of Trend Rate of Growth and Shift in the Trend for State Economies in the Year 1981-82

States	Trend Rate	Shift Parameter	R-Square
1	2	3	5
1. Andhra	3.13 (12.45)	0.87 (0.85)	0.9611
2. Arunachal	7.26 (12.99)	-0.40 (-0.34)	0.9898
3. Assam	3.90 (7.64)	1.87 (1.72)	0.9802
4. Bihar	2.78 (8.93)	1.67 (1.56)	0.9721
5. Gujarat	3.84 (12.28)	1.10 (0.95)	0.9457
6. Haryana	5.29 (17.30)	0.22 (0.25)	0.9757
7. H.P.	2.93 (12.83)	0.66 (1.11)	0.9586
8. J & K	4.22 (24.39)	-0.82 (-1.13)	0.9800
9. Karnataka	3.67 (26.30)	1.14 (2.20)	0.9856
10. Kerala	2.88 (8.50)	-0.65 (-0.67)	0.9872
11. M.P.	2.74 (10.88)	3.68 (3.93)	0.9429
12. Maharashtra	3.70 (13.16)	1.74 (1.89)	0.9910
13. Manipur	5.34 (15.56)	-1.46 (-1.35)	0.9858
14. Orissa	4.77 (7.20)	-1.87 (-0.84)	0.9395
15. Punjab	5.00 (22.22)	0.16 (0.26)	0.9953
16. Rajasthan	3.40 (12.12)	0.48 (0.40)	0.9144
17. T.N.	2.63 (14.58)	0.71 (1.08)	0.9643
18. Tripura	3.51 (13.24)	1.70 (1.78)	0.9745
19. U.P.	2.79 (13.67)	2.61 (3.47)	0.9667
20. W.Bengal	2.45 (18.35)	2.17 (3.99)	0.9845
ALL INDIA	3.52 (81.70)	1.63 (6.80)	0.9971

Notes: (i) Figures in parantheses represent t-value of the corresponding estimate of the parameter.

(ii) Given our data set, t-values in excess of 1.74, 2.11 and 2.90 imply statistically significant estimate at 10% level, 5% level and 1% level respectively.

(iii) The first order autocorrelation is corrected through Cochrane-Orcutt iterative procedure. Reported R-Squares are between original variables.

Source: (i) Basic source is CSO: *Estimates of SDP*, different volumes.

(ii) For the estimates in the last row, Ganesh (1992).

Table-3

Estimates of Trend Rates of Growth and Possible Shifts in Total SDP of Indian States

States	Trend Rate	Shift Parameter	Optimal Year of Shift	R-Square
1	2	3	4	5
1. Andhra	1.57 (3.16)	2.14 (3.52))	1968-69	0.9701
2. Arunachal	7.10 (24.00)	-	-	0.9897
3. Assam	3.16 (6.68)	2.76 (3.45)	1979-80	0.9854
4. Bihar	0.16 (0.30)	3.60 (5.76)	1967-68	0.9800
5. Gujarat	3.02 (7.07)	1.80 (2.64)	1973-74	0.9538
6. Haryana	5.35 (28.59)	-	-	0.9756
7. H.P.	2.88 (21.26)	2.49 (2.81)	1985-86	0.9679
8. J & K	4.21 (32.94)	-3.04 (-1.89)	1985-86	0.9812
9. Kamataka	3.73 (34.65)	2.64 (2.68)	1985-86	0.9865
10. Kerala	3.91 (15.74)	-2.05 (-5.47)	1972-73	0.9902
11. M.P.	2.51 (10.00)	3.38 (4.79)	1979-80	0.9494
12. Maharashtra	2.89 (6.74)	1.95 (3.02)	1972-73	0.9923
13. Manipur	5.61 (13.97)	-1.49 (-1.78)	1977-78	0.9863
14. Orissa	10.10 (13.60)	-7.16 (-8.30)	1967-68	0.9687
15. Punjab	5.05 (35.65)	-	-	0.9953
16. Rajasthan	3.48 (17.80)	-	-	0.9139
17. T.N.	2.77 (21.56)	-	-	0.9628
18. Tripura	2.35 (11.09)	2.37 (7.50)	1972-73	0.9858
19. U.P.	2.10 (9.57)	2.32 (6.15)	1974-75	0.9755
20. W.Bengal	2.48 (19.50)	2.56 (4.11)	1982-83	0.9850
ALL INDIA	3.52 (81.70)	1.63 (6.80)	1981-82	0.9971

Notes and *Source* are the same as *Table-2* above.

Table-4

Estimates of Trend Rates of Growth and Possible Shifts in Primary Sector of Indian States

States	Trend Rate	Shift Parameter	Optimal Year of Shift	R-Square
1	2	3	4	5
1. Andhra	1.88 (8.18)	-	-	0.7717
2. Arunachal	4.52 (11.42)	3.94 (5.91)	1979-80	0.9853
3. Assam	3.58 (11.14)	-	-	0.9357
4. Bihar	1.94 (8.45)	-	-	0.7820
5. Gujarat	3.10 (4.48)	-6.94 (-2.24)	1982-83	0.4085
6. Haryana	3.67 (12.64)	-	-	0.8760
7. H.P.	1.51 (8.42)	-	-	0.6913
8. J & K	2.75 (15.57)	-6.63 (-2.88)	1985-86	0.8953
9. Kamataka	2.50 (19.43)	-	-	0.9190
10. Kerala	1.03 (2.96)	-	-	0.8096
11. M.P.	1.92 (6.69)	-	-	0.6418
12. Maharashtra	2.22 (5.09)	-	-	0.7784
13. Manipur	5.78 (8.04)	-4.81 (-3.20)	1977-78	0.9321
14. Orissa	13.44 (8.36)	-9.81 (-5.63)	1965-66	0.9344
15. Punjab	4.29 (22.32)	-	-	0.9827
16. Rajasthan	3.19 (9.16)	-	-	0.7557
17. T.N.	0.41 (1.84)	-	-	0.1216
18. Tripura	2.65 (21.85)	-	-	0.9302
19. U.P.	1.34 (3.52)	1.68 (2.76)	1973-74	0.8812
20. W.Bengal	2.28 (11.98)	5.02 (5.12)	1982-83	0.9473
ALL INDIA	2.22 (25.54)	0.86 (2.39)	1979-80	0.9757

Notes and *Source* are the same as *Table-2* above.

Table-5

Estimates of Trend Rates of Growth and Possible Shifts in Secondary Sector of Indian States

States	Trend Rate	Shift Parameter	Optimal Year of Shift	R-Square
1	2	3	4	5
1. Andhra	4.87 (30.69)	-	-	0.9936
2. Arunachal	5.60 (5.90)	-	-	0.8420
3. Assam	0.38 (0.36)	10.62 (5.90)	1979-80	0.9401
4. Bihar	5.15 (18.99)	1.89 (2.18)	1980-81	0.9761
5. Gujarat	3.57 (13.50)	3.05 (6.21)	1975-76	0.9907
6. Haryana	6.73 (26.87)	1.42 (1.94)	1981-82	0.9887
7. H.P.	3.47 (9.72)	-	-	0.9282
8. J & K	6.57 (28.51)	-	-	0.9801
9. Kamataka	5.56 (33.56)	-	-	0.9935
10. Kerala	6.98 (11.37)	-4.64 (-5.02)	1972-73	0.9867
11. M.P.	4.98 (29.25)	0.85 (2.00)	1978-79	0.9910
12. Maharashtra	4.81 (32.55)	-	-	0.9939
13. Manipur	4.23 (5.15)	4.32 (4.13)	1969-70	0.9955
14. Orissa	5.33 (13.62)	-	-	0.9570
15. Punjab	5.74 (27.60)	3.07 (3.08)	1984-85	0.9944
16. Rajasthan	3.05 (16.82)	2.55 (2.85)	1982-83	0.9772
17. T.N.	4.75 (15.04)	-2.05 (-2.36)	1979-80	0.9734
18. Tripura	2.70 (5.00)	-	-	0.8635
19. U.P.	4.23 (9.44)	2.61 (3.40)	1974-75	0.9887
20. W.Bengal	2.22 (9.17)	-	-	0.9268
ALL INDIA	4.25 (23.99)	2.15 (4.51)	1981-82	0.9956

Notes and *Source* are the same as *Table-2* above.

Table-6

Estimates of Trend Rates of Growth and Possible Shifts in Tertiary Sector of Indian States

States	Trend Rate	Shift Parameter	Optimal Year of Shift	R-Square
1	2	3	4	5
1. Andhra	3.31 (24.91)	2.30 (11.24)	1972-73	0.9970
2. Arunachal	8.80 (9.97)	-	-	0.9802
3. Assam	4.72 (25.42)	1.61 (5.15)	1979-80	0.9978
4. Bihar	1.52 (3.72)	5.11 (8.30)	1972-73	0.9856
5. Gujarat	3.35 (18.04)	3.11 (10.48)	1973-74	0.9958
6. Haryana	7.80 (32.92)	-	-	0.9926
7. H.P.	5.12 (32.56)	2.45 (3.73)	1984-85	0.9973
8. J & K	6.76 (23.28)	-1.69 (-3.53)	1973-74	0.9923
9. Karnataka	3.86 (23.10)	2.11 (6.79)	1975-76	0.9957
10. Kerala	5.33 (22.46)	-1.69 (-4.73)	1972-73	0.9959
11. M.P.	3.67 (24.84)	5.89 (14.32)	1979-80	0.9954
12. Maharashtra	4.73 (51.78)	2.43 (4.28)	1984-85	0.9976
13. Manipur	5.40 (39.09)	0.96 (2.75)	1979-80	0.9983
14. Orissa	8.42 (5.61)	-7.10 (-3.49)	1970-71	0.9310
15. Punjab	6.41 (33.76)	-2.06 (-5.07)	1979-80	0.9983
16. Rajasthan	3.09 (10.82)	2.00 (3.92)	1974-75	0.9789
17. T.N.	3.33 (28.44)	3.36 (5.66)	1983-84	0.9935
18. Tripura	3.74 (7.47)	4.92 (5.38)	1975-76	0.9945
19. U.P.	2.81 (18.86)	2.70 (8.97)	1976-77	0.9959
20. W.Bengal	2.56 (20.11)	1.32 (6.72)	1972-73	0.9961
ALL INDIA	4.37 (87.75)	2.29 (8.45)	1982-83	0.9996

Notes and *Source* are the same as *Table-2* above.