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Analysis of Regional Growth Patterns in India

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Dinesh N. Awasthi
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Chapter 1

INTRODUCTION

Economic growth means sustained increase in volume of economic activities which result in production of goods and services. Defined in a welfare sense, economic growth would imply an increase not only in total production but also in per capita product. Economic growth is thus normally measured in terms of total (real) income and/or per capita (real) income. These measures of growth, however, tell us nothing regarding the transmission of this growth. It has now been realised that economic growth does not automatically transmit itself to all sections of the society or regions equitably. Of late, therefore, the emphasis, at the policy making level as well as at the theoretical level has shifted away from economic growth per se to its transmission mechanism at micro level. In economic literature this shift has reflected itself in addition of new dimensions to the analysis of economic growth. One of these is the use of supplementary measures of economic welfare like unemployment and poverty; another is analysis of economic growth over some groups or spatial units. Economists have recently been asking more and more the following types of questions : (i) Has economic growth resulted in reduction of unemployment and poverty ? (ii) What have been the

implications of overall economic growth on specified groups and spatial units ? Our study too addresses itself to similar types of questions.

Specifically, our objective in this study would be :

- (i) to find out whether the process and benefits of economic growth have been equitably distributed over various regions of the country,
- (ii) If this is not so, what are the factors which have led to 'concentration' of economic growth in some geographical regions relative to other regions.

The analysis of growth patterns over various regions will be conducted not only in terms of total production (or volume of economic activities) but also in terms of (change in the level of) poverty and unemployment. In the following paragraphs we discuss some definitional and other issues related to the analysis of regional growth and then proceed to outline our approach to the study of regional growth patterns in India.

Some Definitional Issues : We would like to clarify two definitional issues here - one is relating to the definition of equal distribution of growth (or balanced growth) and second is relating to the definition of a region.

Equal distribution of growth can be defined either in terms of equal level of income in various regions or as equal rate of growth of income in these regions. The two definitions are incompatible except in the case when initial level of income is the same over all the regions. Given the initial inequalities, 'criterion' of 'balanced growth' would imply that lower income (poorer) regions will have to have a higher rate of growth of income to catch up with the richer regions. An equal rate of growth, under these circumstances would increase the inequities in the levels of income of various regions. The long term objective of balanced regional development, in the Indian context has been defined (by Planning Commission) in terms of equal level of per capita income of different regions to be achieved through continuous reduction in inequities over time. This would imply in the Indian context, a higher rate of growth of poorer regions as compared to that of richer regions.

A region can be defined on the basis of various criteria e.g. geographical, administrative, economic, etc. Usually, the choice of a region in case of regional studies (especially in economics) is dictated more by the availability of data than the requirements of the analysis. Keeping in mind the fact that income (product) is considered to be an indicator of economic growth and data on product at the regional level is available only at the State level,

normally States are chosen as the (spatial) units for study. There is agreement on the subject that a State, in most of the cases is not a homogeneous (economically or geographically) region and objectives of the analysis would be served much better if an economically homogeneous region is selected. Possibly the only criterion which choice of State as a region satisfies is that it is an administrative unit and relevant statistical information is available at this level. While not underestimating the importance of these factors, we would like to pinpoint some of the limitations of choosing State as a region.

In India the States are geographically large units. A number of these are as large or even larger than some of the countries in the World. Moreover, they are very heterogeneous units. The average figures as well as the relations calculated from them may give a very distorted picture of the State of the economy, a high level of State Domestic Product (SDP) implying a relatively richer State may be due to 'richness' of a few districts whereas most of the others may be quite poor.^{1/} The same could be said of

^{1/} National Council of Applied Economic Research's (NCAER) study on inter-district and inter-State income differentials found, for the year 1955-56 large variations in per capita SDP between districts in a State. This disparity was found to be the highest for the State of Maharashtra - the second richest State in that year. The high income of the State was largely due to the high level of SDP of Greater Bombay. NCAER, Inter District and Inter-State Income Differentials, 1955-56, occasional paper Number 6, New Delhi, 1963.

other indicators like degree of literacy, poverty, unemployment, etc. It is not only that these figures are not very representative of the State of the economy but the relations between them can lead to wrong conclusions and policies. Thus we might get a result specifying zero or low relation between unemployment or urbanisation and GDP, which is not only logically unexplainable but if taken at its face value can lead to wrong analysis of the situation. Errors get compounded in these calculations. In these cases there is strong justification for analysis at a more disaggregated level.^{2/} The need for more disaggregated studies has been increasingly recognised in this country and a few attempts have been made to analyse the various aspects of

^{2/} One might argue that even within a district/taluka/village (i.e., whatever level of aggregation or disaggregation one chooses) there would be inequities within that spatial unit and the ideal case may be choosing a household as the unit of study. Now, there might be cases where disaggregation at this level is required. For our purposes, however, district as the spatial unit will suffice. District is a much more homogeneous unit than a State. Within a district, analysis could be carried out in terms of some spatial subgroups like for rural/urban areas which are quite distinct groups and will throw light on the factors which lead to differentials in levels and rates of growth.

the economy in the framework of a district or talukawise economy.^{3/}

The limitations of choosing State as a region mentioned above do not imply that the analysis at the State level can give no meaningful results. A State is a much more homogeneous unit than the country as a whole and disaggregation at this level can provide some useful insights into the growth process. We will, therefore, confine our study with the analysis of growth pattern of various States.

Regional Growth and Sector Concept : Regional Growth has been explained in terms of various theories ranging from neoclassical theory to 'export-base' theory.^{4/} Neoclassical growth

3/ Prominent among the Indian Studies are the ones done by Minhas B.S. and Vaidyanathan, "Growth of Crop output in India, 1951-54 to 1958-61", Journal of the Indian Society of Agricultural Statistics, (Vol. XVII, 2, 1965); Y.K. Alagh and G.S. Bhalla, Performance of Indian Agriculture - A Districtwise Study, Sterling Publishers Pvt. Ltd., No., No. 1979; C.T. Kurien and Josef James, Economic Change in Tamil Nadu, a Regionally and Functionally Disaggregated Study, Allied Publishers, 1979. In the first two studies a districtwise analysis of agricultural performance in terms of crop output and its rate of growth has been attempted. Kurien's study analyses the economic change in Tamil Nadu at the district and taluka level and with the help of the cluster analysis proves the extreme concentration of 'economic change' in Tamil Nadu. Kurien and James also criticise the accepted measures of growth like SDP etc. which they argue may not be very relevant variables to study at the level of village or taluka economy.

4/ For a discussion of these theories please see, H.W. Richardson, Regional Growth Theory, Chapter 2, The Macmillan Press Ltd., London 1973.

theory has been directly taken from literature on economic growth and applied to the case of regions. Another theory of growth which has found wide acceptance in literature on regional growth and has been tested for many regions originates from the thesis propounded by Colin Clark, and later on widely tested by Kuznets and others for various countries.^{5/} The major hypothesis of Clark-Kuznets theory is that economic growth is positively correlated with increasing share of secondary and tertiary sector and declining share of primary sector in labour force (as well as income) of the country. The hypothesis has been tested on the basis of both cross section and time series analysis for various countries.

The logic behind this relationship is presented in terms of interaction of forces on both demand and supply side. A relatively lower income elasticity of demand for agricultural products (compared to those of secondary and tertiary sectors) and increasing productivity of labour in agriculture leads to a decline in the share of agriculture in labour force. The Clark-Kuznets hypothesis has been extended to suggest superiority of manufacturing over agriculture and strategies of economic development have been equated with strategies for industrialisation. The superiority is

^{5/} Colin Clark, The Conditions of Economic Progress, Macmillan, London 1957, and S. Kuznets, "Quantitative Aspects of Economic Growth of Nations...", Economic Development and Cultural Change, Vol. 5 and 6, Oct. 1956, July 1957 and July 1958.

established not only on the basis of relationships empirically proven over a cross-section of countries and over a length of time period but also on the basis of certain other characteristics relating to the various sectors. Thus, productivity and technological progress is presumed to be higher in secondary sector than in agriculture. We don't plan to do an in depth analysis of relative contribution of agriculture or industry to economic growth.^{6/} We would however like to make a few observations relating to Clarks-Kuznets hypothesis and its extensions.

The first observation relates to the validity of the hypothesis for explaining regional growth patterns in India.

6/ Here we get into a debate relating to balanced vs. unbalanced growth. This question along with the relationship between agricultural and industrial growth has been discussed among others by Chenery and Clark (at the national level), K.L. Gupta (for various States of India) Jameson (for various States of Brazil), K.N. Raj, P. John Macrae and others. H.B. Chenery and L. Clark, "Development Patterns : Among Countries and Over time," The Review of Economics and Statistics, Nov. 1968, Vol. 14, No.4; K.L. Gupta, "Development Patterns : An Interregional Study," Quarterly Journal of Economics, Nov. 1971, pp.644-66; Kenneth Jameson "Development Patterns and Regional Imbalance in Brazil," Review of Economics and Statistics, Aug. 1975, pp.361-4; K.N. Raj, "Growth and Stagnation in Indian Industrial Development," Economic and Political Weekly, Annual No.1976; John Marrac, "The Relationship between Agricultural and Industrial Growth with special reference to Development of the Punjab economy from 1950 to 1965", Journal of Development Studies, July 1971, pp.397-422.

The validity of the hypothesis was questioned when Punjab and Haryana led all the regions in the country in their rate of growth of as well as level of per capita income without any decline (actually an increase) in the share of agriculture in their economies. It was not a case of 'exception proving the rule.' A few studies which have attempted to test empirically the Clarks-Kuznets hypothesis for the Indian States have not been able to substantiate the hypothesis completely.^{7/} This (feature) could be explained either in terms of conventional logic^{8/} (i.e. in terms of income elasticity of demand and productivity of labour whose empirical value structure over sectors being different for Indian economy than that found by Colin Clark for other countries of the world for the period studied) or in terms of certain other factors. One of these other factors could be the short period taken^{implying that} such structural changes in the economy do not take place over a period of 20-30 years. In the case of economies analysed by Kuznets the time period taken varied between 60-70 years.

^{7/} Here we would mention two of such studies - NCAER op.cit., and Ravi Dholakia, Interstate Variation in Economic Growth in India, (unpublished Ph.D. thesis) MSU, Baroda, 1977. Both the studies found some correlation between SDP and share of secondary sector. As to behaviour of other sectors no significant relationships emerged from the existing data.

^{8/} It could also be the fact that we are still in the first stage of economic development and relative shares of sectors do not show significant changes over such a short period.

We would like to explore this issue further and relate it to the varying growth experience of different regions. We would however not like to do it within the present system of classification of economic activities into three broad categories (primary, secondary and tertiary). We hold that a more disaggregated system of classification can help us in unravelling more factors relating to regional growth than the 'old' classification.

The classification of economic activities into above mentioned three sectors is a very broad classification. Each of the sectors is composed of many diverse activities. The diversity is seen at its 'worst' in the tertiary sector which includes as low productivity activities as 'small-time' retailing and as high productivity activities as banking. Similar (though not of the same magnitude) diversity in productivity can be seen between various activities in primary or secondary sector. The growth pattern of different regions could be explained in a much better manner if we were to classify the economic activities according to their productivity. We would thus explain the differentials in the levels of growth of various regions in terms of concentration or otherwise of relatively productive or unproductive activities. Similarly the differentials in rates of growth of various regions could be explained in terms of concentration of rapid growth activities in

different regions in different periods. In the following paragraphs we will explain our methodology of reclassification of economic activities on the basis of various alternative criteria for analysing differentials in levels and rates of growth of various region in the country.

Analysis of Levels of Growth : Classification of Activities :

To begin with, we subclassify economic activities within each of the three major sectors (primary, secondary and tertiary) according to their degree of productivity. The productivity of various activities will be calculated on the basis of data available at the national level. We will calculate the productivity for different crops, different industry groups and various service activities. The data on these variables is available from ASI (for manufacturing activities in the organised sector) and from Agricultural Statistics of India for the agricultural based activities.

We know that even within the narrowly defined sector of 'crops', the productivity of various crops differs.^{9/} Part of the differential in the level of income of say

^{9/} Thus yield per hectare of sugarcane was as high as 5542 (in kg.) in 1975-76 - 1977-78 whereas that of cotton was as low as 146 for the country as a whole. In value terms too the range in productivity of different crops is quite wide.

Andhra Pradesh and Punjab could be explained in terms of the fact that Punjab specialises in wheat (a crop with high level of productivity in recent years) whereas Andhra Pradesh specialises in rice (which upto few years back had much lower productivity).^{10/} Thus, it would seem that it is not the relative importance or otherwise but the composition of various sectors which 'indicates' their relative growth profiles. We would like to decompose these sectors into more homogeneous subgroups and analyse the regional growth pattern within the disaggregated system of activities.^{11/}, ^{12/}

^{10/} 26.38 per cent of area in Andhra Pradesh in 1970-71 was devoted to cultivation of rice whereas in Punjab area under rice was only 6.86 per cent of total cultivated area. The area under wheat cultivation in the two States for the same year was respectively .13 per cent and 40.49 per cent of total cultivated area.

^{11/} We would like to point out here that it is not only (or not always) the type of activity which influences the relative level and rate of growth of a region but also the volume of activity. A low productive or low growth activity by its sheer volume can pull up a region. We would quote Perloff et.al. here - "...a region may grow through getting an increasingly greater proportion of an industry that as a whole is declining nationally. This would be the case when the remaining portions of a declining industry all cluster into one or two regions which gain in volume with regard to this industry while all others are losing out. Or a region may grow because it contains the growing parts of a generally declining industry." See H.S. Perloff, E.S. Dunn, E.E. Lampard and R.F. Muth. Regions, Resources and Economic Growth; p.69, RFF Johns Hopkins Press, 1960.

^{12/} The analysis here will be undertaken in two stages at different levels of disaggregation. In the first stage we will study the regional growth patterns in terms of conventional dimensions - primary, secondary and tertiary. In the second stage, finally in the stage 'activity structure' of the regional economy and its impact on regional growth will be discussed in terms of groups of homogeneous activities.

For this analysis, we will classify economic activities according to their relative rates of growth on the basis of data at the national level. We will identify the activities which have been growing at a relatively faster rate. The rate of growth of various activities will be calculated for some selected sub-periods corresponding to the subperiods chosen for analysis of rate of growth of regions. We would analyse the comparative growth pattern over time of various regions in terms of 'shift' and/or continuous concentration or otherwise of rapid growth activities in some regions versus others.

Other Suggested Criteria for Classification of Activities :

The regional growth pattern could be explained not only in terms of above two classifications but some others also. Thus we could think of employment provided, value added, large or small scale industry, industries with high or low linkage affects or activities with high or low efficiency wages. The last variable has been suggested by Kaldor and is defined as wages/productivity.^{13/} He argues that regions with high efficiency wages will progress faster than other regions. We could think of other ratios also. ASI data reveal that industries differ significantly on these counts. So would agricultural activities. . .

^{13/} Nicholas Kaldor, "The Case for Regional Policies," Scottish Journal of Political Economy, Nov. 1970, pp. 337-348.

In explaining the growth pattern of various regions in India we follow an ~~eclectic~~ approach. Starting with the conventional analysis of inequities between growth experiences of various regions in terms of three main sectors we proceed to a more disaggregated analysis of this phenomenon. The disaggregation is attempted at the level of functional activities alone.

The analysis at the State level will be conducted mainly in terms of SDP. At the activity level we will first classify the activities according to various criteria and identify such activities. We will then attempt to explain the differing growth experience of various regions in terms of composition of different sectors.

We hypothesise, a priori that the level and rate of growth of SDP in different regions will differ due to :

- (i) type (high productivity/high growth) of activity located in that region; and
- (ii) regional characteristics which lead to variations in productivity of same activity between different regions.

We will attempt to explain both (i) and (ii) in terms of locational factors. The analysis for agricultural activities will have to be slightly different from that of industrial activities since different factors influence the growth of

these sectors. The factors which are more relevant for agricultural activities would be climate, type of soil, technological progress, use and availability of various inputs. For industrial activities, the more important factors would be : agglomeration economies, urbanisation economies, nearness to sources of raw materials/markets etc. One factor which will be common for the development of both industry and agriculture is the availability of infrastructural facilities like banking, transportation and communication network etc.^{14/}

Most of the infrastructural facilities, in the Indian context, are provided by the government. The pattern of government expenditure in these activities in various regions would seem to be an important factor determining the pattern of growth of the region.

Among other things, we would also like to explore the role of cities in regional growth. It seems that metropolitan centres play a very important role in this respect. The concept of agglomeration economies, which have actually led to the growth of our big cities, can be used to explain the concentration of wealth in few regions of the country.

^{14/} These activities conventionally belong to the tertiary sector. Thus, it would seem that development of tertiary sector is very important for the overall development of the economy.

It may be added that we intend to ascertain the relationship of spatial growth with poverty and unemployment.

Chapter Scheme

Chapter 1 critically examines Kuznet's hypothesis relating share of various sectors in the economy and economic development and sets out our approach to analysis of regional growth. Chapter 2 is devoted to a comparative analysis of various aspects of selected states. Chapter 3 gives a sectoral view of regional growth patterns in various states. In the next two chapters we turn to analysis of growth in agriculture and manufacturing sectors (large scale as well as small scale) at a disaggregate level. Chapter 6 is devoted to unemployment and poverty and Chapter 7 to summary and conclusions.

Chapter 2

REGIONAL GROWTH PATTERNS : AN OVERVIEW

The various states in the country are extremely heterogeneous units. The heterogeneity extends to various aspects of the economy viz. economic, social, geographic, cultural etc. These factors have a bearing upon patterns of growth in the various regions. The initial disparities in these variable may explain, (at least partly) the divergent growth patterns of these states. The patterns of growth of the states can be seen in their proper perspective only in the background of the basic structural differences in these economies. The purpose of this chapter is to provide an overview of some selected important variables which influence growth patterns in various regions. The selected variables are :

1. Area and land utilisation pattern.
2. Population and urbanisation.
3. State Domestic Product (SDP) and per capita SDP.

This chapter is divided into four sections. In section I we discuss varying endowment of land to different states and the use they have made of this resource. The focus here would be on efficient utilisation of the scarce resource land and the success which various states have

achieved over time in this respect. Section II will be devoted to experience of different states on the population front. Various related aspects which have a bearing on the growth of the region will also be discussed. In section III, we will analyse levels of SDP and per capita SDP in different states over time. In Section IV we would try to relate the various aspects discussed in the earlier sections and draw some general conclusions.

I

Area and Land Utilisation Pattern

At the time of independence the country was divided into 28 states. The ratio between the largest (Madhya Pradesh and Rajasthan each occupied 10.26 per cent of the country's area) and the smallest (Delhi) state was 208.5

In 1956 the states were reorganised. The subdivision was more rational and resulted in more homogenous units in terms of area. The ratio of the largest to smallest state in 1956 declined to 42.86. In the post 1956 period, we witnessed further sub-division of some of the states namely of Bombay (into Maharashtra and Gujarat) and of Punjab (into Punjab and Haryana) and of Assam.

Indian states are still extremely diverse units. Further, the post 1956 subdivisions have not affected most

of the states in a significant manner. As noted above the only states to be affected were Bombay, Punjab and Assam. Punjab, even before division, was not a large state and ranked 12th in terms of area. After its bifurcation it slid down to 14th rank. Bombay, even after bifurcation continued to remain one of the largest states in the country. Assam slid down from 7th to 13th rank.

Of the 22 states existing in the country now, Madhya Pradesh is the largest state covering around 13 per cent of total area of the country and Sikkim is the smallest state (covering 0.22 per cent of the country's area). If we take only the states selected by us, Kerala is the smallest state - its area being only 1.1 per cent of the total area. The other large states each covering above 8 per cent area are - Rajasthan, Maharashtra, Uttar Pradesh, and Andhra Pradesh. These five large states, between themselves, account for almost 50 per cent of the country's area. The smaller states covering between 1-3 per cent of country's area each are Assam, Haryana, Punjab and West Bengal. Rest fall in the category of states covering between 4 to 6 per cent of area.^{1/}

^{1/} The area of Jammu and Kashmir as given includes the area occupied by Pakistan. If this area is excluded, the state covers only 1.5 per cent of total area of the country and belongs to the group of smaller states.

Apart from differences in the size of the geographical area the use to which this area has been put varies a great deal from state to state. To some extent the land utilisation pattern (LUP) is constrained by topographical features of the landscape. Data on topographical structure of regions is not easily available. We have such data for the pre 1956 states which gives the area under hills etc. as well as net area which is topographically usable. This information is given in Table 3.1.

As can be seen from the Table, the per cent of topographically usable area varied a great deal from state to state. Whereas, West Bengal had 92 per cent of its area as topographically usable, such area made only 7.91 per cent of total area in Jammu and Kashmir. Other states with low percentage of topographically usable area were Himachal Pradesh and Bilaspur (11.43 per cent), Andaman-Nicobar (23.8 per cent), Kutch (39.45 per cent) and Assam (41.36 per cent). PEPSU and Rajasthan had only 50 and 53 per cent of their area in this category respectively. Even Punjab (as it was then defined) had only 59.41 per cent of its area as topographically usable.

The reorganisation of states since 1951 might have changed the picture somewhat. We do not have data relating to topographical structure of the reorganised states for the later years. The Ministry of Agriculture, (Government of

India) regularly publishes data relating to land utilisation pattern for different states. From this data, it is not possible to decipher as to the amount of land which is not usable. We however have information on the amount of land 'not available for cultivation' including land which is barren and uncultivable and land under water, transportation and urban use. The data on land utilisation pattern gives other valuable information also. This information is given in Tables 3.2 and 3.3 for the years 1960-61 and 1976-77 respectively.

Land Utilisation Pattern - 1960-61

In 1960-61, net area sown (at 44.40 per cent of total reporting area) accounted for the largest percentage of land for the country as a whole. Next in line were land under forests (18.64 per cent) and barren and unculturable land (12.03 per cent). Other categories accounted for a very low percentage (ranging from 1.73 per cent to 6.58 per cent).of total area. This pattern was repeated for most of the states under consideration. Net sown area claimed the highest percentage of land among all the uses in all states except in Assam and Jammu & Kashmir. Punjab with 60.58 per cent of its area under the category 'net area sown' had the highest percentage of land in this use among all the states. Other states with high percentage^{2/} of land under

^{2/} The World 'High' here implies higher than the national figure in the relevant use. The word low has opposite connotations.

net area sown were -- Bihar, Gujarat, Karnataka, Kerala, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal. Of these states, Punjab, Gujarat and West Bengal had very high per cent of area (ranging between 21.00 to 25.54 per cent) as barren and unculturable land. Most of the states which had low proportion of their land under net area sown had high per cent of area under forests.^{3/} These states were Andhra Pradesh, Assam, Jammu and Kashmir, Madhya Pradesh and Orissa. In case of Rajasthan, however, it is the high proportion of barren and unculturable land (15.23 per cent) culturable waste land (20.21 per cent) which seems to have led to such low proportion (38.75 per cent) of its land under cultivation. Rajasthan also had the highest per cent of land (9.18 per cent) under fallow land other than current. In case of Orissa, apart from forests, it is the categories barren and unculturable land, land not available for cultivation and culturable waste land which seems to make most of the area unusable for cultivation. These 3 categories accounted for 27.00 per cent of total reported area of the state. Assam is another state which had a very high per cent of land (37.56 per cent) as barren and unculturable. In fact, it has the highest proportion of barren land among all states.

^{3/} Two states which had high per cent of area under both net area sown as well as forests were Bihar and Kerala.

The forest cover in the states ranged from a low of 2.41 per cent (Rajasthan) to a high of 64.34 per cent (Jammu and Kashmir). Others among the low forested states were Gujarat, Punjab, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal.

The other uses, as noted above, accounted for very low proportion of total area. Thus permanent pastures and land under miscellaneous tree crops accounted for 4.68 per cent and 1.73 per cent of the area respectively for the country as a whole.

Excepting Karnataka, Madhya Pradesh and Gujarat (in pastures) and Assam, West Bengal and Kerala (in miscellaneous tree crops) all the other states had less than 5 per cent of their area in these uses. States with relatively higher per cent of fallow land were Rajasthan, Andhra Pradesh, Bihar and Orissa.

The category area not available for cultivation accounted for less than 5 per cent of the total area. Tamil Nadu had the highest per centage of land (9.95 per cent) under this use and Maharashtra and Gujarat two of the more urbanised states of the country the least (2.28 and 2.27 per cent respectively). It seems that major part of the area accounted for, under this use must be under water.

Urban spaces, generally, are not extensive users of land.^{4/}

The L.U.P. in various states of the country reflected the dominant agrarian structure of the economy. The L.U.P. is greatly affected by the topographical and historical factors. Changing L.U.P. may be neither easy nor inexpensive. Thus, to convert barren land into land suitable for cultivation may be a very slow process. In the initial stages of planning, one of the objectives was of self sufficiency in foodgrains production. Apart from various measures of increasing production, efforts were made to bring more land under cultivation. As we have seen above, there was lot of scope for this extension activity especially in states like Assam, Gujarat, Punjab and Rajasthan.

Land Utilisation Pattern : Change Over Time (1960-61--1976-77)

For the country as a whole, the percentage of land under net area sown increased from 44.40 per cent in 1960-61

^{4/} While looking at the percentage figures one should not lose sight of the absolute amounts of land involved. Thus, in 1960-61, Rajasthan had relatively lower per cent of land under barren and unculturable land than states like Assam, Gujarat and Punjab but the amount of such land is much higher in Rajasthan than any of these States. Again, Rajasthan and Madhya Pradesh together had more land as culturable waste than rest of the country. Rajasthan alone accounted for 22.47 per cent of country's fallow land. Maximum amount of land under forests (24.81 per cent of total area under forest in the country) and under pastures (27.85 per cent of the total) was in Madhya Pradesh, and that under net area sown in Maharashtra, (13.47 per cent) of total net area sown in the country).

to 46.12 per cent in 1976-77. Part of this increase seems to have come from the category barren land since per cent of land under the category 'not available for cultivation' declined.^{5/} The per cent of land under forests also increased from 18.64 to 21.97.

The direction of change in L.U.P. was broadly the same for most of the states. Table 2.4 shows direction of movement of land under different uses for the states. As can be seen from the table except for the category 'not available for cultivation' the states are clustered in groups showing that most of them moved in the same direction. For the category 'not available for cultivation' seven states showed an increase and nine a decline in per cent of land under this use. This is partly due to the composite nature of this category which has as diverse uses as 'urban' and 'barren' in its fold. An interesting factor here is that increase in all the cases (see Table 2.4) was extremely small (less than one per cent in most of the cases) whereas decline

^{5/} We do not have separate data on barren and unculturable land for the year 1976-77. This category together with land under water, transportation and urban use is put under the category not available for cultivation. It is, however, very difficult to convert land from water, transportation and urban. In fact, per cent of land under urban and transportation use would have definitely increased since the period 1960-61--1976-77 was one of rapid urbanisation. Further, data on barren land for the year 1970-71 shows a decline in land (per centwise) under this category from 12.03 per cent in 1960-61 to 9.26 in 1970-71. We can assume that this trend would have continued in later years also.

(except in case of Kerala) has been more substantial. We surmise that increase would have taken place due to increased land under urban use whereas decline would be in consequence of conversion of barren land into more productive uses.

As can be seen from Tables 2.2 to 2.4, all the states except Andhra Pradesh, Gujarat and Karnataka showed an increase in net area sown. Whereas the decline in 'per cent of net area sown' in case of Andhra Pradesh and Gujarat was marginal that in case of Karnataka was quite significant (from 54.46 in 1960-61 to 48.29 per cent in 1976-77). On the other hand, states like Punjab, Assam, Haryana, Kerala, Madhya Pradesh, Rajasthan and West Bengal showed significant increases in per cent of land under 'net area sown'. By 1976-77 both Punjab and Haryana had 82.79 per cent (highest among all states) of their land under this category. Jammu and Kashmir, as in 1960-61, held the lowest position in this regard. It had only 15.72 per cent of its area under net area sown. Again, as in 1960-61, it had the highest per cent (61.03) of land under forests. Over the period 1960-61--1976-77 Bihar showed a substantial decline and Orissa substantial increase in per cent of area under forests. The changes (increases in most of the cases) in other states were not so significant.

Most of the states show a more efficient use of land as is evident from decline in percent of area under culturable

waste and fallows. There were only two states which showed an increase in per cent of area under culturable waste--Maharashtra and Gujarat. In Gujarat the increase was quite high - the per cent of area under culturable waste increased from 4.26 per cent in 1960-61 to 10.68 per cent in 1976-77. There were six states--Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka and Tamil Nadu--which showed an increase in land under fallows. All excepting Assam and Gujarat has above 10 per cent of their land lying fallow. Rajasthan, despite a decline in per cent of 'fallow' and culturable waste' land continued to have the highest per cent of land under culturable waste and fifth highest under fallow. It accounted for the maximum amount of land under these uses among all the states.

The L.U.P. takes a long time to change. In the short span of sixteen years of our study period some of the states have shown significant shifts. Most of the states have moved towards more efficient use of land. A more productive use of land should have significant implications for economic growth of the state. The relationship can be seen more clearly in the agricultural sector which is the prime user of land. We will be analysing this relationship in chapter 5 where we would include some more indicators relating to use of land.

Population and Urbanisation

The various states have been endowed differently not only with respect to land resource but also with respect

to their human resources. Population and settlement pattern in a region is a result of evolution over a long period of time. Climate, availability of water, nearness to water ways, quality of soil may have had a substantial influence on the establishment of a village or town in the initial stages of development. Over time, locational or other exogenous factors may determine the growth of various settlements. India is a very vast and a very old country. Most of its regions have had settled cultivation for a very long time. Hence the settlement structure has remained stable over a long time. Each region and sub-region has had a hierarchy of settlement--the small towns mainly servicing the surrounding agricultural area and performing the most elementary production and distribution functions and large towns catering to larger populations and performing higher order functions. As the population has increased, changes have taken place not only in the size and number of towns/cities but also in the mix of economic activities and consequently in the rural urban mix of population. In this section, we confine ourselves to the period 1961-81 and discuss some aspects of changes in population over different regions of the country.

India's population increased from 439.1 million in 1961 to 658.14 million in 1981. Meanwhile the urban component of the population increased from 78.94 million in 1961 to 156.19 million in 1981. Urban population as a percentage of total population was 23.73 per cent in 1981 compared to

17.98 per cent in 1961. The data relating to various aspects of population and urbanisation for various states and the country as a whole is given in Table 2.5 to 2.11. As can be seen from Table 2.8 the rate of growth of urban population in both the decades (1960's and 1970s) had been higher than that of rural as well as total population. Further, whereas decennial rate of growth of both total and rural population has declined, that of urban population has increased considerably. Most of this urban population was concentrated in large towns and cities. Thus in 1981, 44.6 per cent of total urban population was settled in twelve metropolitan areas (Tables 2.9 and 2.10). Only 13.63 per cent of the urban population resided in towns with less than 20,000 population. Actually, the percentage of population staying in small towns showed a decline over time.^{6/}

Population and Density (1961-81)

The share of various states in the country's population in 1981, ranged from 1.95 per cent in Haryana to 16.85

^{6/} This however does not mean that small towns have languished. Actually, different categories of towns do not show vastly different rates of growth. See Rakesh Mohan, "Morphology of Urbanization in India" and Amitabh Kundu, "Theories of City Size Distribution and the Indian Urban Structure--A Reappraisal," - Papers presented at seminar on Urbanisation and Planned Economic Development in India - Present scenario and future perspectives", Jawaharlal Nehru University, New Delhi, September 1982.

per cent in Uttar Pradesh (See Table 2.5). Seven states viz. Uttar Pradesh, Bihar, Maharashtra, Andhra Pradesh, West Bengal, Tamil Nadu and Madhya Pradesh account for around 70 per cent of the total population of the country. The remaining 30 per cent is distributed among rest of the 15 states and 9 union territories. As can be seen from Table 2.5, the distribution of population over the states has not changed much. The shifts in this respect, if any, are very insignificant.

The density of population was the highest in Kerala making it the most 'congested' state in the country. Table 2.6 gives data on density of population in various states. Other high density states have been Bihar, Haryana, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal. Rajasthan, Madhya Pradesh and Jammu and Kashmir are the most sparsely populated states. The low density in these states can be explained in terms of uninhabitable terrain and/or low level of economic activity which cannot support a large population. Density of population as can be seen from Table 2.6, increased in all the states over the period 1961-81.

Rate of Growth of Population

The decennial rate of growth of population of different states varied a great deal. Table 2.8 gives rates of growth of population of different states. The high growth states in both the periods were Gujarat, Haryana, Madhya Pradesh

and Rajasthan. Andhra Pradesh, Bihar, Punjab and Tamil Nadu showed low rates of growth in both the decades. Among the high growth states only Rajasthan showed an acceleration in growth rate in 1971-81 over the period 1961-71. Similarly, among low growth state only Tamil Nadu showed a decline. Other states which showed a decline in the rate of growth of population were Gujarat, Haryana, Kerala, Madhya Pradesh, Maharashtra, Orissa, and West Bengal. The deceleration in rate of growth was quite significant in case of Kerala, Orissa and Tamil Nadu. Rajasthan and Uttar Pradesh showed significant acceleration in rate of growth. The coefficient of variation of rate of growth of population between different states increased from 14.20 in 1961-71 to 15.22 in 1971-81.

The rate of growth of population and acceleration/ deceleration in that over time is more a function of success or failure in family planning rather than level of growth of economic activity in the area or migration to and from a region.^{7/} This however, cannot be said of the component of this population namely urban population. Urbanisation as we will see in later chapters is closely associated with industrialisation in the region.

7/ Visaria, Pravin and Visaria, Leela, "Indian Population Scene after 1981 Census : A Perspective," Economic and Political Weekly, Vol. XVII, Spl. No. 1981, pp.1731.

Urbanisation in States - Level and Pattern

All states show similar trend over time as far as level of urbanisation is concerned. The level of urbanisation in all of them was higher in 1981 as compared to that in 1971. As can be seen from Table 2.7 the per cent of urban to total population increased in all states. Maharashtra continued to be the most urbanised and Orissa the least urbanised state in the country. The rate of growth of urban population, in all the states, was higher than that of rural population (see Table 2.8). The smallest urban-Rural-Growth-Differential (URGD) was seen in the case of West Bengal and the highest in case of Orissa in both the periods. Further, all states except Maharashtra, Tamil Nadu and Gujarat showed an acceleration in the rate of growth of urban population over time. The decline in the decennial rate of growth of urban population was quite significant in the case of Tamil Nadu (from 38.44 over 1961-71 to 27.71 over 1971-81). As may be seen from Table 2.8 the states which had high rate of growth (of urban population) in both the periods were Bihar, Gujarat, Madhya Pradesh, Orissa and Rajasthan. On the other hand Kerala, Punjab and West Bengal had 'low' rate of growth of urban population over both the decades. Maharashtra and Tamil Nadu shifted from high growth to low growth category in the second period. The reverse shifts were made by Andhra Pradesh, Haryana, Karnataka and Uttar Pradesh. An interesting feature of the period

1971-81 was that it is the relatively less urbanised states which have experienced a rapid rate of urban growth. The old industrially developed and highly urbanised states like Maharashtra, Tamil Nadu and West Bengal have experienced much lower rates of growth of urban populations. Absolute increases in urban population in these states continue to be large because of high initial (base) levels. Thus, despite showing 'high' rates of growth, the less urbanised states will take a long time to catch up with the old industrial states in terms of the size of urban population.

Pattern of Urbanisation

The old industrial states not only have a relatively higher proportion of population staying in urban areas but a major part of this urban population resided in large urban areas. This can be seen from Table 2.9 which gives the distribution of urban population in towns classified according to size for selected states in the country. The cities/towns have been divided into six categories according to their size of population.^{8/}

8/ The criteria for classification of towns is as follows :

Class	I town	= Million +
Class	II town	= 5 lakh to one million
Class	III town	= 1 lakh to 5 lakhs
Class	IV town	= 50,000 - 1 lakh
Class	V town	= 20,000 - 50,000
Class	VI town	= less 20,000 than

As can be seen from Table 2.9, West Bengal had the highest per cent in 1961 (42.23 per cent) of its urban population living in Class I towns. It also had the minimum percentage of its urban population living in Class V and VI towns. Maharashtra was second on both these counts. Both the states continued to hold the same position in 1971 and 1981 also. Other states which had high percentage of population living in Class I towns in 1961 were : Andhra Pradesh, Gujarat, Karnataka and Tamil Nadu. In fact, in 1961 these were the only states which had Class I towns as can be seen from Table 2.10. By 1981 only two more states had joined this group namely Rajasthan and Uttar Pradesh. However, the percentage of population in Class I towns in these states (at around 14 per cent) was much lower than in other states.

The percentage of urban population residing in class I town has increased in all these states over the period 1961-81. The sharpest increases in this regard have come about in Maharashtra (from 37.20 per cent to 51.03 per cent) and West Bengal (42.28 per cent to 63.5 per cent). The increase in case of Maharashtra has come about in the second decade whereas in case of West Bengal it was the decade 1961-71, which experienced the maximum increase. Again, among all the states only Karnataka showed steady increase. Tamil Nadu followed the pattern of Maharashtra--slight

increase (from 19.23 per cent to 19.83 per cent) over the decade 1961-71 followed by a spurt (26.85 per cent) in the next decade.

The percentage of population living in other categories of towns too varied a great deal from state to state. In 1961, Haryana had the smallest percentage of population (8.07 per cent) living in Class III towns. In 1981 it had 56.64 per cent of its population living in Class III towns--the highest among all states. Rajasthan and Orissa were the other two states having more than 30 per cent of their population in Class III towns in 1981. In the same year, Haryana and Orissa were the only states which had neither a metropolitan city nor a class II town. Orissa had the highest percentage of population living in Class IV towns. Percentage of population living in Class V and VI towns has been declining over time for most of the states. However, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh had more than 20 per cent of their population living in Class VI towns even in 1981. The number of such towns in Uttar Pradesh had increased tremendously over the decade 1971-81, and so has the percentage of population living in them. In fact, Uttar Pradesh is the only state which has shown an increase in percentage of population living in Class VI towns over the period 1961-81. Similarly the only states to show an increase in percentage of population living in class V towns were Karnataka, Orissa and Rajasthan.

As the population of towns increased and the towns graduated to a higher class, the lower category towns would lose population till a still lower category town would graduate to their category and offset the loss. This seems to have happened in many states in case of Class III and IV towns. Whereas categories I, II, V and VI have shown a clear trend (percentage of population living in first two categories has increased and that in next two categories declined for most of the states over the period 1961-81), no such clear trend is discarible for class III and IV towns.

The concentration of urban population in large urban areas is not as much as a function of the degree of urbanisation (as measured in terms of percentage of urban population to total population) as much as it is of industrialisation and the types of industrialisation which takes place in a state. Predominantly agrarian structures cannot support very large cities. These are feasible entities only where there is a **mass** of secondary and tertiary activities. This can best be illustrated with the example of Punjab and West Bengal. In 1981, both the states had around 27 per cent of their population as urban. However, in West Bengal, 63.5 per cent of this urban population lived in million plus cities and 76.8 per cent in 'lakh plus cities' whereas in Punjab these percentages were 0.00 and 46.40 respectively.

The concentration of urban population varied not only between industrial and non-industrial states but also within industrially developed states--West Bengal having the highest and Tamil Nadu the least concentration. In a later Chapter we will examine the relationship between industrial growth and concentration of urban population. Now we turn to analysis of 'aggregate economic activity' in different states. Taking State Domestic Product as a major indicator of economic activity of a region we will analyse the relative position of various states in this respect over the period 1961-81.

State Domestic Product--1961-81

The wide variations in area, population and their composition for various states discussed above are also noticeable in their state domestic product (SDP). In 1977-78, the contribution of different states to National Domestic Product (NDP) ranged from a low of 0.7 per cent to a high of 12.3 per cent. Table 2.11 gives share of SDP of different states to NDP for a few selected years. As can be seen from the Table, the range has slightly declined over the period 1960-61--1977-78. Again, there have been some changes in the relative position of various states. Thus, in 1960-61, Uttar Pradesh was the largest contributor and Jammu and Kashmir the smallest. Whereas Jammu and Kashmir has retained its position at the bottom, the top position - by 1977-78 had

been taken over by Maharashtra relegating Uttar Pradesh to second position. Apart from these states, all the other states excepting Karnataka, Orissa and West Bengal have shifted their ranks over the period 1960-61--1977-78. The states which have shifted up are Andhra Pradesh, Gujarat, Haryana and Punjab. Assam, Kerala, Madhya Pradesh, Rajasthan and Tamil Nadu showed decline in their ranks. The shifts in all the cases, however, have not been significant. The rank correlations between SDP of 1960-61 and 1970-71 and that between SDP of 1970-71 and 1977-78, come out to be 0.986 and .99 respectively. Both are significant at 1 per cent level of significance.

The absolute contribution of states to NDP also showed some changes. Thus the contribution of Andhra Pradesh, Bihar, Uttar Pradesh, Tamil Nadu and West Bengal declined steadily over the period 1960-61 to 1970-71 to 1977-78. Haryana was the only state to show continuous increase in its share over this period. The states (excluding the ones mentioned above) which showed a decline in their contribution to NDP over the period 1960-61--1977-78 were Assam, Madhya Pradesh and Rajasthan. Apart from Haryana, Gujarat, Punjab and Maharashtra also showed increase over the period 1960-61 - 1977-78.

As mentioned above Maharashtra and Uttar Pradesh are the two largest contributors to the NDP. These two states

accounted around 21.66 per cent of total GDP of the country each contributing more than 10 per cent. In the next category we have West Bengal, Tamil Nadu, Andhra Pradesh, Bihar, Madhya Pradesh, Gujarat and Karnataka each contributing between 5-10 per cent to GDP. The states whose share is less than 5 per cent in all the years selected by us have been Rajasthan, Kerala, Punjab, Orissa, Assam, Haryana and Jammu and Kashmir. All these states excepting Rajasthan are small sized states. Further, the two topmost contributors (Uttar Pradesh and Maharashtra) are large states--both area-wise as well as populationwise. If we compare the share of various states in GDP to their shares in total area and population of the country we will probably find a very close correlation between these variables. Table 2.12 gives the share of selected states in GDP, area and population of the country for the year 1970-71.^{8/} A casual look at this Table shows that whereas the share of states in GDP is approximately in line with their share in population, the relationship between GDP and area is not so strong.^{9/} The states whose share in GDP was lower than their share in both

^{8/} As we have seen in earlier sections, the shares of different states in area, population and GDP have not changed much overtime. We, therefore, select only one year viz. 1970-71, which will give us a general idea of relationship between these three variables.

^{9/} The rank correlation between area and GDP comes to +0.43 and that between population and GDP to +0.94. Whereas the former is not significant at 5 per cent level of significance the latter is significant at one per cent level of significance.

area and population were - Andhra Pradesh, Assam, Jammu and Kashmir, Madhya Pradesh, Orissa and Rajasthan. At the other end we had states like Haryana, Punjab, Gujarat, Maharashtra and West Bengal whose share in NDP exceeded their share in both area as well as population.

State Domestic Product - Rate of Growth

All these states (Haryana et al) with the exception of West Bengal have recorded rates of growth in their SDP over the period 1960-61 - 1977-78 which are higher than the national average. Table 2.13 gives the compound rate of growth of SDP over some selected period for various states. Punjab shows the highest rate of growth.^{10/} The relatively higher rate of growth (13 per cent approx.) recorded by Punjab and Haryana could be partly due to their low initial base.^{11/} However, other states with low or even (lower) initial base (Assam, Jammu and Kashmir and Orissa) have not shown as high rates of growth. The lowest rate of growth over the periods 1960-61 - 1970-71 and 1960-61- 1977-78 was shown by Tamil Nadu. In fact the only states which showed a rate of growth higher than the national rate of growth

^{10/} In absolute terms, however, it is Maharashtra which has added the maximum amount (Rs.7803 lakhs) to its SDP over the period 1960-61 - 1977-78. Uttar Pradesh and West Bengal follow Maharashtra in absolute additions to SDP over this period. Punjab and Haryana rank quite low in this respect.

^{11/} Thus in 1960-61 Punjab's SDP was only .24 of that of Maharashtra and in case of Haryana's SDP this ratio was even lower at .15.

over the period 1960-61 - 1977-78 were Gujarat, Haryana, Maharashtra and Punjab. All the other states showed low rates of growth. The range (at 4.07) however was not very high.

The states show frequent shifts in their position with respect to compound rate of growth (CRG) over various periods and it is not possible to discern any general pattern. The variation between the CRG of various states, however, seems to have declined in the period 1970-71 - 1977-78 as compared to that in 1960-61 - 1970-71. The coefficient of variation of CRG declined from 15.92 (1960-61 - 1970-71) to 10.72 (1970-71 - 1977-78). The coefficient of variation was lower for the period 1960-61 - 1977-78 as compared to both the above mentioned (shorter) periods. However, we cannot draw any conclusions regarding the decline in inequality in rate of growth of SDP of various regions over time on the basis of coefficient of variation. A look at CRG for shorter sub-periods shows the highest variation over the period 1974-75 - 1977-78.

Per Capita SDP

The states which experienced a 'high' rate of growth in their SDP are also the ones which had higher per capita SDP than other states. The ranking of states in terms of per capita SDP shows Maharashtra at the 'top' from 1960-61 to 1965-66. In 1965-66, Punjab was reorganised into two parts--Punjab and Haryana. Some parts of the state were

also incorporated into the newly constituted state of Himachal Pradesh. Since then, for each and every year, Punjab has maintained its position of being the state with the highest per capita SDP in the country. Table 2.14 gives per capita SDP of the selected states for the years 1960-61 to 1977-78. As can be seen from the table, the second rank has been held interchangeably by Haryana and Maharashtra (except in 1970-71 when Gujarat held this position). Other states which have had per capita SDP higher than the national average throughout the period have been Gujarat and West Bengal. Karnataka and Assam had high per capita SDP^{12/} (greater than per capita NDP) in some years (Assam in 1960-61, 1966-67 and Karnataka in 1970-71 and 1971-72). Tamil Nadu, after 1962-63, has had a per capita SDP lower than the national average (Barring these states the rest of the states have always had low SDP).

With the exception of years 1965-66 and 1976-77 Bihar has had the lowest per capita SDP among all the states considered. In 1965-66 it was Madhya Pradesh and in 1976-77 it was Orissa which held the lowest position.

^{12/} The terms 'high' and 'low' here, as elsewhere in the text are used in relation to national average.

It may be mentioned that the position of various states in terms of their per capita SDP has fluctuated during the period 1960-61 to 1977-78. However, such fluctuations have not basically altered the composition of various groups. Five richest states have always been Maharashtra, Punjab, Haryana, West Bengal and Gujarat. Andhra Pradesh, Karnataka and Tamil Nadu have consistently been the middle income states. Similarly, Uttar Pradesh, Madhya Pradesh, Orissa and Bihar belong to the low-income group. In this (low income) group Jammu and Kashmir, Kerala, Assam and Rajasthan have also made their appearance from time to time. This has been the 'most fluid' of the groups - the only 'consistent' being Bihar. Among the low income states, Kerala is the only state which seems to have finally crossed over the middle income group. It has not made a single appearance in the group of low income states since 1957-68. We divide the states in three groups--Group I, II and III according to their per capita SDP. Group I includes all the states which have per capita SDP higher than the per capita NDP, Group III consists of five poorest states. Rest of the states compose Group II. Needless to state, the composition of groups would vary from year to year as can be seen from Tables 2.18 & 2.19 which divided the states into three groups according to above definition. In the next section we will analyse the inequality in per capita SDP of various states taken together and groupwise.

Interstate Inequality in SDP

The inequality between per capita SDP of various states has been increasing over time. This can be seen from Table 2.15 which gives computed values of various measures of inequality in SDP (per capita) of selected states for the years 1960-61 to 1977-78. All measures point towards increasing inequality. Thus, the H/L (highest to lowest) ratio increased from 1.90 in 1960-61 to 2.66 in 1970-71 to 2.67 in 1977-78. Meanwhile the coefficient of variation (COV) also, showed an increase from 18.61 in 1960-61 to 25.74 in 1970-71 to 28.73 in 1977-78. Both H/L and coefficient of variation showed highest inequality in the year 1976-77. Again, the absolute difference between the SDP of the richest and the poorest state increased from Rs.194 (1960-61) to Rs.1227 (in 1977-78).

It is not only the variation between sixteen states which have increased but also within Group I and the rest of the states. This can be seen from Table 3.16. Further, the absolute difference between the per capita SDP of the richest state and the second richest state has also increased from Rs.19 in 1960-61 to Rs.325 in 1977-78. This difference was not very high till the year 1965-66. From a figure of 19 in 1960-61 it increased to 92 in 1966-67 and the gap between the incomes of first two richest states in the country has continued to widen since then.

As expected, the coefficient of variation of per capita SDP of the groups taken separately is lower than that of all the states taken together. Interestingly, until 1967-68 it was the COV of the Group II and III states taken together which was higher than that of Group I states. The situation was reversed after that year and has continued to be so till 1977-78.

Per Capita State Domestic Product - Rate of Growth

The increasing inequalities in per capita SDP of states point towards the fact that the states in the higher income groups have been growing at a much faster rate than the states in the lower income groups. This can be seen from Table 2.16 which gives the compound rate of growth (CRG) of per capita SDP of various states. The highest CRG for the period 1960-61 was recorded by Punjab. The other high growth states were Haryana, Gujarat, and Maharashtra. Over the period (1960-61 - 1977-78) the lowest CRG was registered by Assam and the next lowest by Tamil Nadu. The rank correlation between level of per capita SDP in 1960-61 and CRG for the period 1960-61 - 1970-71 comes out to be 0.37, which is statistically significant at 1 per cent level of significance. The coefficients of rank correlation between per capita SDP 1960-61 and 1970-71 and CRG for the periods 1960-61 - 1970-71 and 1970-71 and 1977-78 are also quite high at .86 and .84 respectively and confirm the

conclusion of high positive correlation between level of per capita SDP and its CRG.

The problem is not that the low income states have generally shown a lower rate of growth than that of the richer states^{13/} but, that they have not shown a rate of growth significantly higher than the one shown by the rich states. As noted before, given the initial level of inequality in income levels between the states, the low income states will have to grow at considerably higher rate of growth to reduce the level of disparity. Thus if Bihar were to attain a level of income equal to that of Punjab in 20 years time, it will have to grow at a CRG of 16.4 per cent per annum approx - a CRG more than double its present rate. This is assuming that Punjab continues to grow at the same rate i.e. 10.80 per cent CRG over period 1960-61 - 1977-78. If Punjab were to stagnate at its current level of per capita SDP, of

^{13/} Some of the low income states have recorded relatively high rates of growth of in their per capita SDP over some periods. This is partly due to low level of initial income. Despite these higher rates of growth the additions to their per capita SDP have been much lower than some of the high income states with lower CRG. Thus, despite its relatively higher rate of growth in 1960-61 - 1970-71 Orissa added only Rs.265 to its per capita SDP. During the same period Maharashtra's per capita SDP increased by Rs.400 and that of West Bengal by Rs.345. Both these states had recorded a lower rate of growth than that of Orissa. Even more revealing is the case of Manipur, a state not included in our analysis. This state showed the highest rate of growth over the period 1970-71 - 1977-78 but remained one of the lowest income states in the country.

Rs. 1962 Bihar at its current rate of growth (7.50 per cent per annum) will take 14-15 years to reach level of income equal to that of Punjab.

Over time the inequalities in rate of growth have shown some tendency to decline (see Table 2.16). The coefficient of variation (COV) of CRG of all states declined from 20.43 (1960-61 - 1970-71) to 13.08 (1970-71 to 1977-78). The coefficient of variation of CRG is even lower (at 12.52) for the longer period 1960-61 - 1977-78. Thus it would seem that disparities in growth are much lower in the long period as compared to those in the short period. Taking even shorter periods we see that the COV showed an increase from 29.96 (1960-61 - 1965-66) to 31.19 (1965-66 - 1970-71) and then declined to 20.57 (1970-71 - 1974-75). It was the highest for the period 1974-75 - 1977-78.

Conclusion

The above analysis reveals that it is the high income states which have had a higher rate of growth. The divergence in growth rate is not very high. Further the variation in growth rate shows some decline over time. In order to achieve greater equality between per capita SDP of various states what is required is greater, rather than smaller divergence - with poorer states growing at rates higher than those enjoyed by the richer states. The states which

are richer and which have shown higher rates of growth are heterogenous entities. Size wise three of them (Punjab, Haryana and West Bengal) are small, one (Gujarat) is medium sized and one (Maharashtra) is a large state.

Table 2.1

Area of States and Distribution of Area by Topographical Factors 1951

States	Area (in sq. miles)	State area as per cent of total area of India (3)	T.Land area (4)	Moun- tains (5)	Hills (6)	Plateau (7)	Plain (8)	Unusable areas (9)	Topographi- cally usable areas (10)	% usable area (11)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Indian Union	1,269,640	100.00	8126	873	1506	2248	3498	3082	5044	-
<u>Part 'A' States</u>	766,536									
1. Assam	85,012	6.70	544	127	254	-	163	319	225	41.36
2. Bihar	70,330	5.54	450	-	59	140	251	95	355	78.89
3. Bombay	1,11,434	8.78	712	-	186	284	243	234	478	67.13
4. Madhya Pradesh	1,30,272	10.26	834	-	225	404	205	280	554	66.43
5. Madras	1,27,790	10.07	818	3	203	131	480	213	605	73.96
6. Orissa	60,136	4.74	385	-	142	60	183	131	254	65.97
7. Punjab	37,378	2.94	239	49	18	13	159	97	142	59.41
8. Uttar Pradesh	1,13,409	8.93	726	79	41	34	572	143	583	80.30
9. West Bengal	30,775	2.42	197	3	3	-	191	15	182	92.39
<u>Part 'B' States</u>										
10. Hyderabad	82,168	6.47	526	-	64	367	95	145	381	72.43
11. Kashmir	92,780	7.31	594	548	27	16	3	547	47	7.91
12. Madhya Bharat	46,478	3.66	297	-	32	197	69	77	220	74.07
13. Mysore	29,489	2.32	189	-	34	154	-	65	124	65.61
14. Pepsu	10,078	0.79	64	-	4	2	58	32	32	50.00
15. Rajasthan	1,30,207	10.26	834	-	42	271	521	387	447	53.60

...

Table 2.1 (contd....)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
16. Saurashtra	21,451	1.69	136	-	7	-	130	14	122	89.71
17. Travancore & Cochin	9,144	0.72	58	1	31	-	26	25	33	56.90
<u>Part 'C' States</u>										
18. Ajmer	2,417	0.19	15	-	1	14	-	5	10	66.67
19. Bhopal	6,878	0.54	44	-	3	39	2	11	33	75.00
20. Coorg	1,586	0.12	10	-	9	1	-	7	3	30.00
21. Delhi	578	0.04	4	-	-	-	4	-	4	100.00
22. Himachal Pradesh and Bilaspur		0.86	70	48	22	-	-	62	8	11.43
23. Kutch	16,724	1.32	109	-	5	-	103	66	43	39.45
24. Manipur	8,628	0.68	55	2	49	4	-	39	16	29.09
25. Tripura	4,032	0.32	26	-	10	-	16	8	18	69.23
26. Vindhya Pradesh	23,603	1.86	151	-	9	118	24	38	113	74.83
<u>Part 'D' Territories and other areas 5,959</u>										
27. Andaman & Nicobar Islands	3,215	0.25	21	-	21	-	-	16	5	23.81
28. Sikkim	2,744	0.22	18	13	4	-	-	17	1	5.55

Source : Constitution of India and India Yearbook, 1953.

Table 2.2

Land Utilization Pattern of Selected States (1960-61)
(Per cent of reported area)

States	Percent of State area to total area of the country	Not avail- able for cultiva- tion	Barren and un- culturable land	Forests	Perma- nent pas- tures	Land under misc. tree crops	Cultu- rable waste land	Fallow land other than current	Current fallow	Net area sown
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Andhra Pradesh	9.13	6.71	8.64	21.42	4.41	1.07	5.96	3.26	9.00	39.51
Assam	4.84	5.99	37.56	33.67	1.06	8.34	0.77	1.15	0.22	15.41
Bihar	5.80	8.01	4.87	21.68	1.28	-	5.21	4.86	7.73	46.35
Gujarat	5.99	2.27	25.54	5.15	5.82	0.23	4.26	2.37	1.91	52.46
Jammu & Kashmir	1.63	6.29	5.91	64.34	2.48	2.67	3.32	0.22	2.22	13.49
Karnataka	6.28	4.32	4.91	14.42	9.26	1.95	3.49	2.75	4.45	54.46
Kerala	1.29	5.31	3.92	27.37	1.17	5.29	3.71	1.61	1.74	49.87
Madhya Pradesh	14.64	4.37	5.24	31.58	8.91	0.76	7.34	3.24	1.79	36.78
Maharashtra	10.29	2.28	5.83	17.59	4.69	0.60	3.03	3.67	3.89	58.12
Orissa	5.20	8.87	9.91	22.91	4.74	2.97	9.12	1.92	5.91	36.07
Punjab	4.10	5.91	21.08	3.02	1.02	0.09	3.86	-	4.43	60.58
Rajasthan	11.32	3.24	15.23	2.41	4.98	0.05	20.21	9.18	5.98	38.75
Tamil Nadu	4.35	9.95	7.26	14.34	2.79	1.09	5.42	4.82	7.48	46.08
Uttar Pradesh	9.87	6.48	8.70	12.86	0.15	3.03	5.56	4.27	0.59	58.27
West Bengal	2.96	(C)	14.60	12.45	-	7.22	-	4.31	-	51.41
All India	100.00	4.97	12.03	10.64	4.60	1.73	6.58	3.76	3.95	44.60

Table 2.3

Land Utilisation Pattern of Selected States 1976-77

States	% of State's area to total area of India	(2)	Area not available for cultivation	(3)	Forests	(4)	Perma- nent pasture	Land under misc. tree crops	(6)	Cultura- ble waste land	(7)	Fallow land other than current	(8)	Current fallow	(9)	Net area sown	(10)
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)							
Andhra Pradesh	9.02	16.00	23.26	3.54	0.998	3.43	4.43	9.65	30.64								
Assam	2.58	30.76	25.01	2.36	3.17	1.66	1.55	1.30	34.12								
Bihar	5.70	15.46	16.04	0.89	1.26	2.82	5.50	9.84	43.18								
Gujarat	6.19	19.60	9.71	4.55	0.03	10.63	1.99	2.320	51.11+								
Haryana	1.45	10.56	2.50	0.98	(a)	0.02	-	2.36	02.79								
Jammu & Kashmir	1.49 ^c	12.73	61.03 ^(b)	2.36	2.36	3.12	0.18	2.06	15.72								
Karnataka	6.27	9.97	15.23	7.86	1.73	2.93	3.76	10.17	48.29								
Kerala	1.23	8.72	27.84	0.41	1.83	2.98	0.57	0.95	56.64								
Madhya Pradesh	14.57	10.14	32.20	6.67	0.31	4.65	2.04	2.17	41.33								
Maharashtra	10.12	8.80	17.30	5.21	0.63	3.22	2.93	3.13	60.26								
Orissa	5.11	5.32	42.82	3.46	3.15	1.80	1.01	4.62	37.82								
Punjab	1.66	10.67	4.07	0.08	0.03	0.99	0.02	1.29	82.79								
Rajasthan	11.25	13.16	5.81	5.30	0.04	19.32	6.50	5.83	44.04								
Tamil Nadu	4.27	17.52	15.39	1.38	1.43	2.92	4.22	10.88	46.21								
Uttar Pradesh	9.80	11.27 ^p	17.04	0.93	2.63	4.78	2.02	3.00	58.33								
West Bengal	2.91	6.58	13.41	(a)	6.07	(a)	4.09	(b)	69.84(e)								
India	100.00	12.90	21.97	4.10	1.30	5.64	3.19	4.70	46.12								

Table 2.4

Direction of Change in Various Land Uses in Selected States 1960-61 - 1976-77

Direction of change (1)	Not available for cultivation (2)	Forests (3)	Culturable waste (4)	Fallow Land (5)	Land under tree crops (6)	Pastures (7)	Net area sown (8)
Increased	Andhra Pradesh Bihar, Jammu & Kashmir, Karnataka Madhya Pradesh Maharashtra Tamil Nadu	Andhra Pradesh Gujarat Karnataka Kerala Madhya Pradesh Orissa, Punjab Rajasthan Uttar Pradesh Tamil Nadu West Bengal	Gujarat Maharashtra	Andhra Pradesh Bihar Karnataka Tamil Nadu Gujarat	Assam Bihar Maharashtra	Maharashtra Rajasthan Uttar Pradesh Jammu & Kashmir	Assam, Bihar Haryana, Jammu & Kashmir Kerala, Madhya Pradesh Maharashtra Orissa, Punjab Rajasthan Tamil Nadu West Bengal Uttar Pradesh
Declined	Assam, Gujarat Kerala, Orissa Punjab Haryana Rajasthan Uttar Pradesh West Bengal	Assam, Bihar Jammu & Kashmir Maharashtra	Andhra Pradesh Assam, Bihar Jammu & Kashmir Karnataka Kerala Madhya Pradesh Orissa, Punjab Rajasthan Tamil Nadu Uttar Pradesh	Assam, Haryana, Kerala, Madhya Pradesh, Orissa, Punjab, Rajasthan Uttar Pradesh West Bengal Jammu & Kashmir	Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala Madhya Pradesh, Orissa, Tamil Nadu Uttar Pradesh, West Bengal, Jammu & Kashmir	Andhra Pradesh Assam, Bihar, West Bengal, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Orissa, Punjab, Tamil Nadu	Andhra Pradesh Gujarat Karnataka

Table 2.5

Per cent shares of Selected States in Total
Population of the Country

States	(in per cent terms)		
	1961	1971	1981
Andhra Pradesh	8.19	7.9	8.14
Assam	2.78	2.7	-
Bihar	10.58	10.3	10.61
Gujarat	4.70	4.9	5.16
Haryana	1.73	1.8	1.95
Jammu & Kashmir	0.81	0.8	-
Karnataka	5.37	5.3	5.63
Kerala	3.85	3.9	3.86
Madhya Pradesh	7.37	7.6	7.92
Maharashtra	9.01	9.2	9.53
Orissa	4.00	4.00	3.99
Punjab	2.54	2.5	2.53
Rajasthan	4.59	4.7	5.18
Tamil Nadu	7.7	7.5	7.34
Uttar Pradesh	16.79	16.1	16.85
West Bengal	7.96	8.1	8.28
India	100.00	100.00	100.00

Source : Census of India, 1961, 1971 and 1981

Table 2.6

Density of Population in Selected States

States	1961	1971	1981
Andhra Pradesh	131	157	193
Assam	97	136	-
Bihar	267	324	401
Gujarat	110	136	173
Jammu & Kashmir			
Karnataka	435	549	654
Madhya Pradesh	73	94	118
Madras	258	316	371
Maharashtra	129	164	204
Mysore	123	153	193
Orissa	113	141	169
Punjab	166	269	331
Rajasthan	59	75	100
Uttar Pradesh	251	300	377
West Bengal	399	504	620
Haryana	-	227	291
India	134	161	200

Table 2.7

Share of Urban Population in Total Population of
Selected States

States	(in per cent)		
	1961	1971	1981
Andhra Pradesh	17.44	19.3	23.25
Assam	7.48	8.8	-
Bihar	8.43	10.0	12.46
Gujarat	25.77	28.1	31.08
Haryana	17.23	17.7	21.96
Jammu & Kashmir	16.66	18.6	-
Karnataka	22.33	24.3	28.91
Kerala	15.11	16.2	18.78
Madhya Pradesh	14.29	16.3	20.31
Maharashtra	28.22	31.2	35.03
Orissa	6.32	8.4	11.82
Punjab	23.06	23.7	27.72
Rajasthan	16.28	17.6	20.93
Tamil Nadu	26.69	30.3	32.98
Uttar Pradesh	12.85	14.0	18.01
West Bengal	24.45	24.7	26.49
India	17.98	19.87	23.73

Table 2.8

Decennial Rate of Growth of Population

States	<u>Total population</u>		<u>Rural population</u>		<u>Urban Population</u>	
	1961-71	1971-81	1961-71	1971-81	1961-71	1971-81
Andhra Pradesh	20.60	23.19	17.81	17.19	33.81	48.26
Assam	34.37	-	32.38	-	53.03	-
Bihar	21.26	23.90	19.13	20.51	44.45	54.40
Gujarat	29.34	27.21	25.22	21.89	41.20	40.82
Haryana	31.36	28.04	30.48	21.36	35.61	59.16
Jammu & Kashmir	29.60	-	27.12	-	42.04	-
Kerala	25.89	19.00	24.15	15.39	35.68	37.63
Madhya Pradesh	28.66	25.17	25.72	19.16	46.31	56.07
Maharashtra	27.26	24.40	21.98	17.43	40.68	39.82
Mysore	24.07	26.43	20.90	18.74	35.09	50.39
Orissa	24.99	19.72	22.39	15.26	63.52	68.29
Punjab	21.00	23.01	19.82	16.59	24.92	43.66
Rajasthan	27.63	32.38	25.61	27.07	38.03	57.15
Tamil Nadu	22.01	17.23	16.03	12.65	38.44	27.78
Uttar Pradesh	19.82	25.52	28.25	19.70	30.47	61.22
West Bengal	27.24	22.96	27.01	20.11	27.95	31.61
India	24.66	24.43	21.78	18.96	37.33	46.02
Coefficient of variation *	14.20	15.22	17.14	17.66	22.99	24.26

*In the calculation of coefficient of variation C-V, Assam and Jammu & Kashmir have been excluded throughout.

Source : Census of India 1971, Paper I of 1971. Supplement Provisional Population Table and Census of India, 1981, Paper II of 1981.

Table 2.9

Size Distribution of Towns* in Selected States of the Country

1961

States	I	II	III	IV	V	VI
Andhra Pradesh	1	-	10	8	50	143
Bihar	-	-	9	9	30	85
Gujarat	1	-	5	12	37	112
Haryana	-	-	1	7	11	42
Karnataka	1	-	5	10	30	173
Kerala	-	-	7	5	31	52
Madhya Pradesh	-	-	8	5	30	165
Maharashtra	1	2	10	11	42	173
Orissa	-	-	1	4	7	48
Punjab	-	-	4	4	23	76
Rajasthan	-	-	6	4	23	108
Tamil Nadu	1	-	10	19	49	186
Uttar Pradesh	-	3	14	16	52	159
West Bengal	1	-	4	11	31	73
India	7	5	92	129	449	1650

...

Table 2.9 (contd...)

1971

States	I	II	III	IV	V	VI
Andhra Pradesh	1	-	12	17	59	118
Bihar	-	-	11	9	42	99
Gujarat	1	-	6	17	37	138
Haryana	-	-	2	9	14	40
Karnataka	1	-	10	9	38	171
Kerala	-	-	5	7	40	36
Madhya Pradesh	-	2	9	11	41	169
Maharashtra	1	2	14	16	61	331
Orissa	-	-	4	1	19	53
Punjab	-	-	4	8	22	72
Rajasthan	-	1	6	7	31	106
Tamil Nadu	1	1	15	27	57	141
Uttar Pradesh	1	4	17	20	67	184
West Bengal	1	-	4	18	34	77
India	9	10	126	178	570	1638

Table 2.9 (contd....)

1981

States	I	II	III	IV	V	VI
Andhra Pradesh	1	2	17	30	88	96
Bihar	-	4	12	19	57	87
Gujarat	1	2	10	23	46	138
Haryana	-	-	11	5	13	48
Karnataka	1	1	15	11	64	158
Kerala	-	3	5	7	49	21
Madhya Pradesh	-	4	10	28	41	220
Maharashtra	3	2	20	20	81	150
Orissa	-	-	6	7	23	67
Punjab	-	2	5	9	28	90
Rajasthan	1	-	10	11	52	121
Tamil Nadu	1	4	15	37	63	125
Uttar Pradesh	2	4	24	37	85	507
West Bengal	1	-	11	21	36	61
India	12	28	171	270	739	2020

Class I - Million +

Class II - 5 lakh - 1 million

Class III - 1 lakh - 5 lakh

Class IV - 50,000 - 1 lakh

Class V - 20,000 - 50,000

Class VI - 20,000

Source : Calculated from data given in Census publications.

Table 2.10

Per cent of Total Urban Population in Different Sized
Towns in Selected States

States	1961					
	I	II	III	IV	V	VI
Andhra Pradesh	19.95	-	23.21	8.48	23.77	24.59
Bihar	-	-	39.36	15.36	22.51	22.77
Gujarat	22.67	-	21.78	14.25	20.52	20.78
Haryana	-	-	8.07	36.22	28.39	27.32
Karnataka	22.90	-	18.23	12.58	15.95	30.34
Kerala	-	-	34.34	11.53	32.12	22.00
Madhya Pradesh	-	-	39.06	8.22	20.60	31.12
Maharashtra	37.20	12.80	15.91	6.87	11.40	15.82
Orissa	-	-	13.19	25.75	16.77	44.29
Punjab	-	-	33.56	8.14	23.86	24.44
Rajasthan	-	-	38.54	7.35	20.34	33.77
Tamil Nadu	19.23	-	28.29	14.09	17.26	21.13
Uttar Pradesh	-	22.53	31.9	11.76	16.65	17.16
West Bengal	42.28	-	31.85	7.91	11.20	8.76
India	-	-	-	-	-	-

Table 2.10 (contd....)

1971

States	I	II	III	IV	V	VI
Andhra Pradesh	21.42	-	26.94	13.35	2.92	17.37
Bihar	-	-	45.39	11.08	23.91	19.62
Gujarat	21.18	-	27.79	15.44	15.75	19.84
Haryana	-	-	12.82	39.75	26.06	21.37
Karnataka	23.15	-	27.91	8.24	15.38	25.32
Kerala	-	-	42.32	13.38	31.77	34.53
Madhya Pradesh	-	16.32	23.73	10.26	19.82	24.87
Maharashtra	37.99	10.94	21.86	6.93	11.14	11.14
Orissa	-	-	38.28	3.94	29.17	28.61
Punjab	-	-	40.62	15.63	21.74	21.96
Rajasthan	-	13.51	28.36	10.75	20.47	26.91
Tamil Nadu	19.83	4.40	33.51	14.16	15.11	12.9
Uttar Pradesh	10.27	20.67	26.12	10.83	16.70	15.41
West Bengal	63.86	-	7.12	11.85	9.63	7.54

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Table 2.10 (contd....)

1981

States	I	II	III	IV	V	VI
Andhra Pradesh	20.29	9.14	24.26	16.17	20.95	9.19
Bihar	-	31.76	22.36	14.38	19.26	12.24
Gujarat	23.82	15.69	18.41	14.53	13.37	14.18
Haryana	-	-	56.64	10.82	14.80	17.74
Karnataka	27.20	4.92	26.48	6.46	17.75	17.19
Kerala	-	36.72	16.41	9.52	31.86	5.49
Madhya Pradesh	-	26.61	20.23	18.00	12.24	22.92
Maharashtra	51.03	5.29	18.92	5.95	10.88	7.93
Orissa	-	-	41.63	12.76	21.83	23.78
Punjab	-	25.87	20.53	13.28	21.31	19.01
Rajasthan	14.07	-	32.45	10.05	22.02	21.41
Tamil Nadu	26.85	18.49	16.85	15.99	12.52	9.3
Uttar Pradesh	13.49	13.75	24.25	12.71	12.34	23.46
West Bengal	63.5	-	13.3	10.78	7.71	4.67

Source : Calculated from data given in Census Publications

Class	I	-	Million +
	II	-	5 lakhs → Million
	III	-	1 lakh → 5 lakh
	IV	-	50,000 → 1 lakh
	V	-	20,000 → 50,000
	VI	-	→ 20,000

Table 2.11

Population Growth in Different Size and Class of Settlements

States	10,00,000 & above		5,00,000-9,99,999		1,00,000-4,99,999	
	1961-71	1971-81	1961-71	1971-81	1961-71	1971-81
Andhra Pradesh	43.83	40.74	-	-	40.41	49.48
Assam	-	-	-	-	47.08	-
Bihar	-	-	-	66.20	42.25	53.51
Gujarat	44.40	44.43	-	-	48.19	55.56
Haryana	-	-	-	-	2.41	67.83
Jammu & Kashmir	-	-	-	-	46.82	-
Karnataka	37.82	76.17	-	-	32.76	41.12
Kerala	-	-	-	-	53.06	26.19
Madhya Pradesh	-	-	-	44.63	49.41	54.81
Maharashtra	43.80	39.50	39.46	39.42	41.84	46.13
Orissa	-	-	-	-	40.63	64.14
Punjab	-	-	-	-	29.81	38.04
Rajasthan	-	-	-	57.78	42.48	47.38
Tamil Nadu	65.02	34.91	-	25.82	46.39	30.83
Uttar Pradesh	-	32.99	27.56	25.09	23.93	39.14
West Bengal	22.57	24.51	-	-	28.81	42.60
All India	40.13	39.68	32.43	36.06	39.35	45.32

Table 2.11 (contd....)

States	50,000-99,999		20,000-49,999		19,999 & above	
	1961-71	1971-81	1961-71	1971-81	1961-71	1971-81
Andhra Pradesh	19.20	44.66	34.56	42.02	18.43	19.10
Assam	37.39	-	46.93	-	34.40	-
Bihar	17.99	42.71	25.71	47.51	20.42	21.43
Gujarat	29.29	30.43	27.38	32.46	27.10	22.63
Haryana	41.67	55.34	35.49	40.12	32.21	23.56
Jammu & Kashmir	-	-	31.09	-	27.45	-
Karnataka	41.95	46.16	26.93	36.69	22.28	20.83
Kerala	20.92	52.40	19.50	17.22	25.22	17.68
Madhya Pradesh	38.66	41.79	39.89	52.45	26.89	21.68
Maharashtra	43.47	36.09	33.15	30.51	23.14	18.60
Orissa	76.98	39.10	38.52	49.91	23.80	17.34
Punjab	22.27	38.74	21.69	35.11	20.76	19.68
Rajasthan	35.83	39.63	36.01	45.63	26.39	30.10
Tamil Nadu	29.83	24.52	34.16	22.63	15.96	13.03
Uttar Pradesh	29.10	39.58	28.72	44.51	10.96	24.11
West Bengal	31.57	34.96	49.03	43.38	26.84	21.13
All India	35.79	37.57	32.49	38.37	22.72	19.23

Source : Amitabh Kundu "Theories of city Size Distribution and the Indian Structure" paper presented at Seminar organized by the Jawaharlal Nehru University, New Delhi, September 1982.

Table 2.12

Share of Selected States in National Domestic Product (NDP)
of Country

(in per cent terms)

States	1960-61	1970-71	1977-78
Andhra Pradesh	7.4	7.3	6.6 ^q
Assam	2.5	2.2	2.2 ^p
Bihar	7.4	6.5	6.1
Gujarat	5.5	6.3	5.9
Haryana	1.8	2.4	2.49
Jammu & Kashmir	0.7	0.7	0.7 ^p
Karnataka	5.0	5.7	4.9
Kerala	3.2	3.4	3.2
Madhya Pradesh	6.2	5.8	5.8
Maharashtra	12.0	11.6	12.3
Orissa	2.8	3.0	2.7
Punjab	2.9	4.0	4.0
Rajasthan	4.2	4.6	3.7
Tamil Nadu	8.3	7.0	6.1
Uttar Pradesh	13.8	12.3	11.9
West Bengal	10.0	9.3	8.5

Note : p = Provisional

q = Quick Estimates

Source: Calculated from data given in RBI Bulletin,
April 1978 and September 1981.

Table 2.13

Share of Selected States in SDP, Area and Population of the Country (1970-71)

(in per cent terms)

States	SDP	Area	Population
Andhra Pradesh	7.3	8.44	7.9
Assam	2.2	2.39	2.7
Bihar	6.5	5.30	10.3
Gujarat	6.3	5.97	4.9
Haryana	2.4	1.35	1.8
Jammu & Kashmir	0.7	6.77	0.8
Karnataka	5.7	5.85	5.3
Kerala	3.4	1.18	3.9
Madhya Pradesh	5.8	13.50	7.6
Maharashtra	11.6	9.38	9.2
Orissa	3.0	4.75	4.00
Punjab	4.0	1.54	2.5
Rajasthan	4.6	10.43	4.7
Tamil Nadu	7.0	3.97	7.5
Uttar Pradesh	12.3	8.97	16.1
West Bengal	9.3	2.68	8.1

Source : Tables 3.11, 3.5 and the India Yearbook 1976.

Table 2.14

Annual Compound Rate of Growth of GDP of Selected States¹

States	1960-61 to 1965-66	1965-66 to 1970-71	1970-71 to 1974-75	1974-75 to 1977-78	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1977-78
Andhra Pradesh	9.12	10.55	16.77	2.64	9.83	10.49	10.10
Assam	8.01	9.37	14.44	7.58	8.69	11.45	9.82
Bihar	11.04	6.02	16.53	4.27	8.50	11.11	9.56
Gujarat	9.31	13.71	8.18	14.25	11.49	10.74	11.18
Haryana	9.69	16.56	12.46	12.45	13.07	12.46	12.82
Jammu & Kashmir	5.98	13.48	15.27	8.43	9.66	12.29	10.74
Karnataka	8.37	14.41	14.33	3.60	11.52	9.60	10.73
Kerala	10.48	10.72	14.44	5.84	10.60	10.67	10.63
Madhya Pradesh	5.90	12.57	17.07	5.87	9.18	12.13	10.39
Maharashtra	8.07	11.21	16.84	8.00	9.63	12.97	10.99
Orissa	11.34	10.35	12.28	6.80	10.84	9.90	10.45
Punjab	11.06	16.39	12.49	10.83	13.69	11.80	12.91
Rajasthan	8.10	13.98	10.63	5.91	11.00	8.58	10.00
Tamil Nadu	6.08	10.14	11.72	7.56	8.09	9.91	8.84
Uttar Pradesh	10.13	7.35	13.86	8.37	8.73	11.47	9.85
West Bengal	9.10	9.13	12.83	7.53	9.12	10.53	9.70
India	9.30	10.66	14.69	8.51	9.98	12.00	10.81
COV	20.18	25.91	18.02	40.90	15.92	10.72	10.27

Note : Compound rates of growth have been worked out on the basis of the values in current prices.

Source: Calculated from data given in RBI Bulletin, April 1978 and September 1981.

Table 2.15

Per Capita SDP of Selected States, 1960-61 - 1977-78

States	(in current prices)										
	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68			
1 Andhra Pradesh	275	297	302	349	392	387	445	500			
2 Assam	315	327	323	357	394	399	500	558			
3 Bihar	215	220	233	262	294	332	314	391			
4 Gujerat	362	397	390	414	494	498	564	652			
5 Haryana	327	-	-	-	-	450	608	713			
6 Jammu & Kashmir	269	272	282	300	331	317	409	449			
7 Karnataka	286	296	305	349	380	386	418	451			
8 Kerala	259	273	279	290	334	380	399	469			
9 Madhya Pradesh	260	268	264	307	348	305	338	463			
10 Maharashtra	409	412	442	485	526	534	610	676			
11 Orissa	217	228	276	313	342	329	395	435			
12 Punjab	347	-	-	-	-	532	702	305			
13 Rajasthan	284	313	300	306	391	373	452	514			
14 Tamil Nadu	334	334	335	351	337	403	463	481			
15 Uttar Pradesh	252	260	264	288	367	373	431	491			
16 West Bengal	390	397	416	471	503	532	584	659			
All India	307	317	328	368	425	429	486	560			

Table 2.15 (contd....)

Sr. No.	1968-69	1969-70	1971-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
1	495	521	584	625	647	829	994	903	901 ^p	1002 ^Q
2	514	591	538	549	572	644	818	776 ^p	851 ^p	932 ^p
3	376	503	402	415	480	575	637	661	700	735
4	605	693	829	830	762	1121	1038	1215	1340	1452
5	635	811	845 ^{pr}	928 ^{pr}	989 ^{pr}	1174 ^{pr}	1217 ^p	1274 ^p	1472 ^p	1472
6	446	497	524	572	601 ^p	720 ^o	836 ^{pr}	883 ^Q	897 ^Q	936 ^Q
7	483	495	685	698	712	973	1077	1005	999	1129 ^p
8	496	541	564	563	636	777	883	907	948	937
9	430	475	489 ^p	534 ^p	573 ^p	726 ^p	819 ^p	769 ^p	759 ^p	905 ^p
10	700	752	809	850	881	1125 ^p	1380 ^p	1393 ^o	1505 ^p	1637 ^p
11	464	491	482	480	576	697	701	715 ^p	659 ^p	799 ^p
12	878	930	1030	1080	1172	1438	1525	1597	1312	1962 ^p
13	414	497	623	564	593	824	840	850	887 ^p	925 ^Q
14	499	536	595	663	691	824	369	840	948	1036 ^p
15	453	487	486	497	605	673	760	730	815 ^p	916 ^p
16	660	702	735	789	790	946	1090	1116	1202	1263 ^p

Table 2.16

Measurement of Inequality between States 1960-61 - 1977-78

Year	Measure of in- equality	All States			Group I States		Group I&II States		Difference between richest and second richest states
		H/L	Range	COV	Range	COV	Range	COV	
1960-61		1.90	194	18.61	194	8.96	71	9.55	19
1961-62		1.87	192	-	85	-	93	-	15
1962-63		1.90	209	-	107	-	90	-	26
1963-64		1.85	223	-	71	-	95	-	14
1964-65		1.79	232	-	32	-	100	-	18
1965-66		1.75	229	18.55	84	6.38	98	9.15	2
1966-67		2.24	388	21.97	202	10.17	149	11.25	92
1967-68		2.06	414	21.25	153	8.01	167	8.87	92
1968-69		2.34	502	23.56	273	13.85	138	8.73	178
1969-70		2.31	527	24.57	237	11.19	138	7.07	119
1970-71		2.56	628	25.74	345	13.17	221	11.86	185
1971-72		2.60	665	26.74	382	13.82	248	12.32	152
1972-73		8.44	692	24.68	410	16.26	232	9.95	183
1973-74		2.50	863	25.79	492	14.25	314	11.11	264
1974-75		2.39	888	24.42	487	14.54	357	11.53	145
1975-76		2.42	936	26.71	481	12.54	344	11.77	204
1976-77		2.75	1153	30.52	610	13.87	340	12.07	307
1977-78		2.67	1227	28.73	694	14.97	394	10.96	325

H/L = Highest to lowest ratio COV = Coefficient of variation
 Group I States = States having per capita SDP greater than the per capita NDP
 Group II & III States = Rest of the states.

Table 2.17

Compound Rate of Growth of Per Capita SDP Selected States

States	(per cent per annum)						
	1960-61 to 1965-66	1965-66 to 1970-71	1970-71 to 1974-75	1974-75 to 1977-78	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1977-78
Andhra Pradesh	7.07	8.58	14.22	0.27	7.82	8.02	7.90
Assam	4.84	6.16	11.04	4.44	5.50	8.17	6.59
Bihar	9.08	3.90	12.20	4.89	6.46	9.00	7.50
Gujarat	6.59	10.73	5.78	11.84	8.64	8.34	8.51
Haryana	6.59	13.43	9.55	6.55	9.96	8.25	9.25
Jammu & Kashmir	3.34	10.57	12.39	5.66	6.89	9.45	7.94
Karnataka	6.18	12.16	11.98	1.58	9.13	7.40	8.41
Kerala	7.97	8.20	11.86	3.78	8.09	8.32	8.19
Madhya Pradesh	3.24	9.90	13.76	3.38	6.52	9.19	7.61
Maharashtra	5.48	8.66	14.28	5.86	7.06	10.59	8.50
Orissa	8.68	7.94	9.82	4.46	8.31	7.49	7.97
Punjab	8.92	14.13	10.31	8.76	11.49	9.64	10.80
Rajasthan	5.60	10.80	7.76	3.26	8.27	5.81	7.19
Tamil Nadu	3.83	8.10	9.93	6.03	5.96	8.24	6.88
Uttar Pradesh	8.16	5.43	11.83	6.42	6.79	9.48	7.09
West Bengal	6.41	6.67	10.35	5.17	6.54	8.10	7.18
India	6.92	8.26	12.20	6.29	7.59	9.63	8.42
COV	29.96	31.19	20.57	52.40	20.43	13.08	12.52

Source : Calculated from data in Table 3.18.

Table 2.18

Per Capita SDP - Ranked (in Current Prices)

States	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66
Group I						
1	409 Maharashtra	412 Maharashtra	442 Maharashtra	485 Maharashtra	526 Maharashtra	534 Maharashtra
2	390 West Bengal	397 West Bengal	416 West Bengal	471 West Bengal	508 West Bengal	532 West Bengal
3	347 Punjab	397 Gujarat	390 Gujarat	414 Gujarat	494 Gujarat	532 Punjab
4	362 Gujarat	334 Tamil Nadu	335 Tamil Nadu			498 Gujarat
5	334 Tamil Nadu	327 Assam				450 Haryana
6	327 Haryana					
7	315 Assam					
Group II&III						
8	307 286 Karnataka	317 313 Rajasthan	328 323 Assam	368 357 Assam	425 394 Assam	429 403 Tamil Nadu
9	284 Rajasthan	297 A.P.	305 Karnataka	351 Tamil Nadu	392 Assam	399 Assam
10	275 A.P.	296 Karnataka	302 A.P.	349 A.P.	391 Rajasthan	387 A.P.
11	269 J.K.	273 Kerala	300 Rajasthan	349 Karnataka	387 Tamil Nadu	386 Karnataka
12	260 M.P.	272 J.K.	282 J.K.	307 M.P.	380 Karnataka	380 Kerala

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Table 2.18 (contd...)

States	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72
Group I						
1	702 Punjab	305 Punjab	878 Punjab	930 Punjab	1030 Punjab	1080 Punjab
2	610 Maharashtra	713 Haryana	700 Maharashtra	811 Haryana	845 Haryana	928 Haryana
3	608 Haryana	676 Maharashtra	660 West Bengal	752 Maharashtra	829 Gujarat	850 Maharashtra
4	634 West Bengal	659 West Bengal	635 Maharashtra	702 West Bengal	809 Maharashtra	830 Gujarat
5	664 Gujarat	652 Gujarat	605 Gujarat	693 Gujarat	735 West Bengal	789 West Bengal
6	500 Assam				685 Karnataka	698 Karnataka
7	486	560	517	603	638	665
Group II&III						
8	463 Tamil Nadu	558 Assam	514 Assam	541 Karnataka	623 Rajasthan	663 Tamil Nadu
9	482 Rajasthan	541 Rajasthan	499 Tamil Nadu	536 Tamil Nadu	595 Tamil Nadu	625 A.P.
10	445 A.P.	500 A.P.	496 Kerala	521 A.P.	584 A.P.	572 J&K
11	431 U.P.	491 U.P.	495 A.P.	497 Rajasthan	564 Karnataka	564 Rajasthan
12	418 Karnataka	481 Tamil Nadu	483 Karnataka	497 J&K	538 Assam	563 Karnataka

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Table 2.18 (contd....)

States	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Group I						
1	1172 Punjab	1438 Punjab	1525 Punjab	1597 Punjab	1812 Punjab	1962 Punjab
2	989 Maharashtra	1174 Maharashtra	1380 Maharashtra	1393 Maharashtra	1505 Maharashtra	1637 Maharashtra
3	881 Haryana	1125 Haryana	1217 Haryana	1274 Haryana	1472 Haryana	1472 Haryana
4	790 West Bengal	1121 Gujarat	1090 West Bengal	1215 Gujarat	1340 Gujarat	1452 Gujarat
5	762 Gujarat	973 Karnataka	1077 Karnataka	1116 West Bengal	1202 West Bengal	1268 West Bengal
6		946 West Bengal	1033 Gujarat			
7	717	876	1011	1033	1097	1214
Group II&III						
8	712 Karnataka	829 A.P.	994 A.P.	1005 Karnataka	999 Karnataka	1129 Karnataka
9	691 Tamil Nadu	824 Rajasthan	883 Kerala	907 Karnataka	948 Kerala	1033 Tamil Nadu
10	647 A.P.	824 Tamil Nadu	369 Tamil Nadu	903 A.P.	948 Tamil Nadu	1002 A.P.
11	636 Karnataka	777 Kerala	840 Rajasthan	833 J&K	901 A.P.	987 Kerala
12	605 U.P.	726 M.P.	836 J&K	850 Rajasthan	897 J&K	986 J&K

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Table 2.18 (contd...)

States	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66
13	259 Kerala	268 M.P.	279 Kerala	306 Rajasthan	367 U.P.	373 Rajasthan
14	252 U.P.	260 U.P.	276 Orissa	300 J&K	348 M.P.	373 U.P.
15	277 Orissa	228 Orissa	264 M.P.	290 Kerala	342 Orissa	332 Bihar
16	215 Bihar	220 Bihar	264 U.P.	238 U.P.	334 Karnataka	329 Orissa
17			233 Bihar	262 Bihar	331 J&K	317 J&K
18					294 Bihar	305 M.P.
SD	55.84					75.69
Mean	300.06					408.13
COV	1.61					13.55
States nat. av.						
Gr. I						
SD	31.80					32.51
Mean	354.86					509.2
COV	8.96					6.38
Nat. average						
I & III						
SD	24.58					33.14
Mean	257.44					362.13
COV	9.55					9.15
Range	Gr. I 94					
Gr. II & III	71					
H/L	1.90					
Richest-next						
richest	19	15	26	14	18	2

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Table 2.18 (contd....)

States	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72
13	409 J&K	469 Karnataka	464 Orissa	495 Karnataka	524 J&K	543 Assam
14	399 Karnataka	463 A.P.	453 U.P.	491 Assam	489 M.P.	534 H.P.
15	395 Orissa	451 Karnataka	446 J&K	491 Orissa	486 U.P.	497 U.P.
16	333 M.P.	449 J&K	430 M.P.	487 U.P.	482 Orissa	480 Orissa
17	314 Bihar	435 Orissa	414 Rajasthan	475 M.P.	402 Bihar	415 Bihar
18		391 Bihar	376 Bihar	403 Bihar		
SD	104.82	115.64	125.89	143.13	164.44	177.79
Mean	477	544	534.25	582.625	638.75	664.81
COV.	21.97	21.25	23.56	24.57	25.74	26.74
States nat.av.						
Gr. I						
SD	60.48	56.12	96.37	87.03	108.28	119.21
Mean	594.67	701	695.6	777.6	822.17	862.5
COV.	1077	8.01	13.85	11.19	13.17	13.82
Nat. average						
II & III						
SD	45.74	41.96	40.24	34.94	62.72	67.30
Mean	406.4	472.91	460.91	494	528.7	546.2
COV.	11.25	8.87	8.73	7.07	11.86	12.32
Range Gr. I	202	153	273	237	345	382
Gr. II & III	149	167	138	138	221	248
H/L	2.23	2.06	2.33	2.31	2.56	2.60
Richest-next richest	92	92	178	119	195	152

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Table 2.13 (contd....)

States	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
13	601 J&K	720 J&K	819 M.P.	840 Tamil Nadu	837 Rajasthan	932 Assam
14	593 Rajasthan	697 Orissa	813 Assam	776 Assam	851 Assam	925 Rajasthan
15	576 Orissa	673 U.P.	760 U.P.	769 M.P.	815 U.P.	916 U.P.
16	573 M.P.	644 Assam	701 Orissa	730 U.P.	759 M.P.	905 M.P.
17	572 Assam	575 Bihar	637 Bihar	715 Orissa	700 Bihar	799 Orissa
18	480 Bihar			661 Bihar	659 Orissa	735 Bihar
SD	173.93	226.76	236.38	260.97	318.47	325.30
Mean	705	879.125	967.75	977.125	1043.44	1133.94
COV.	24.68	25.79	24.42	26.71	30.52	28.73
States.net.av.						
Gr. I	149.43	160.94	177.53	165.41	203.39	233.32
SD	913.8	1129.5	1221.17	1319.0	1466.2	1558.2
Mean	16.26	14.25	14.54	12.54	13.87	14.97
Nat. average						
II & III						
SD	60.47	30.96	94.01	96.70	102.72	103.17
Mean	607.82	728.9	815.7	821.73	851.27	941.09
COV.	9.95	11.11	11.53	11.77	12.07	10.96
Range	410	492	487	481	610	694
Gr. I	232	314	357	344	340	394
Gr. II&III	2.44	2.79	2.39	2.42	2.75	2.67
H/L						
Richest-riest						
richest	183	264	145	204	307	325

Note : U.P. = Uttar Pradesh, A.P. = Andhra Pradesh, J&K = Jammu & Kashmir,
H.P. = Himachal Pradesh, M.P. = Madhya Pradesh.

Chapter 3

STATE DOMESTIC PRODUCT - A SECTORAL VIEW

In this chapter we propose to analyse the level and growth of State Domestic Product of different states in terms of its composition. Specifically, we will be examining the relationship between level of per capita SDP and shares of various sectors i.e., primary, secondary and tertiary in S.D.P. of the state economies. We will also examine, in some detail, the related aspect of absolute contribution of each sector to per capita S.D.P. and attempt to pinpoint the sector/s largely responsible for interstate inequalities in levels of per capita S.D.P.

Per Capita S.D.P. and Industrial Structure of the States

The inequalities in per capita S.D.P. can be explained in terms of varying industrial structure of the states. Generally, activities in the primary sector are much less productive than those in secondary and tertiary sectors. It is therefore generally hypothesised that there is a positive relationship between per capita S.D.P. and percentage of income generated in secondary and tertiary sectors and a negative relationship with that generated in primary

sector.^{1/}

In the following paragraphs we will analyse the industrial structure of various states and shifts in this structure over time and their relationship with level and growth of per capita S.D.P.

In 1960-61, 52.2 per cent of N.D.P. of India was generated by the primary sector, 19.1 by secondary and 28.7 by the tertiary sector. The industrial structure for selected years for the country as a whole as well as for various states is given in Table 3.1. In 1960-61, only in four states the contribution of primary sector was lower than that of the national average. These four states were Gujarat, Maharashtra, West Bengal and Tamil Nadu. These states (except Tamil Nadu) also had a higher percentage of value added contributed by secondary sector than the national average. All the states which had relatively higher contribution by secondary sector and lower contribution by primary sector belonged to Group-I States (the richest states) in the country.^{2/} The reverse, however, is not true. Two states

1/ This hypothesis has been tested at the country level by Kuznets and found to be holding true. The extension of this hypothesis to state level has been validated empirically in some cases. It has however not been conclusively proved in case of Indian States. We have discussed this issue at some length in Chapter 1.

2/ For the definition of the groups, see Chapter 2.

belonging to Group-I -- viz. Punjab and Haryana -- had a large primary sector and a small secondary sector. The share of primary sector in S.D.P. of the states was 62.9 per cent (Haryana) and 57.0 per cent (Punjab) -- higher than the national figure of 52.2 per cent. Again the share of secondary sector was 16.1 per cent in case of Haryana and 16.5 per cent in case of Punjab. Though the share of secondary sector in these two states was lower than the national average, this share, alongwith that of other Group-I states, was higher than that of rest of the states.

Such was not the case with respect to the tertiary sector. Thus, the share of tertiary sector in 1960-61, in both Bihar and Maharashtra was not too different. In that year Maharashtra was the richest and Bihar the poorest state, in terms of per capita S.D.P., in the country. Further, Kerala and Uttar Pradesh -- two other poor states -- had a relatively large tertiary sector.^{3/} In the case of Haryana and Punjab two of the richest states in the country -- the contribution of tertiary sector was below than that for the country as a whole.

3/ The words large/high and small/low, in this chapter have the same connotations as the words high and low in Chapter-2.

The primary sector, in 1960-61, in all the states was still the single largest contributor to the S.D.P.. The situation remained the same for most of the states till the year 1977-78. There were, however, a few exceptions. Thus, in 1970-71, (as well as in 1977-78) tertiary sector was the single largest contributor to S.D.P. in Maharashtra. By 1977-78, Tamil Nadu also joined this category. In the case of Gujarat, the contribution of the tertiary sector (at 36.1 per cent of S.D.P.) in 1977-78, was only 0.5 per cent less than that of the primary sector. Interestingly in none of the states, the secondary sector became the most dominant sector, for the years considered. However, in Maharashtra in both 1970-71 and 1977-78 and in Tamil Nadu in 1977-78, the contribution by the secondary sector exceeded that of the primary sector.

Among the richer states, West Bengal and Gujarat seem to stand somewhere between the 'high primary' states of Punjab and Haryana and low primary states of Maharashtra and Tamil Nadu.

The heterogeneity in the shares of primary sector was much larger between the richer states - than for the poorer states. As can be seen from Table 4.2, the COV of primary sector was the lowest for Group-III state and highest for Group-I states. This was true for all the years considered (i.e. 1960-61, 1970-71 and 1977-78). Group-III

has had the lowest variation not only in shares of primary sector but also for those of secondary sector for all the years. Group-III would thus seem to be a more homogeneous group than the other two groups.^{4/} In 1970-71, Group-I had the highest COV in shares of all the sectors and Group-III had the lowest. Such 'neat' pattern was not seen for any other year.

Within each of the groups, Groups II and III showed lowest variation in case of primary and highest in case of secondary sector for the year 1960-61, whereas Group-I, like the other two groups, had the highest variation in secondary sector, the lowest COV was seen in case of tertiary sector. The same pattern (as that of Group I) was repeated for all states taken together (See Table 3.1A).

Shifts in Shares of Various Sectors Over Time

The shifts in the shares of various sectors have not always been in the direction expounded by Kuznets.^{5/} Whereas all of the states have shown an increase in per capita income over time, the share of primary sector has not declined in all the cases nor have the shares of

4/ As seen in Chapter 2, it had lower COV for most of the years in per capita S.D.P. also.

5/ Kuznets found that share of primary sector declined and that of secondary and tertiary increased with economic growth. See Kuznets and Simons, 'Six Lectures in Economic Growth'.

secondary and tertiary sectors gone up for all of them. In fact, over the period 1960-61 to 1970-71, eight states (namely Assam, Bihar, Rajasthan, Gujarat, Uttar Pradesh, Orissa, Punjab and West Bengal) out of the sixteen states selected by us showed an increase in the share of the primary sector (Table 3.1). The share of the primary sector in all these states, declined over the next sub-period (1970-71 to 1977-78). It may be noted that the share of the primary sector in 1977-78 remained higher than that in 1960-61 for four states namely Assam, Rajasthan, Orissa and West Bengal.^{6/} Significant declines in the share of primary sector have taken place in the case of Andhra Pradesh, Karnataka, Kerala, Maharashtra and Tamil Nadu -- the highest (decline) being in the case of Tamil Nadu (from 52.0 in 1960-61 to 31.4 in 1977-78). Tamil Nadu also witnessed the highest increase in the share of the secondary sector. In 1977-78, the share of the secondary sector in Tamil Nadu's SDP was 32.3 per cent -- the highest among all states in that year. Orissa had the lowest share (12.9 per cent) among all states, in the same year. Excepting Assam and West Bengal all the states showed an increase in the share of the secondary sector in 1977-78 as compared to the year 1960-61. Assam showed a decline over this period and West Bengal maintained the same share in 1977-78 as in

^{6/} The decline in case of West Bengal was very small (0.5 per cent). In fact, the share of the three sectors in case of West Bengal remained more or less the same over the period 1960-61 to 1977-78.

year 1960-61. Significant upward shifts (above 5 per cent) in the share of the secondary sector had taken place in the case of Andhra Pradesh, Bihar, Jammu and Kashmir, Karnataka, Maharashtra, Tamil Nadu and Uttar Pradesh, Orissa, Punjab and Rajasthan showed very little shift in this regard. In case of some states which showed an increase in the share of secondary sector over the period 1960-61 to 1977-78, the increase was not continuous. Thus, the share of secondary sector in Maharashtra declined from 33.3 in 1970-71 to 32.2 in 1977-78, Gujarat, Orissa, Punjab and Rajasthan showed a decline over the period 1960-61 to 1970-71.

As in the case of primary and secondary sectors, various states exhibited diverse pattern of behaviour in the case of their tertiary sector. In 1977-78 Maharashtra showed the highest (36.7 per cent) and Orissa the lowest (20.9 per cent) share of tertiary sector in their respective SDPs. Five states namely Bihar, Jammu and Kashmir, Orissa, Rajasthan and West Bengal had a lower share of tertiary sector in their respective SDPs in year 1977-78 as compared to 1960-61. Andhra Pradesh, Haryana, Kerala, Madhya Pradesh and Tamil Nadu showed increase in the share of tertiary sector in both the sub-periods (See Table 3.1). Jammu and Kashmir and Maharashtra showed a decline in the share of the tertiary sector over the period 1970-71 --

1977-78 after showing an increase in the first sub-period (1960-61 to 1970-71). Reverse was the case for the rest of the states.

Shares of Different Sectors -- Variations
Among States Over Time

As noted before, the disparity in the share of various sectors between different states was the highest in case of the secondary sector and lowest variation was seen in the case of tertiary sector for the years 1960-61 and 1977-78 and of primary sector for the year 1970-71. The difference between the COV in shares of secondary sector and other sectors was quite high (around 10 per cent) that between primary and tertiary sector was low (less than 2 per cent). Over the period 1960-61 -- 1977-78 the COV in shares of secondary sector has declined (from 31.85 per cent to 27.68 per cent) and that of primary and tertiary has increased. Consequently the difference between COVs of shares of primary and tertiary sectors has increased somewhat (from 0.24 in 1960-61 to 1.84 in 1977-78) and that between the shares of secondary and the other two sectors has declined from around 18 to 8-9.

Thus over time the various states in the country are becoming more heterogenous as far as shares in primary sector are concerned, the disparities in terms of secondary sector seem to be declining somewhat. Nonetheless, the

disparity in the secondary sector is still far greater than that in primary and tertiary sector.

The low variation in shares of tertiary sector is not surprising. The tertiary sector is composed of various types of activities - some very sophisticated and highly productive ones (like services of financial institutions etc.) and others belonging to 'low order' of activities like vending, business of small shops, 'Kabari' etc. Thus, high income as well as low income states may have a high percentage of value added from this sector -- the high income states due to their productivity and low income states due to their 'mass'. Further, a significant component of this sector is made up of government sector which (as a per cent of SDP) does not vary much from state to state.

Industrial Structure of States: Another Look

A natural corollary to the variation in shares of sectors between different states is the divergent industrial structure of the states. In Table 3.3, we categorised states according to three main types of industrial structure:

- A) Low primary, high secondary and high tertiary.
- B) Medium primary secondary and tertiary.
- C) High primary, low secondary and low tertiary.

As can be seen from Table 3.3, there are very few states which have similar industrial structure. Most of the states (in terms of our definition) have combination (Part A, Part B, Part C) structures. Further, the states with similar industrial structures do not necessarily belong to the same income-group of states. In 1960-61, in Industrial Structure A we have Maharashtra, Gujarat and West Bengal and in structure B, Kerala, Punjab, Rajasthan and Tamil Nadu. Whereas all the states having industrial structure A (in 1960-61) belonged to the same group (Group I) of states, the same cannot be said of states with Industrial structure B or C. Two (namely Punjab and Tamil Nadu) of the four states with industrial structure B belong to high income (Group I) group of states, one (Rajasthan) to Group II and one (Kerala) to Group III states. Similar is the case for states with Industrial Structure C.

The number of states having similar industrial structure declined in 1977-78 as compared to year 1960-61. Within states having similar industrial structure, as in 1960-61, heterogeneities with respect to per capita income were witnessed. For both 1960-61 and 1977-78 though most of the states having Industrial structure A belong to Group I and most of the states having Industrial Structure C belong to Group III, the pattern is neither

neat nor does it disclose any close relationship between industrial structure and income.

A reverse categorisation of states according to their per capita SDP also shows states within each group having divergent industrial structure. But if we look at the group as whole, some general pattern which emerges is that: on an average group I has the lowest share and Group III the highest share of SDP originating in the primary sector. Reverse is the case for shares of secondary and tertiary sectors. The pattern did not hold in year 1960-61 when it was Group II rather than Group III which had the highest share of primary and lowest of secondary and tertiary sectors. In later years (1970-71 and 1977-78) however a clear pattern relating the per capita SDP of the group and its average share in various sector has emerged.

This conclusion is confirmed, to some extent, by the results of the rank correlation between per capita SDP and the share of different sectors in the SDP. As we can see from Table 3.4, though the relationship between per capita SDP and shares of various sectors (as shown by co-efficient of rank correlation) is positive in all the cases, the relationship is stronger with respect to shares of secondary and tertiary sectors as compared to that of primary sector. Further, whereas the coefficient of rank

correlation between per capita GDP and share of tertiary sector steadily increased from 0.88 (in 1960-61) to 0.90 (in 1970-71) to 0.95 (in 1977-78), that between per capita GDP and share of primary and secondary sector did not show such steady 'trend'. Over the period 1970-71 to 1977-78 the coefficient of rank correlation between per capita GDP and share of primary sector remained constant (at 0.76) whereas that between per capita GDP and share of secondary sector increased slightly from 0.88 to 0.91. In both 1970-71 and 1977-78 the rank correlation between per capita GDP and share of tertiary sector was the highest and that between per capita GDP and share of primary sector was the lowest.

Variation in Shares of Sectors -- Group-wise Analysis

An analysis of variation in shares of various sectors in each group gives us an insight into the homogeneity (or otherwise) of industrial structure of various groups. As far as primary sector is concerned, it is Group III which reveals minimum variation, Group I, in this respect shows the highest variation. This, was true for all the years considered. Further, whereas the COV of primary sector has shown a steady increase (over 1960-61 to 1977-78) for Group II and III it declined slightly for Group I over the second sub-period (1970-71 -- 1977-78).

Further the variation in the share of secondary and tertiary sector declined in case of Group I and II (the decline was sharper in case of Group I as compared to that for Group II) over the period 1970-71 -- 1977-78, and increased in case of Group III. This signifies that whereas Group I is becoming more homogeneous Group III is becoming less so though it continues to remain more homogeneous than the other two groups. As compared to other groups it had the lowest COV in shares of all sectors in 1970-71 and in shares of all except tertiary sector in 1960-61 and 1977-78.

Looking at the data from another angle, an interesting pattern emerges over time. This pattern relates to comparative variations in (Shares of) different sectors within each group. Information relating to this aspect is given in Table 3.5. As can be seen from this Table Group I had the highest variation in the secondary sector and lowest in tertiary sector in all the years considered. Group II, in the first of two periods shows the highest variation in secondary sector and the lowest variation in the primary sector. In the last period the pattern becomes similar to that of Group I. Group III, for two out of three periods shows a pattern similar to that of Group II. Thus it would seem that over time, Group II follows the pattern of (variation in sector shares) Group I and Group III

that of Group II. Further, it is the shares of secondary sector which show greater variability as compared to shares of other sectors. This is true of all groups and for all the years considered (except for Group III in 1970-71 when the tertiary sector showed the highest variation). As had been discussed above, the shares of secondary sector have exhibited greater variation than any other sector even when all the states were taken together. Further as we would see in a later section in terms of some other variables like value added per capita in various sector, it was the secondary sector which showed the highest variation for the years concerned. All this points towards greater disparity between states in secondary than in any other sector. This disparity however has shown some signs of declining over time. The growth of the secondary sector is less uneven over states as compared to that of other sectors.

Compound Rate of Growth of Various Sectors

If we look at the variation in the rates of growth of various sectors, it is the secondary sector which shows the lowest variation for various sub-periods. Table 3.6, gives computed values of compound rates of growth and COV of these rates of growth of value added by various sectors for selected states. As can be seen from the Table, primary

sector shows the highest variation in all the periods. Further, the variation in growth of secondary sector show substantial decline for the period 1970-71 -- 1977-78 as compared to the period 1960-61 -- 1970-71. The decline in variation in primary sector over the same period is very small and that for tertiary sector not as substantial as that for secondary sector.

As to rates of growth of various sectors in different states, Punjab and Haryana have consistently shown high rates of growth (in both primary and secondary sectors (See Table 3.7 which divides regions according to high and low growth regions in terms of growth of various sectors). West Bengal, on the other hand, shows consistently low rate of growth in the secondary as well as the tertiary sector. In the tertiary sector, it is Kerala and Haryana which show continuously high CRG. Assam, Bihar, Madhya Pradesh, Orissa, Karnataka, Tamil Nadu and West Bengal have shown low rates of growth of value added by tertiary sector in all the periods concerned. Apart from Haryana and Punjab, states which have recorded high rates of growth in primary sector in all the periods are -- Assam, Gujarat and West Bengal. None of these states however had high rates of growth in their secondary sector in all the periods. Thus the performance of most of the states in different sectors was not uniform. For most of them, it varied from one period to another also.

For the period 1960-61 -- 1977-78 as a whole, Tamil Nadu has shown the lowest rate of growth in the primary sector, Assam in the secondary sector and Bihar in the tertiary sector. The states showing the highest rate of growth in the three sectors have been Punjab (in both the primary and tertiary sector) and Jammu and Kashmir (in the secondary sector).

The high CRG recorded by some states (like Jammu and Kashmir) could be due to low initial base. Conversely the relatively lower CRG in some sectors by other states (like West Bengal) could be due to a high initial level of value added in the sector. One can get a more accurate picture of the growth profile of various sectors in the states by looking at value added per capita in various sectors.

Value Added per Capita in Various Sectors

Table 3.8 gives value added per capita of primary, secondary and tertiary sectors for various states.^{2/} As can be seen from this Table, in the primary sector, Punjab and Haryana have consistently occupied the first two positions. In 1960-61, Haryana had the highest value added in primary sector whereas in later years Punjab has outstripped every other state by a wide margin. Thus, the

^{2/} The state population figures used for deriving value added per capita in different sectors for the year 1977-78 have been gotten by dividing SDP for this year by per capita SDP for each of the state.

absolute difference between the value added per capita by primary sector of Punjab and that of its nearest rival Haryana increased from Rs. (-) 76.86 in 1960-61 to Rs. 94.81 in 1970-71 to Rs. 274.51 in 1977-78. The ranks of other states in per capita value added in primary sector have fluctuated a great deal over time. The only state (excepting Punjab and Haryana) which has had high per capita value added in primary sector in all the years considered is Karnataka. In 1960-61, Tamil Nadu ranked fifth and Maharashtra sixth in this respect. Both the states slid down in later years. In 1970-71, it was Maharashtra and in 1977-78 Tamil Nadu which had the lowest rank. Over the period 1960-61 -- 1977-78 Orissa and Rajasthan improved their ranks. The states which continued to have low value added per capita in primary sector in all the years were Bihar, Kerala and Uttar Pradesh.

The position which Punjab holds in the primary sector Maharashtra holds in the secondary and tertiary sectors. For all the years considered Maharashtra ranked first in both these sectors and in absolute terms is far ahead of other states. The other states which in 1960-61 showed 'high' per capita value added in secondary sector were Gujarat, Tamil Nadu and West Bengal. Other states had comparatively very low levels of value added (per capita)

in this sector^{8/} Bihar had the lowest value added (per capita) in this sector in 1960-61. In 1970-71 it was 0.152 and in 1977-78 Uttar Pradesh which held this position. The states which have gone down in ranking in this respect are: Andhra Pradesh, Assam, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh. West Bengal lost its second rank to Gujarat in 1970-71 and went down still further to fifth rank in 1977-78 giving entry to Punjab and Tamil Nadu in the higher ranks. The states which showed improvement in their positions in this sector were Haryana, Jammu and Kashmir, Karnataka, Kerala and Punjab.

As noted above, Maharashtra has held the first rank, (among all states) in the tertiary sector, West Bengal, Gujarat, Tamil Nadu and Punjab were the other states which in 1960-61, had high per capita value added in tertiary sector. In 1970-71, Tamil Nadu dropped out of this category. In 1977-78 West Bengal too joined Tamil Nadu. Both West Bengal and Tamil Nadu lost their higher ranks. Their place was taken by other states like Punjab and Haryana. Over the period 1960-61 -- 1977-78 Punjab improved its rank from fifth to second and Haryana from eleventh to fifth.

^{8/} In fact in 1960-61, even Tamil Nadu compared to Maharashtra, West Bengal and Gujarat had very small secondary sector in terms of value added per capita. Thus its per capita value added was only Rs. 58.09 compared to Rs. 106.60 of Maharashtra, Rs. 93.15 of West Bengal and 91.95 Gujarat.

Significant changes in this respect have been noticed in the case of Rajasthan (in downward direction). Gujarat maintained its status up (at third position).

The inter state disparity in per capita value added in primary and tertiary sectors has increased over time whereas that in the secondary sector shows some decline. As can be seen from Table 3.8 the COV of per capita value added in primary sector increased from 12.31 in 1960-61 to 29.79 in 1977-78 and that of tertiary sector increased from 28.60 (1960-61) to 38.52 (1977-78). During the same period the COV of per capita value added in secondary sector declined from 50.39 to 46.98. The COV however continued to be the highest for the secondary sector.

Conclusion

The analysis of per capita SDP in terms of its sectoral components brings out some interesting results. Noteworthy among them are the following:

1. the poorer states e.g. Orissa, Bihar, and Uttar Pradesh have low per capita SDP in not one but all the three sectors;
2. amongst the richer states, Punjab, Haryana and Gujarat have done well in all the sectors, Punjab and Haryana had been ahead of other states in the primary sector in 1960-61 and have improved their

position in the other sectors over time; Gujarat improved its rank in primary (from thirteenth to eighth) and secondary (from third to second) and maintained its rank (third in the tertiary sector over the period 1960-61 -- 1977-78;

The other rich states however did not perform so well in all the sectors. Maharashtra and Tamil Nadu recorded lower ranks in the primary sector over the period 1960-61 -- 1970-71. Whereas Maharashtra improved its rank somewhat in this respect in 1977-78, Tamil Nadu's rank slid down still further. West Bengal too could not maintain its rank of 1960-61 in both secondary and tertiary sectors. It however improved its position in the primary sector. The decline in rank of per capita SDP of Maharashtra and Tamil Nadu can be explained mainly in terms of their weakened position in the primary sector.

From the above analysis it is clear that one cannot pinpoint a single sector as the cause of high/low per capita SDP of a state. Disparities between per capita SDP of different states are to be explained in relations to disparities in all the three sectors. In the next few chapters we will analyse both primary and secondary sector separately and attempt to find out the causes of disparity in the performance of various states with respect to these two sectors.

Table 3.1Economic Structure of Selected States

(per cent shares)

Year/ States	1960-61		
	P	S	T
Andhra Pradesh	58.8	12.8	28.4
Assam	56.9	19.1	24.1
Bihar	58.0	10.6	31.4
Gujarat	41.8	25.7	32.5
Haryana	62.9	16.1	21.0
Jammu & Kashmir	67.7	8.7	23.6
Karnataka	62.1	12.4	25.5
Kerala	56.0	15.2	28.8
Madhya Pradesh	63.4	14.9	21.7
Maharashtra	41.8	26.4	31.7
Orissa	63.2	12.4	24.4
Punjab	57.0	16.5	26.5
Rajasthan	57.0	15.8	27.2
Tamil Nadu	52.0	17.6	30.4
Uttar Pradesh	60.2	11.1	28.7
West Bengal	42.5	24.3	33.2
India	52.2	19.1	28.7

contd..

Table 3.1 contd.

1970-71			1977-78		
P	S	T	P	S	T
55.6	13.7	30.7	50.5	17.3	32.2
63.9	14.0	22.1	59.5	15.0	25.5
62.8	16.8	20.4	56.3	20.6	23.1
48.9	20.8	30.3	36.6	27.3	36.1
62.4	16.1	21.5	55.2	17.9	26.9
57.8	15.0	27.2	58.6	18.2	23.2
59.6	18.6	21.8	51.3	21.0	27.1
54.7	16.4	28.9	45.5	18.7	35.8
61.6	15.2	23.2	58.6	17.8	23.6
28.9	33.3	37.8	31.1	32.2	36.7
68.9	12.0	19.1	66.2	12.9	20.9
60.3	13.3	26.4	55.6	17.7	27.7
64.8	13.2	22.0	58.6	16.8	24.6
40.9	25.6	33.5	31.4	32.3	36.3
60.3	14.9	24.8	53.4	16.0	30.6
44.6	23.0	32.4	43.0	24.3	32.7
50.1	19.7	30.2	45.8	21.4	32.8

P = Primary Sector.

S = Secondary Sector.

T = Tertiary Sector.

Table 3.2

Economic Structure of States by Crops

	1960-61			1970-72			1977-78		
	P	S	T	P	S	T	P	S	T
<u>Group I States</u>									
Average Share	50.7	20.81	28.48	50.78	20.85	28.37	44.3	23.68	32.02
Cov.	15.9	19.99	15.20	23.08	30.60	17.18	22.16	24.49	12.80
<u>Group II States</u>									
Average share	61.4	12.42	26.18	55.98	16.588	27.44	49.47	20.42	30.16
Cov.	6.6	20.29	6.91	15.36	28.00	16.90	19.01	27.45	16.77
<u>Group III States</u>									
Average Share	60.16	12.84	27.00	62.28	14.78	22.94	58.62	16.82	24.56
Cov.	4.80	14.79	12.87	5.94	10.50	12.76	7.24	14.87	13.25

P = Primary sector.
 S = Secondary sector.
 T = Tertiary sector.

Note: The average share is calculated as unweighted arithmetic mean of shares in states.

Table 3.3States Grouped According to their Industrial Structure

		1960-61
	(1)	(2)
A	1. Low Primary	Gujarat, Maharashtra, West Bengal.
	2. High Secondary	Gujarat, Maharashtra, West Bengal.
	3. High Tertiary	Gujarat, Maharashtra, West Bengal, Bihar.
B	1. Medium Primary	Kerala, Punjab, Rajasthan, Tamil Nadu, Andhra Pradesh, Assam, Bihar.
	2. Medium Secondary	Kerala, Punjab, Rajasthan, Tamil Nadu, Andhra Pradesh, Haryana.
	3. Medium Tertiary	Kerala, Punjab, Rajasthan, Tamil Nadu, Andhra Pradesh, Karnataka, Uttar Pradesh.
C	1. High Primary	Jammu and Kashmir, Madhya Pradesh, Orissa, Haryana, Karnataka, Uttar Pradesh.
	2. Low Secondary	Jammu and Kashmir, Madhya Pradesh, Orissa, Uttar Pradesh, Andhra Pradesh, Bihar, Karnataka.
	3. Low Tertiary	Jammu and Kashmir, Madhya Pradesh, Orissa, Assam, Haryana.

contd..

Table 3.3 contd.

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1977-78

(1)		(2)
A	1. Low Primary	Maharashtra, Gujarat, Tamil Nadu.
	2. High Secondary	Maharashtra, Gujarat, Tamil Nadu.
	3. High Tertiary	Maharashtra, Gujarat, Tamil Nadu.
B	1. Medium Primary	Karnataka, Kerala, Andhra Pradesh, West Bengal.
	2. Medium Secondary	Karnataka, Kerala, West Bengal, Assam, Bihar, Jammu & Kashmir.
	3. Medium Tertiary	Karnataka, Punjab, Uttar Pradesh, Haryana.
C	1. High Primary	Assam, Madhya Pradesh, Orissa, Rajasthan, Bihar, Haryana, Jammu and Kashmir, Punjab, Uttar Pradesh.
	2. Low Secondary	Assam, Madhya Pradesh, Orissa, Rajasthan, Andhra Pradesh, Haryana, Punjab, Uttar Pradesh.
	3. Low Tertiary	Assam, Madhya Pradesh, Orissa, Rajasthan, Bihar, Jammu and Kashmir.

Table 3.4Rank Correlation Between Per Capita SDP and Share
of Various Sectors

	1960-61	1970-71	1977-78
Per Capita SDP and Share of Primary Sector	0.73	0.76	0.76
Per Capita SDP and Share of Secondary Sector	0.98	0.88	0.91
Per capita SDP share and of Tertiary sector	0.88	0.90	0.95

Table 3.5

Variation in Different Sectors for Groups of
States

	1960-61	1970-71	1977-78
Gr. I			
H	S	S	S
L	T	T	T
Gr. II			
H	S	S	S
L	P	P	T
Gr. III			
H	S	T	S
L	P	P	P

H = Highest
L = Lowest

P = Primary sector
S = Secondary sector
T = Tertiary sector.

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Table 3.6

Compound Rate of Growth of Value Added of Various
Sectors in Selected States¹

(per cent per annum)

	1960-61 to 1970-71		
	Primary Sector	Secondary Sector	Tertiary Sector
Andhra Pradesh	9.22	10.58	10.69
Assam	9.96	5.36	7.75
Bihar	9.37	13.37	3.92
Gujarat	13.25	9.15	10.71
Haryana	12.98	13.08	13.34
Jammu & Kashmir	7.94	15.81	11.23
Karnataka	11.06	16.13	9.78
Kerala	10.34	11.44	10.64
Madhya Pradesh	8.87	9.42	9.92
Maharashtra	5.63	12.20	11.57
Orissa	11.80	10.48	8.16
Punjab	14.33	11.27	13.65
Rajasthan	12.43	9.02	8.07
Tamil Nadu	5.53	12.22	9.14
Uttar Pradesh	8.75	11.98	7.16
West Bengal	9.64	8.52	8.85
India	9.5	10.3	10.55
Cov.	25.07	24.24	24.17

contd..

Table 3.6 contd.

	1970-71 - 1977-78		
	Primary Sector	Secondary Sector	Tertiary Sector
Andhra Pradesh	8.98	14.24	11.25
Assam	10.32	12.55	13.75
Bihar	9.38	14.39	13.09
Gujarat	6.25	15.13	13.55
Haryana	10.50	14.17	16.12
Jammu & Kashmir	12.51	15.43	9.77
Karnataka	7.28	11.52	13.42
Kerala	7.80	12.77	14.11
Madhya Pradesh	11.34	14.69	12.13
Maharashtra	14.16	12.42	12.49
Orissa	9.27	11.04	11.32
Punjab	10.5	15.49	12.57
Rajasthan	7.03	12.39	10.33
Tamil Nadu	5.84	13.62	11.18
Uttar Pradesh	9.55	12.61	14.87
West Bengal	9.95	11.40	10.67
India	9.6	13.9	14.05
Cov.	23.77	10.98	13.89

Note: Growth rates are according to the values in current prices.

Source: As in Table 2.14.

Table 3.7(a)

Categorisation of States According to High and Low Growth
in Various Sectors

Primary sector	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1977-78
High Growth States	Assam, Gujarat, Haryana, Karnataka, Kerala, Orissa, Punjab, Rajasthan, West Bengal.	Assam, Gujarat, Haryana, Jammu & Kashmir, Madhya Pradesh, Punjab, Maharashtra, West Bengal.	Assam, Gujarat, Haryana, Jammu and Kashmir, Madhya Pradesh, Orissa, Punjab, Rajasthan, West Bengal.
Low Growth States	Andhra Pradesh, Bihar, Jammu and Kashmir, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh.	Andhra Pradesh, Bihar, Karnataka, Kerala, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh.	Andhra Pradesh, Bihar, Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh.

contd..

Table 3.7 (b)

Categories of States According to High and Low Growth Regions
in Various Sectors

Secondary Sector	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1977-78
High Growth States	Andhra Pradesh, Bihar, Haryana, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh.	Andhra Pradesh, Bihar, Haryana, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Punjab Pradesh.	Andhra Pradesh, Bihar, Haryana, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Punjab Pradesh.
Low Growth States	Assam, Gujarat, Madhya Pradesh, Rajasthan, West Bengal	Assam, Karnataka, Kerala, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.	Rajasthan, West Bengal, Orissa, Madhya Pradesh, Gujarat, Assam.

contd..

Table 3.7(c)

**Categorisation of States According to High and Low Growth Regions
in Various Sectors**

Tertiary Sector	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1977-78
High Growth States	Andhra Pradesh, Gujarat, Haryana, Jammu and Kashmir, Kerala, Maharashtra, Punjab.	Haryana, Kerala, Uttar Pradesh	Punjab, Kerala, Haryana
Low Growth States	Assam, Bihar, Karnataka, Madhya Pradesh, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.	Andhra Pradesh, Assam, Bihar, Gujarat, Jammu & Kashmir, Karnataka, Madhya Pradesh, Punjab, Maharashtra, Orissa, Rajasthan, Tamil Nadu, West Bengal.	Andhra Pradesh, Assam, Bihar, Gujarat, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal

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Table 3.8

Value Added Per Capita in Various Sectors - Statewise

State	1960-61 (Rupees)		
	Primary Sector	Secondary Sector	Tertiary Sector
Andhra Pradesh	160.64	34.96	77.60
Assam	156.58	52.56	66.32
Bihar	23.96	22.66	67.11
Gujarat	149.54	91.95	116.29
Haryana	203.03	51.91	67.79
Jammu & Kashmir	180.65	23.20	62.98
Karnataka	175.59	35.06	72.11
Kerala	143.14	38.88	73.61
Madhya Pradesh	162.96	38.30	55.76
Maharashtra	168.79	106.60	128.00
Orissa	134.68	26.43	52.00
Punjab	196.15	56.78	91.19
Rajasthan	158.05	43.81	75.42
Tamil Nadu	171.64	58.09	100.36
Uttar Pradesh	150.44	27.74	71.71
West Bengal	162.92	93.15	127.27
All India Cov.	12.31	50.39	28.60

contd..

Table 3.8 contd.

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States	1970-71		
	Primary sector	Secondary sector	Tertiary sector
Andhra Pradesh	320.95	79.08	177.22
Assam	337.86	74.02	116.83
Bihar	250.20	66.93	81.27
Gujarat	401.09	170.60	248.53
Haryana	520.21	134.22	179.24
Jammu & Kashmir	299.00	77.60	140.71
Karnataka	403.57	125.95	147.61
Kerala	303.09	90.87	160.14
Madhya Pradesh	296.24	73.10	111.57
Maharashtra	229.55	264.50	300.24
Orissa	328.80	57.26	91.15
Punjab	615.02	135.65	269.26
Rajasthan	399.22	81.32	135.54
Tamil Nadu	240.34	150.43	196.85
Uttar Pradesh	290.58	71.80	119.51
West Bengal	322.50	166.31	234.28
All India	327.21	128.37	197.04
Cov.	28.51	46.93	37.15

contd..

Table 3.8 contd.

1977-78			
States	Primary Sector	Secondary Sector	Tertiary Sector
Andhra Pradesh	505.89	173.38	322.57
Assam	554.99	139.92	237.85
Bihar	414.04	151.49	169.88
Gujarat	531.53	396.47	524.27
Haryana	814.74	264.2	397.04
Jammu & Kashmir	583.83	181.33	231.15
Karnataka	579.04	237.03	312.66
Kerala	448.66	184.39	353.01
Madhya Pradesh	530.73	161.21	213.74
Maharashtra	509.3	527.32	601.01
Orissa	528.3	102.94	166.79
Punjab	1089.25	327.17	542.67
Rajasthan	542.58	155.55	227.77
Tamil Nadu	325.23	334.55	375.98
Uttar Pradesh	489.09	146.54	280.26
West Bengal	545.4	308.21	414.75
All India	522.43	268.78	416.69
Cov.	29.79	46.98	38.52

Note: 1. In current prices.

Source: As in Table 3.6.

Chapter 4

ANALYSIS OF THE REGIONAL DISPARITIES IN THE LEVEL AND GROWTH OF INDUSTRIAL SECTOR

In most of the states, the industrial sector occupied a much less important position than the primary sector. However, as noted in chapter 3, the disparity among different states was relatively higher in this sector compared to primary and tertiary sectors. This chapter is devoted to the analysis of this sector at a disaggregated level. Since the data for industry at disaggregated level are available only for organised manufacturing sector/registered factory sector, on a comparable basis over time, we limit our analysis to this segment of the secondary sector alone.^{1/} However, at a less disaggregated level the performance of various sub-sectors of the manufacturing sector viz. organised large scale (census) sector, organised small scale (sample) sector and unorganised sector have also been attempted in the chapter. Attempt has also been made to explain the causes of these persistent inequalities in the level and growth of regional industrial economies.

1/ The organised manufacturing sector in any case comprises a significant part of the secondary sector as a whole in almost all the states, therefore we are to a large extent justified in analysing this component only (see Table 4.1).

Methodology and Data Base.

In this chapter an attempt has been made to understand the nature and causes of the regional variation in the level of industrial development. Keeping this objective in view we have used percentage shares and growth rates to decipher the dynamics of change in this sector across the major states. Some of the inequality measures like 'Thiel's Inequality Index' weighted Co-efficient of Variation and Gini co-efficients have been used to see the trend in the inter regional inequalities over time.^{2/} Location quotient and specialisation coefficient have been employed to understand the role of industrial structure in the level and growth of the

2/ Thiel's Inequality Index (TII) is computed as:

$$TII = \sum P x_j \log (Px_j / P_j),$$
 weighted coefficient of variation (CV_w) is measured as:

$$CV_w = 100 \times \frac{1}{\sum P_j} \left[\sum P_j (x_j - \bar{x})^2 \right]^{1/2} / \bar{x}$$

Gini Coefficient (G) is calculated as:

$$G = \frac{1}{2n^2 \bar{x}} \sum_i \sum_j |x_i - x_j|$$

where

n = number of observations (states),

x_i, x_j = aggregate variable in question (x) for i^{th} or j^{th} state

$\bar{x}$ = mean value of variable x , P_j = proportion of nation's population in States,

Px_j = proportion of the state j in the aggregate variable x ,

$\bar{x}_w$ = weighted mean or the average values of x for all the states taken together.

industrialisation across space.^{3/} Regression analysis has been carried out to isolate some of the important factors determining the level of industrial development of the states.

The major source of data for this chapter is the Annual Survey of Industries (ASI), published by the Central Statistical Organisation (CSO). Information for the Registered Factory Sector, i.e. the census and the sample sectors, as published by the CSO has been used to analyse the manufacturing sector. The analysis, spatial as well as temporal, has made mainly in terms of value added. However, the variables like fixed capital and employment have also been used wherever necessary. Some information with regard to unorganised segment of the

3/ 'Location Quotient' is a measure of relative regional concentration of a given industry compared to total national magnitude. The industries with high location quotients ($LQ \geq 1$) will thus constitute the industrial base of the region. It is expressed as:

$$L.Q. = \frac{V_{ji}}{V_j} \div \frac{V_i}{V_N}$$

where V = value added, i = ith industry,
J = jth region and N = Nation.

The specialisation coefficient (SQ) measures the extent to which a regional economy has a diversified pattern. If a regional economy is as diversified as that of the nation, SQ will be zero, while if all its industrial activity is concentrated in the industry and which in turn concentrated in that region only, the SQ will equal to one. In other words, SQ nearer the zero more diversified will be the state and vice-versa. Thus S.Q. is expressed as:

$$SQ = + \sum_{j=1}^m \left(\frac{V_{ji}}{V_j} - \frac{V_i}{V_N} \right)$$

or $\sum_{j=1}^m$

(Addition over either of the positive or negative values symbols as in L.Q. above).

manufacturing sector, as provided in the National Accounts Statistics has also been used. In all 53 industry groups, roughly corresponding to the sample sector's level of disaggregation have been used for the purpose of analysis.^{4/} Data regarding the various determining factors (of the level of industrialisation) have been obtained from the various Government publications.^{5/}

In the earlier chapter we have considered the years 1960-61, 1970-71 and 1977-78 for analysing the sectoral patterns across states. In this chapter we have slightly shifted the years under consideration because the ASI data in terms of its coverage are more comparable from 1961 onwards.^{6/} The years 1961, 1969-70 (hereforth referred as 1969) and 1978-79 henceforth referred to as 1978) were considered for the analysis. For they divide the series into almost two equal parts and made it more reasonable to compare the performance between the pre and post seventies period. Thus the benchmark years for the purpose of this chapter shall be 1961, 1969 and 1978.

4/ A detailed aggregation scheme of the sectors is presented in the Appendix I

5/ For detailed discussion on the data base, their major sources, limitations and adjustment made therein, see Appendix I

6/ See Nair, K.R.G., Regional Experience in a Developing Economy, New Delhi, Wiley Eastern Ltd, pp.50-52.

Trends in the Inter-State Distribution of Industry:1961-1978.

In order to analyse the level of industrialisation across the states in 1961, 1969 and 1978, first, the recourse ~~has~~ been taken to the share of value added generated by manufacturing sector (VAM) in the respective state Domestic Product (SDP)^{6/}. The proportion of VAM in SDP in the various states with their relative ranks are given in Table 4.2. One of the striking features of the industrial development in India, appears to be its undulated spread over space. It is readily seen from the table that Maharashtra with 23.50 per cent of the value added generated by manufacturing sector in the states' SDP emerges as the most industrialised state followed by Gujarat (19.49%), West Bengal (19.15%) and Tamil Nadu (16.24%) in 1961. All these states emerge as more industrialised states, compared to the remaining ones, by virtue of being above the all India average (14.6%). A somewhat similar trend is observed in the organised manufacturing segment of the total manufacturing.^{7/}

^{6/} Share of the manufacturing sector in the total SDP has been used as an index for the level of industrialisation and indicates the relative strength of the manufacturing sector in the regional economy.

^{7/} In 1961, rank correlation coefficient between organised and total manufacturing sector was found to be + 0.9147 significant at 0.01 per cent level of significance.

By 1978, some changes are observed in the rank ordering of the various states. However, it appears that the more and the less industrialised states shuffle their ranks within their respective groups. Thus Tamil Nadu moves to second position pushing Gujarat and West Bengal to third and fourth positions respectively; while Maharashtra maintains its first position. None of the industrially backward (IB), states grew enough to be considered as industrially developed (ID) states. It is interesting to observe that ranking of the states in the unorganised segment does not confirm to the rank order of the organised sector. In 1961 some of the IB states like Haryana and Rajasthan snatch a higher order berth with first and second ranks respectively according to the contribution of unorganised manufacturing sector in the SDP. By 1978 some more IB state emerge as industrially prominent by improving upon their earlier ranks. For example Kerala, Uttar Pradesh, Punjab and Madhya Pradesh, Andhra Pradesh move to first, third, twelfth and thirteenth ranks respectively.

To confirm the association between the organised and unorganised sectors, we worked out rank correlation for various years, across states. In 1961 the rank coefficient of correlation (r_k) was + 0.1705 and in 1978, it was -0.044 which is not significant even at 10% level (see Table 4.3). It is difficult to establish any relationship between the

two sectors over time.^{8/} It leads one to speculate that the unorganised sector is growing independent of the organised sector and has its own growth impulses across states. It may be partly due to the government policies of encouraging the small scale sector, especially in the backward areas. The table also gives a set of relationships between the various segments of the manufacturing sector. It is interesting to note that the relationship between the large and the small scale organised sectors, though significantly positive, has a declining trend over the years. Whereas the association between the organised small scale (sample) sector and the unorganised sector appears to have strengthened over time. It may, plausibly, be a case of scalar complementarity between these two segments in the various states.

However, the share of value added in SDP generated by the manufacturing sector is also likely to depend on the performance of other sectors of the economy, apart from its own.^{9/} Therefore, it might not always reflect the relative strength of the manufacturing sector in the regional economies. Another way to adjudge the level of industrialisation of the

8/ Though the coefficient of rank correlation marginally improved in 1969, but was found to be insignificant.

9/ For example, exceptionally good harvest in a particular year, accompanied by an improved performance of the service sector will obviously tend to reduce the percentage contribution of the manufacturing sector in the overall SDP of the region and vice-versa.

various regions is to look at the per capita industrial output in the respective state economies.^{10/}

Table 4.4 displays per capita value added (PCVA) generated in the organised sector by states. Interestingly enough, the table shows almost similar ranks to that when the states are ranked according to the contribution of manufacturing sector in the SDPs. There is hardly any significant deviation from the earlier grouping except that Assam, which formed a part of ID states in 1961, moved to IB states group in 1978 according to the PCVA.

Therefore, irrespective of the criteria used, Maharashtra West Bengal, Gujarat and Tamil Nadu emerge as industrially developed states, registering above the national average value. The other category of industrially backward states consists of Andhra Pradesh, Assam, Bihar, Haryana, Jammu and Kashmir, Kerala, Karnataka, Madhya Pradesh, Orissa, Punjab, Rajasthan, and Uttar Pradesh, which are below the national average. However, by 1978, the only change encountered is in the cases of Punjab and Haryana which make an upward movement to join the group of ID states.

^{10/} For the purpose of the analysis, we have used per capita value added to represent per capita output generated in any region.

The Shares

Table 4.5 gives the shares of various states in the value added, fixed capital and employment in the registered manufacturing sector in the years 1961, 1969 and 1978. As is evident from the table, Maharashtra, West Bengal, Gujarat, Tamil Nadu, Bihar and Uttar Pradesh virtually remain unchallenged throughout the period. In 1961 Maharashtra, West Bengal, Gujarat and Tamil Nadu were the top four states in terms of value added with 26.97, 20.59, 10.19 and 8.16 per cent shares respectively. Even in 1978, the status quo was almost maintained. Similarly, in terms of employment and fixed capital, these states were industrial leaders. Together, they contributed approximately 59.25 per cent of employment and 56.12 per cent of the fixed capital in 1961. In 1978 also their share in the employment and fixed capital were approximately 50 and 38 per cent respectively.

Though their absolute share experienced a decline over time, the position remain almost unaltered except that some of the IB states, like Andhra Pradesh, Bihar, Karnataka, Uttar Pradesh also improved their position overtime. It is interesting to observe that, over-time, the states with higher share lost in favour of the states which had a relatively modest share in 1961. Out of all the states, which lost overtime, West Bengal lost half of its share in terms of value added (from 20.59% in 1961 to 11.18% in 1978), employment

(from 20.23% to 12.87%) and fixed capital (from 19.85% to 6.56 per cent). Other such regions are Maharashtra, Assam and Bihar in terms of value added; Gujarat and Kerala in terms of employment and Orissa in terms of fixed capital. The remaining states appear to have improved their shares overtime (see Table 4.5).

In the light of the above discussion we make an attempt to understand the growth profile of the various regions between 1961 and 1978 on the basis of the indication like value added, employment and fixed capital, pertaining to the registered factory sector.

The Growth Rates

The annual compound growth rates (CRG) of value added, employment and fixed capital in the various regions between 1961-1969, 1969-1978 and 1961-1978 are presented in Table 4.6. It is observed from the table that the states with higher level of industrialisation are not necessarily the 'high growth' ones. To the contrary these are the less developed states which, by and large, grew at a higher rate. For example Rajasthan, Madhya Pradesh and Andhra Pradesh, relatively less developed states in 1961, grew at 11.67, 9.65 and 9.56 CRG per annum in terms of value added, compared to the industrially developed states like Maharashtra (5.34% CRG per annum), West Bengal (1.15%), Gujarat (6.08%) and Tamil Nadu (6.35%) between 1961 and 1978.

Similarly highest compound rate of growth in value added during 1961 and 1969 was achieved by Haryana having 13.61 per cent per annum closely followed by Orissa (11.34%), Kerala (10.81%), Rajasthan (10.51) and Karnataka (10.08), compared to Maharashtra (5.97%), West Bengal (2.09%), Gujarat (3.24%) and Tamil Nadu (6.85%). It may be noted that the top four states in terms of their level of industrialisation ranked 10th, 11th, 14th, and 9th respectively when arranged according to their CRG.

Though the growth performance of the various regions differ according to the variable considered, the fastest growing regions invariably belong to the IB states category, irrespective of the time period and variable taken into account. On the other hand, most of the **last positions** were claimed by the group of ID states, Tamil Nadu being the only exception. Therefore, it is plausible that the negative association between the level of industrialisation and the **rate** of growth might have led the inter-regional industrial inequalities to converge between 1961 and 1978.

The Trend in the Inter-region Industrial Inequalities:1961-1978

As discussed in the methodology, three inequality indices viz. weighted co-efficient of variation, Thiel's Inequality Index and Gini co-efficients are computed in order to make an overall assessment about the trends in the inter-regional concentration of industry across states. These

indices are calculated for value added, employment and fixed capital over states for all the years between 1961 and 1978. The results are presented in Table 4.7.

The results show a clear trend towards reduction in the level of inter-regional industrial inequalities over the years which is observed irrespective of the index or variable considered. However, the trend is not completely smooth and some undulating years do appear here and there. For example the years 1969 or 1978, where the values of inequality indices, in general, have marginally increased. However, they do not seem to distort the overall declining trend. To confirm our observation we computed percent change between 1961-69, 1969-78 and 1961-78. It was found that despite a marginal upward movement in 1969 and 1978, the percentage change has been negative, albiet it varies depending on the variable **or** index. On an average, inequalities reduced (as per percentage change) by approximately 15 percent in value added, 21 percent in employment and around 28 percent in fixed capital between 1961 and 1978. The decline between 1961 and 1969 was more marked than in the subsequent sub-period particularly in the case of fixed capital. ^{11/}

^{11/} It may be owing to the heavy investment in the capital intensive public sector investment in relatively backward states like Bihar, Madhya Pradesh and Orissa and to an extent Karnataka during the sixties, following Mahalanobis model.

In order to know the exact magnitude of the rate at which the inequalities reduced, we worked out trend rates of growth also (see Table 4.7). We notice that the inequality declined approximately at a rate of 1.50 percent compound per annum in terms of value added, at 1.75 percent in terms of employment and around 2 percent in terms of fixed capital. In all the cases, values of R^2 were found to be statistically significant. Thus, the above discussion brings point home that inter-state industrial inequalities have significantly declined over time, irrespective of the variable or the index of inequalities considered for inference.

Industrial Structure of the State Economies:

Before attempting an answer to the question: as to what causes variation in the level of industrialisation across the states; let us look at the industrial structure of these regional economics. We analyse the industrial structure at a point of time, i.e. 1978 and changes over a period between 1961 and 1978 in terms of location quotients and changes in the shares of various industry groups in different states respectively; using value added data for the registered manufacturing sector.^{12/}

^{12/} Though the industrial structure of the various states will vary according to the variable considered, we take value added as the best indicator. Other variables were employment or fixed capital are likely to present a biased picture depending upon the factor proportions in specific industry groups at the regional level. Moreover, value added is a net outcome of the contribution of all the factors of production and is expected to yield more reliable growth for our kind of analysis.

(a) Industrial Base of the State Economie

In a multi-regional economy, a region would tend to specialise in those industries for which it has some comparative advantage over the other regions. Hence the industries will high location quotients (with value ≥ 1) would constitute the industrial base of the region.^{13/}

Table 4.8 depicts the industrial base of the various states in India in the year 1978-79. The industries have further been classified into nine broad groups according to their end use. What emerges from the table is that majority of the states have relatively independent blocks or sets of resource based industries comprising their industrial base.

The development of capital goods and demand based industries is confined either to some developed states like Maharashtra or West Bengal; or where heavy public sector investment has been made (like in Bihar, Orissa, Madhya Pradesh or Karnataka). To some extent Punjab and Haryana are exceptions. Development of the capital goods sector in Uttar Pradesh is of a relatively recent origin. Even in the capital goods sector, activities are confined mainly to repair of motor

^{13/} The location quotient is a measure for relative regional concentration of a given industry vis-a-vis the national magnitude.

vehicles or to a lesser extent in some metal products (other than machinery and transport equipment), otherwise, the industrial base of the regions, by and large, reflects resource endowment of the regions.

The industrial base of Gujarat, a relatively developed state, consists of four independent blocks of industries viz; agro-based consumer goods industries; fibre-based (textiles) consumer goods industries; chemical based intermediate goods industries; and non-metallic mineral based intermediate goods industries. The industrial base of Assam and Jammu and Kashmir is dominated by agro-based industries (like food preservation and canning) or some stray consumer industries like wine and tea, ofcourse along with some intermediate goods industries like wood and wood products or paper and paper products. The capital goods sector, more often than not, is confined to motor vehicle repairs.

The industrial base of the states like Bihar, Orissa, Madhya Pradesh and Rajasthan is predominantly oriented to the capital goods sector and to a lesser extent to some other intermediate goods industries like paper and paper products or wood and wood products due to the local availability of raw material. The states of Andhra Pradesh and Uttar Pradesh are characterised by a wide range of agro-based or other consumer oriented industries and mineral based industries.

Of late, the capital goods sector has also started emerging; while Punjab and Karnataka have predominance of consumer demand oriented industries along with some capital goods industries. And Kerala, though has a relatively diversified base, tends to specialise in intermediate goods industries like wood and wood products, paper and paper products, rubber and rubber products and some mineral based industries. Resource base for these industries is worth the notice. To the contrary Haryana seems to have specialised in the industries which fall under the capital and intermediate-goods sector and for which very meagre resource base is locally available. Plausibly, some market forces have shaped the industrial structure of the regions.

States like Maharashtra, West Bengal and Tamil Nadu can be broadly grouped in a more homogenous category. These states not only have a relatively wider industrial base, but also have specialised in those industry groups for which resource endowment is not so rich within the region. Besides, specialising in resource based industries, these states also specialise in capital goods and foot-loose industries.

Thus, it appears that resources-oriented industrial base is the basic characteristics of most of the regional economies in India, exceptions apart. If we compare somewhat

similar table for the year 1961^{14/} we find that most of the states have diversified their industrial base from traditional consumer goods sector to relatively modern sectors.

(b) Dominance of the Regions in the Important Industry Groups

India started with a small and narrow industrial base, confined mainly to the consumer goods sector, in 1951. During the subsequent years of planning, performance of the industrial sector has been quite impressive in terms of quality as well as quantity. As envisaged in the Mahalanobis model, India has broadened and diversified its industrial base from a rudimentary traditional and consumer base industries to capital and intermediate goods sector during the second and third plan periods. It may, however, be mentioned that the experience at the national level was not uniformly shared by the constituent states, as is clear from the analysis of the industrial base, in the proceeding section. Since the earlier exercise was for a point of time, it will be interesting to observe the pattern of change over a period of almost 20 years, i.e. from 1961 to 1978. The objective of this exercise is to trace the dominance of high industry state to various industry groups. It is likely that industrially more developed states have significant

14/ Alagh, Y.K., Subrahmaniam, K.K., and Kashyap, S.P., "Regional Industrial Diversification in India, Some Factual Analysis", Economic and Political Weekly, Vol.6, No.5, 1971.

share of important industries and vice-versa. 'Important' industries are defined in terms of their share in total value added by registered factory sector at the national level. Table 4.9 gives list of such industries with their respective shares in value added for the years 1961, 1969 and 1978.^{15/}

As can be seen from the table, the industrial structure at the national level has not shown much change over time, except industry groups 239, 251, 339 and 384 where industry groups 239 and 251 lost their share to become unimportant industry groups from 1969 onwards while other two gained importance over time. Other groups maintained their shares to remain important industry groups. Thus the textiles (231) contributed around 26 percent to total value added of the country in 1961, which come down to 20% in the total value added by industries in 1978, though it remained the largest contributor throughout. Other industries which

^{15/} We identify important industry groups according to their share in the industrial value added at all India level. All those industry groups having more than or equal to one percent share in the value added at the National level are considered as important industries. Thus in all 23 industry groups are identified as important industry groups for the purpose of the analysis (see Table 4.9).

Alternative one could identify these industries on the basis of their growth performance. However, it may not be very desirable for, it is quite possible that an industry group, despite its high rate of growth, may not be able to affect the overall pattern of industrial structure., especially if the industry group in question has a very meagre weight in total manufacturing.

lost their share over time are grain mill products (205), sugar (207), food product not elsewhere classified (n.e.c.) (209), manufacture of tobacco and tobacco products (228), manufacture of wood and wood products (251), printing and publishing of all types (280), rubber and rubber products (300), petroleum refineries (321), cement, lime and plaster (334), non-ferrous basic metals (342), metal products and parts (except machinery and transport equipment) (350) and railway, loco equipments etc. (382). The remaining groups which become more important with the passage of time are: other textiles, (239), manufacture of paper and paper products (271), heavy chemicals, organic & inorganic chemical, and fertilizers (311), paints, varnishes, drugs and chemicals, n.e.c. (319) miscellaneous non metallic mineral products (339), iron, steel and ferro-alloys (341), machine and machine tools (except electrical machinery) (360), electric machinery and apparatus (370), motor vehicles and parts (383) and repair of motor vehicles (384).

Table 4.10a, 4.10b and 4.10c give shares of various states in the selected industry groups. In 1961, Maharashtra and West Bengal dominated in almost all the major industry groups. Out of 35 industry groups Maharashtra claimed more than 10 percent share of the nation's value added in as much as 22 industry groups and West Bengal in 19 groups. States like Gujarat and Tamil Nadu, though did not dominate to that extent in any specific industry group, had significant share

of quite a few industries. For example Gujarat's share in some of the predominant industries in 231, 209, 360 and 311 was 21.34, 9.76, 9.53, 7.10 and 18.02 percent respectively in 1961. Tamil Nadu had 12.22, 10.93, 5.75, 7.68, 9.20 and 8.95 percent share in the industry groups 231, 209, 319, 207, 360 and 311 respectively, of course, along with other industry groups (see Table 4.10a). Two other states, Bihar and Uttar Pradesh had significant share, though only in a few but very important industries at the national level. For example, Uttar Pradesh claimed 39.07 percent share of the nation's sugar, gur and khandsari industry (207). Similarly, Bihar claimed 30.31 percent share of the iron and steel industry (341) in 1961, along with other industries.

On the other hand states like Karnataka, Madhya Pradesh, Kerala, Andhra Pradesh and Assam hardly had any significant concentration of 'important' industries. For example, Karnataka hardly crossed 3 percent share in the top ten industry groups except in 207, 220 and 360. Similarly Madhya Pradesh accounts for 6.39 percent in tobacco and tobacco products (220), 5.17 in iron, steel and ferro alloys (341) and 4.40 percent share in textile group (231); Andhra Pradesh accounts for 26.99 percent in 220, and 8.51 percent in sugar, gur and khandsari (207); Assam, 29.13 percent in industry group miscellaneous food products (n.e.c.) (209) and Kerala accounts for 11.26 percent share of the industry group 209 and 3.01 percent of the industry group 311 (see Table 4.10a).

It is apparent from the table that other states like, Orissa, Rajasthan and Jammu and Kashmir had very small shares in most of the industry groups. And if we find high proportion of some important industry group in these states, the industry in general will be very low ranking in terms of its proportion in the total value-added of the country. Exceptions like the industry group 341 in Orissa (10.23 percent), and the group 382 in Rajasthan (7.73 percent) hardly make for general case.

The situation remained more or less unchanged in the later years also. For example, Maharashtra continues to dominate the industrial scene though without improving its share (in fact it lost some of its share to other states). But West Bengal seems to emerge as a net loser in quite a few significant industries. The gainers have been states like Gujarat, Tamil Nadu, Uttar Pradesh, Andhra Pradesh, Madhya Pradesh and Rajasthan which overtime gained significant share of some of the important industries.

Table 4.10b and 4.10c reveal that though six states viz. Maharashtra, West Bengal, Gujarat, Tamil Nadu, Bihar and Uttar Pradesh continue to dominate the first ten industry groups, the degree of dominance has tended to decline overtime. Consequently a tendency of greater spatial spread is evident among the various industry groups. States like Andhra Pradesh, Karnataka and Madhya Pradesh have shown greater vitality

whereas Assam has lost its initial advantage in some of the important industry groups. Kerala has remained almost static, with a somewhat unusual upward swing in 1969. Among the remaining states while Rajasthan, Orissa, Punjab and Haryana seem to have broadened their base, the performance of Jammu and Kashmir has been anything but impressive.

Thus, it is clear that the industrial structure of the country has been heavily concentrated in a few industries (ten industry groups account for almost 72 percent share in the total value added generated in 1978). These industries, in turn, are concentrated in a few states. More striking is the dominance of a few states not only in the important industry groups but also in most of the industries which are not so important even in 1978 (see Table 4.10c).

Inter-state Industrial Variation: Some Explanations

The above discussion leads on to ask: what are the forces which determine inter-regional variation in the level of industrial development? After all, regional inequalities, at least in the early phase of development arise because some regions with locational advantage grow faster than the others. However, economic history of various countries reveals that the inequalities tend to decline as development proceeds. Logically it would happen if (a) developed regions grow at a slower pace than the backward regions, (b) developed

regions stop growing and backward regions grow, or (c) developed regions encounter a declining phase, while under-developed regions remain ever stagnant.

These phases might be witnessed owing to a variety of reasons such as industry mix of the region, existing regional technological linkages, operation of some market factors at the regional level conferring some locational advantages to a region vis-a-vis other regions. Thus, in order to understand the dynamics of the regional variations in India, we postulate that more developed states will have more diversified industrial structure and *vico-versa*. (ii) alternatively it can be postulated that the growth of the region will depend on the type of industry mix of the region, i.e., if a region specialises in those industries which are fast growing at the national level, it would tend to grow faster owing to its favourable industry-mix (industry mix might also operate via inter industry demand); and in a macro dynamic frame (iii) the level of industrial development will vary across the states to the extent performance of some of the factors like regional demand or market size, availability of infrastructure, level of agricultural development, agglomeration economies, urbanisation, raw material availability, labour discipline, efficiency wages and the government participation varies across the regions.

(1) Regional Industrial Diversification and Level of Industrial Development:

We attempt to examine the relative extent of industrial diversification of the various regions by estimating the region specific coefficient of specialisation. Table 4.11 provides values of the coefficients for the years 1961, 1969 and 1978. Classified in three broad groups, we find that in 1961 Maharashtra, Tamil Nadu, West Bengal and Uttar Pradesh are industrially more diversified states; Gujarat, Karnataka, Madhya Pradesh and Delhi could be grouped in the 'middle level' of diversification, whereas, the remaining regions are found to be less diversified.

In the next two decades, almost all the states have diversified their industrial structure except Maharashtra where the tendency seems to be in opposite direction; and Andhra Pradesh and Orissa which became more specialised in some industries leading to increase in their value of specialisation co-efficient in 1969, attain higher degree of diversification by 1978. During the entire period (1961-78) Maharashtra, Tamil Nadu, Bihar, Madhya Pradesh, Andhra Pradesh, Kerala, Orissa and Assam and Jammu and Kashmir show very little change in their level of diversification; while West Bengal, Uttar Pradesh, Gujarat, Karnataka, Rajasthan witnessed substantial diversification in their industrial structure. On the whole, there does not seem to have been any significant

overall change in the relative level of regional industrial diversification over the period.^{16/}

It is also interesting to observe that the nature of specialisation varies with the level of diversification in a region. In general, 'middle level' and 'less diversified' regions specialise in resource base industries, while 'more diversified' regions have a wide range of industry groups, including capital goods and demand oriented 'foot-loose' consumer goods industries. Assam, Jammu and Kashmir, Orissa and Bihar are the classic example of the former group, whereas, Maharashtra, Tamil Nadu, West Bengal and Karnataka of the latter. But for its heavy concentration of cotton textile industries even Gujarat would have fallen in this category.

Finally we examine the relationship between the levels of industrialisation and industrial diversification of the regions. For in the early phase of industrial development, the level of diversification in a region is likely to be low; and the industrial structure resource-based. As the development proceeds, it will lead to higher degree of diversification, taking demand-based as well as capital goods industries

^{16/} Average change in the specialisation coefficient for all the regions in 1969 over 1961 was merely about + 0.0315 and + .0324 between 1969 and 1978. Also the rank correlation between the series for 1961 and 1969 and 1969 and 1978 was + 0.9764 and + 0.9731 respectively, indicating the stability of the relative rank order of the states during these years.

into its orbit. A highly industrialised region, by and large, is not likely to have an industrial structure limited to a few industries.

We tried to test this relationship in terms of rank-correlation between the degree of diversification^{17/} and the level of industrialisation (expressed in terms of the proportion of a region in the aggregate value added). The postulated relationship between the two variables was found to be generally true. For, the co-efficients of rank correlations were + 0.6632, + 0.7585, + 0.8142 for the years 1961, 1969 and 1978 respectively. Values were found to be significant at 1 per cent level.^{18/} It is worth noting that the relationship tends to become stronger with the passage of time as the relative positions of some of the relatively less diversified regions register an improvement. Thus the axiom that a diversified industrial structure is concomitant of the high level of industrialisation holds good in the context of the regional industrial economy of India.

^{17/} Here, least specialised state (having lowest value of coefficient of specialisation) is treated as most diversified for the purpose of ranking.

^{18/} We also worked out rank correlation between the level of diversification and the level of industrialisation in terms of per capita value added generated in the registered manufacturing (factor) sector. In this case also the values of rank co-efficient correlation were found to be significantly positive, being + 0.4573, + 0.5645 and + 0.6099 for 1961, 1969 and 1978 respectively.

Till now, we have been able to underscore the point that some industrial changes have taken place in the industrial structure of the regions, and that there exists a relationship between the level of industrial development and the extent of the regional industrial diversification, that too in a somewhat static frame. The analysis in this section does not throw any light on the contribution of structural changes to the growth performance and the trend and extent of industrial inequalities across the regional economies. One can plausibly seek some understanding through the hypothesis (ii). However, a study on the subject ^{19/} using shift and share analysis, for the periods 1961 to 1969 and 1969 to 1978, observed that, "despite an apparent relationship between the levels of industrialisation and diversification, the industrial structure per se does not explain the variations in the growth performance of the regional industrial economies. To the contrary, the component of 'differential shift', dominates as an explanatory variable".^{20/} Further, analysing the role of inter-industry linkages (in an input-output framework), the study observed that, "it is somewhat difficult to associate (i) the sectoral growth with technological linkages (weighted or unweighted) and (ii) overall growth with the indices arrived

^{19/} Awasthi, Dinesh N, Industrial spread over space in India: Its Nature and Determining Factors, Unpublished Ph. D. Thesis submitted to Gujarat University, 1986.

^{20/} Ibid, p. 13).

at on the basis of growth linkage relationship", into the matrix of the state economies in India.^{21/} The study further observed that, "In order to understand the factors underlying the inter regional variations, one may have to turn to behavioural factors rather than relying too much on the structural variables and technological relations."^{22/}

(ii) Inter-regional Industrial Variations: Role of Some Behavioural Factors:

Given the observations as above, one has to seek an explanation of the varied regional industrial performance in the factors other than the region specific industrial structure. If the factors which make a region more attractive for industries are identified, one might make an attempt to explain the regional variations existing in the country's industrial economy.

In early theoretical expositions, raw material availability and transport cost were assumed to be the most important factors for attracting industries. But with successive technological innovations, these factors were relegated into the background. Researchers laid more emphasis on the historical process of regional industrial development, linking it with the level of economic development. Thus, regional industrialisation is widely regarded as a sequential process.

^{21/} Ibid, P. 166

^{22/} Ibid, P. 169

Theoretically it can be postulated that, increase in per capita income in a region will also set the process of industrialisation in motion. For increase in income will likely to lead to a higher demand for manufactured goods (owing to its higher income elasticity, along with an increase in investable surplus (due to higher savings). However, existing regional demand and investible surplus may not be sufficient to foster industrialisation, if a critical minimum level of infrastructure is not available. Another factor which has, of late been realised as a crucial is human capital (entrepreneurship and efficient labour).^{23/} For, entrepreneurs perception of a region's attractiveness depends on the quality (submissive) and cost (cheap) of labour force^{24/}. Moreover, attitude of the government in promoting industries also plays a crucial role. Government can also play the role of entrepreneur in giving initial break to the prolonged stagnant regions by locating industries via public sector investment, which helps in creating industrial clusters in a region.^{25/}

^{23/} Economic history of countries like Japan or South Korea will substantiate the point.

^{24/} For example Kerala is endowed with factors like per capita income, saving, infrastructure and large market. But for entrepreneurship and docile labour, it would have made strides in industrial development.

^{25/} Apart from this government can plays an important role in providing infrastructural facilities and easy access to the capital at a cheaper rate of interest, which possibly will act as a catalyzer for industrialists.

These and many more factors might attract industries in a region. But their level of operation will be limited by the size of the market as reflected by the size of the population, and purchasing power of the buyers which in turn will depend upon the per capita income, income distribution, the type of demand; plausibly varying according to the degree of urbanisation (which also creates agglomeration and external economies).

One can, therefore, postulate that regional variations in industrial development will exist to the extent of regional variations in the behaviour of factors like per capita income, population, urbanisation, level of agricultural mechanisation, urbanisation, agglomeration, economic entrepreneurship, efficiency wages, docile labour force, availability of raw material, infrastructure and the public policies.

However, it may be mentioned that the factors operate in a mutually inter dependent fashion. It is difficult to postulate a unidirectional causal relationship among them. The sources of the variations are seemingly complex and we are on much less surer ground in isolating the impact of each of them. Difficulties in quantification of some of the qualitative variables like entrepreneurship and government attitude etc. along with the lack of suitable and adequate data base for some of the variables like interregional trade or agglomeration economies etc. further limit the analysis.

An ideal way to examine interdependencies is to adopt a 'systems approach' wherein the cause and effect relationships could be quantified for policy analysis. In view of the data constraint and computer software, resources etc., the adoption of the systems approach in the present context is not feasible. Moreover, any attempt in the direction of understanding regional variations is most likely to remain incomplete or at least partial until and unless all or most of the variables (depending on the availability of information and suitable indicators) are taken into consideration.

Thus, here we are interested in finding some clues to answer: what factors explain / determine inter-regional variations in the level of industrial development in India between 1961 and 1978. Therefore, we focuss our attention on the empirical varification of the extent to which inter-state variations in the level of industrial development arise due to the variations in the level of various behavioural variables.

The analysis is initially based on a cross section of the states at three different points of time, i.e. 1961, 1969 and 1978. We have estimated single equation linear models using the method of ordinary least squares, and have followed step-wise regression procedure, wherein usual assumptions of 'Classical General Linear Regression Model', about the disturbance term, apply. Though we recognize the interdependent

nature of relationship in such models and consequent simultaneity bias in using unidirectional causal framework, it is assumed that the latter captures the essential elements determining the interregional variations. The postulated behaviour of the variables and the equations using step-wise regression procedure, are specified below.

Specification of the Variables: All the variables considered to explain the inter-regional variations are specified as:

<u>Name of the variables</u>	<u>Connotations</u>
A. Dependent Variable, i.e., per capita value added generated in the registered manufacturing sector reflecting the level of industrial development.	Y
B. <u>Independent variables</u>	
1. Size of the market as reflected by the population of the state (being positively associated with the dependent variable)	X ₁
2. Purchasing Power of the buyers as reflected by per capita income of the region (positive association)	X ₂
3. Urban demand for manufactured goods, reflected by the proportion of urban population in the state residing in 20000+ population towns (positive association)	X ₃
4. Inter-industry demand, reflected by the inverse of the coefficient of specialisation (positive association).	X ₄
5. Demand for industrial goods emanating from agriculture sector, represented by index of the level of agricultural mechanisation (positive association)	X ₅
6. Region specific availability of raw material represented by per capita output in forestry, mining and cash crops, taken together (positive association)	X ₆

7. Agglomeration Economies as represented by region specific agglomeration index (positive association) X_7
8. Level of Infrastructural development represented by an index of transport, power and banking facilities (positive association) X_8
9. Direct government participation reflected by per capita gross block investment in public sector undertaking (positive association). X_9
10. Indirect government participation measured in terms of an index of financial assistance sanctioned by various non-banking financial institutions and industrial licences to various states by the Government (positive association) X_{10}
11. Availability of suitable manpower represented by an index of the number of persons undergoing technical training per lakh population and wage rate per worker (positive association) X_{11}
12. Efficiency wages represented by wage productivity ratio (negative association) X_{12}
13. Degree of labour militancy reflected by manday lost for 1000 workers and number of trade unions per 1000 workers (negative association) X_{13}
14. Relative size of the urbanisation with above 1 lakh population (positive association) A_1
15. Number of urban centres with lakh + population (positive association) A_2
16. Average inter-urban distance (negative association) A_3
17. Level of transport facilities (positive association) Tr
18. Availability of power as measured by per capita of power generated (positive association) Pw

19. Existing banking network as reflatd by a composite index of number of banks per lack population and per 1000 Km (positive association)	R_k
20. Error term	e
21. Parmeters	$b_0, b_1 \dots b_n$

Among the variables specified above, variable X_1 to X_5 are considered to represent demand side variables. This group includes the variables which exercise a pull effect on the industries, via, increasing local demand for manufactured goods while the other variable, i.e. from X_6 onwards are treated as supply side variables under the assumption that the availability of these factors will make a region more attractive for locating industries and in turn affect the level of industrial development. This classification, however, is arbitrary because variable like per capita income may be treated as demand as well as supply side factor depending upon the inter-pretation and hence such a classification involve value judgement. We have adopted this classification for the sake of brevity. Thus the following linear equation has been postulated.

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + b_9 X_9 + b_{10} X_{10} + b_{11} X_{11} + b_{12} X_{12} + b_{13} X_{13} + e$$

Where Y is per capita value added generated in the registered factory sector. The equations are presented for each of the 3 years viz 1961, 1969, and 1978. In the next

stage we have pooled information for all the three years and estimated the equation as per the above procedure.

Other specifications: We have also considered some other specifications by placing emphasis on agglomeration economics and infrastructure components respectively. ^{The} factors such as relative size of the urban centres (A_1), number of such urban centres (A_2) and average inter-urban distance (A_3) are defined as components of the agglomeration economics, while transport (Tr), Power (Pw) and banking facility (Bk) are assumed to represent the infrastructural components. The equations are specified as:

$$Y = b_0 + b_1 A_1 + b_2 A_2 + b_3 A_3 + e_1 \text{ and,}$$

$$B = b_0 + b_1 \text{Tr} + b_2 \text{Pw} + b_3 \text{Bk} + e_2$$

Following the earlier specification, the above equations are also estimated separately for each year and also for all the years pooled together.

Empirical Results:

As elaborated in the methodology, we regressed dependent variable on various demand and supply side factors. The results are presented in Table 11. All the regressions i.e. for 1961, 1969, 1978 and pooled one, were found to be statistically significant at one per cent level, as revealed by respective $\bar{R}^2$ (R^2 adjusted for degree of freedom). The trend in overall explanatory power of the models, however,

was found to be declining over time. As can be seen from the table, both demand and supply side variables explain approximately 95 per cent of the total variation in 1961. Moreover, approximately 79 per cent of the total explanation is provided by indirect government participation alone. Purchasing power of the buyers and inter-industry demand from demand side; and infrastructure, agglomeration economies, efficiency wages and indirect government participation among the supply side factor emerge as significant explanatory factors in 1961. All the signs of b coefficients are as postulated.

In 1969, purchasing power of the buyers loses its place to the demand from agriculture sector; while inter-industry demand improves its impact by becoming more significant among the demand side variables. Among supply side variables, agglomeration economies and indirect government participation retain their significance. In addition, labour militancy also emerges as a significant variable. The signs of all the b coefficients are as expected except for the demand from the agriculture sector and the labour militancy. All the variables taken together explain approximately 94 per cent of the total variation.

By 1978, inter industry demand, agglomeration economies and infrastructure are the only factors which explain the regional variations. Taken together these three

factors explain about 62 per cent of the total variation. The import of remaining factors seems to have declined over time. Another interesting feature of the regression results is that about 42 per cent of the variation is explained only by inter-industry demand (a demand side factor), unlike earlier period where supply side factors played a more important role.

The predominance of demand side variables is infact more pronounced when these cross sections are pooled together. The variables such as consumer's purchasing power, inter-industry demand and demand for industrial products from agricultural sector, from the demand side factors and agglomeration economies and infrastructure from the supply side variables are observed to be statistically significant in the pooled regression equations. More interestingly the contribution of all the demand side factors in the unadjusted R^2 is around 86 per cent, while that from the supply side factors is only 14 per cent. Thus, the demand side factors assume an important role in explaining the interregional variations. It may be noted that these results are in contrast with the results by years which depict the long run behaviour, unlike the pooled ones which represent mongrel structure.

Overall, the results reveal some interesting features which have some policy implications. For example, supply side variables predominate the scene in the early phase. In the later stages, demand side variables become more important. Similarly, indirect government participation is relevant only in the early phases of industrialisation. Later on industrialisation appears to become a self propellant process. Another notable feature is the presence of efficiency wages in the year 1961 only. Probably in the later stages the compatibility between the wages and productivity would have been maintained across the states.^{26/}

At this stage the behaviour of some of the factors which operate contrary to the postulation needs some classification. Let us first take the case of the demand from agriculture sector for manufactured goods as reflected by the level of agricultural mechanisation. It was postulated that if there is high level of agricultural mechanisation in a region, naturally there will be high demand for tractor, pumping sets, oil engines and NKP (these items constitute the index of agricultural mechanisation). Thus it will have a positive association with the level of industrial development.

^{26/} With more and more access to information, a worker is likely to migrate to a high wage island from the low wage one. If such migration takes place at a slightly higher pace, the increase in the supply of labour in the higher efficiency wage island with decline in supply of the labour force in the later will be logical outcome. Assuming market mechanisation to be operative, wages will tend to equalise in both regions.

What emerges from the results is that in 1961 it is not significantly important and in 1969 it has a negative b coefficient, so is the sign when all the years are pooled together.

Though unusual, the phenomenon is not altogether surprising. For the year 1969 was the time when 'Green Revolution' set in motion in India. As we know, higher level of mechanisation in agriculture is directly associated with higher use of power, leading to a situation where power resources have to be directed to agriculture (some times even at the cost of industry) if the pace of growth has to be maintained. If we accept this logic, it is quite plausible to encounter the negative impact of agricultural mechanisation on the industrial growth. And possibly this was the period where the agriculture sector might have started buying for the scarce power resources; so important for the rapid growth of industrialisation. Thus the negative sign is obvious consequence of this trend of paradigm.

Similarly labour militancy has opposite sign to the postulated (negative) one. For logic tells that healthy and peaceful environment on labour front is a prerequisite of the industrial development, and a lack of this might prove detrimental, because of the losses in output due to labour unrest. However, one could expect such behaviour of the variable at least in Indian condition, where industries

are concentrated in a few developed regions of the country. Since these regions have a relatively longer history of industrialisation, it is quite likely that the labour force might have become politically more conscious of its rights in these developed regions. Consequently it tends to fight out its claims leading to more troubled days in such pockets. That is why, probably, we encounter a positive association between the levels of industrial development and labour militancy. However, since this phenomenon appears only in 1969, we can treat it as random.

Further Evidence on Infrastructure and Agglomeration Economies

From the above discussion we observe that infrastructure and agglomeration economies are the two important factors from the supply side which substantially explain the regional variations; and have a strong bearing on the industrial growth. Since both these variables are a combination of some of the important factors which are likely to affect the pace of industrial growth, it might be rewarding to look at the behaviour of these individual components. We discuss the influence of these two major variables viz. infrastructure and agglomeration economies, separately.

Infrastructure:

The index of infrastructure comprises availability of transport (roads and railways), power and banking facilities.

The step-wise regression results are displayed in Table 12. All the regressions and b coefficients are significant at 99 per cent level of confidence except for 1961 where the level of confidence is 95 per cent. In the present case only one factor, namely power availability, explains regional variation in a significant manner. The explanatory power of the model has gradually increased over the period. Moreover, the influence of power availability has also improved over the period. A unit increase in power availability has induced 0.3946 units increase in the level of industrialisation in the initial period. While it was 1.3032 units increase in 1978. Power being the major constraint for industrial stagnation in India, (Ahluwalia 1981); and the positive feature of the results obtained would highlight the need for a larger allocation for investment in the power sector.

Agglomeration Economies:

In the foregoing analysis we have defined agglomeration economies as an index of three major components, viz., number of cities above a threshold size per 1000 km, their relative size with more weight given to the large centres, and the distance between them in a region.^{27/} The first two components

^{27/} We admit that this is a very crude and imperfect index of regional agglomeration economies. And, "How to develop an index of regional agglomeration economies" as Richardson puts it, "is a thorny problem the solution of which requires much more research" Richardson, (1973), Regional Growth Theory, London: Macmillan, p.213.

are postulated to influence positively while the last one negatively.

The step-wise regression results are given in Table 4.2. All the models for various years are found to have a good fit, significant at 99 per cent level of confidence. The overall explanatory power of the models seems to be declining over time and the relative size of urban centres is the only variable appearing in the final results.^{28/} The b coefficient for all the years is found to be statistically significant at one per cent level and with right signs.^{29/}

The table reveals that in 1961, a unitary change in the relative size of the urban centres led to 0.2679 unit increase in the level of industrialisation, whereas in 1978 it was affected only by 0.1124 unit. It implies that in the early phase, the size of the urban centres plays relatively

^{28/} In order to get some explanation as to why the other two variables are ignored, we looked at the correlation coefficient matrix. The results were revealing. What emerges is that relative city size was most strongly and positively associated with the dependent variables, followed by number of urban centres above threshold size. But these two variables are also significantly correlated with each other, whereas average inter-urban distance, though with right type of sign (negative) was weakly (insignificantly correlated with the dependent variables. This shows that though relationships hold good and direction also is found as postulated the two variables are dropped out on technical grounds.

^{29/} Here we avoid the controversy whether this variable leads to industrial development or itself is an outcome of the process of industrial development.

more important role in the process of industrialisation. Once industrialisation reaches a certain level of development, importance of such centres possibly starts declining. This may be due to several reasons: (1) some spill over of industries starts taking place from big and busy urban centres to smaller ones because of the prohibitive cost of the land and other services in the urban agglomerations; (2) diseconomies start operating after a certain stage; (3) probably restrictions imposed by the government on any further expansion of industries in certain areas may direct growth in some relatively smaller towns.^{30/}

^{30/} Though we do not have direct evidence to support our hypothesis, probably the growth of town like Vapi is an outcome of such restriction imposed on Bombay. Moreover a recent study, evaluating the impact of urbanisation on industrialisation across states in India also observed the "increasing importance of second and third largest either in explaining industrial activity of the states. In 1961, these variables (x_{12} and x_{13}) [share of second and third largest city in total population (x_{12}) and share of second and third largest city in urban population] were either insignificant variables or variables having negative impact on manufacturing activity. Over time, these variables become more significant especially in relation to explanation of per capita manufacturing activity." See Wadhwa, Kiran and S.P. Kashyap, "Interregional Industrialisation in India: Role of Urbanisation and Urban Structure," in Misra, G.P. (ed.), Regional Structure of Development and Growth in India, Vol.I, New Delhi, Ashish Publishing House, 1985, p.347.

Major Findings:

In the foregoing analysis we observed that the regional patterns of growth of industries have been quite varied across the states. Major highlights of the phenomena are:

- (i) The distribution of industries across states gives quite an uneven spread across states in India. It is found to be concentrated in four major states viz, Gujarat, Maharashtra, Tamil Nadu and West Bengal.
- (ii) Level of the unorganised segment of the manufacturing sector, by and large, does not confirm to the pattern of the organised large scale sector across the states. Possibly, unorganised sector is growing independent of the organised sector and has its own growth impulses across the states. Moreover, the relationship between the small scale (sample) sector and unorganised sector appears to have strengthened over time. It is, plausibly a case of scalar complementarity between these two segments of the manufacturing sector, across space in India.
- (iii) It is heartening to note that the inter-regional inequalities in the level of industrialisation have shown a clear tendency of decline over time.

- (iv) It appears that resource base oriented industrial pattern is the basic characteristics of most of the regional economies in India. Albiet most of the states have diversified their industrial base from traditional consumer goods sector to relatively more modern (capital and intermediate goods) sectors.
- (v) Though the performance of industrial sector has been quite impressive in terms of quality as well as quantity, at the national level, the fruits of this growth have not been shared by the various states equitably. It is clear from the analysis that the industrial structure of the country is heavily concentrated, in about 10 industry groups; and these industry groups in turn are concentrated in a few states. However, the tendency of spread and shift is not denied. But the pace has been far from satisfactory.
- (vi) Examining the relationship between the levels of industrialisation and level of industrial diversification of the regions, a close relationship is observed between the two. Thus, higher is the level of industrial diversification in the state higher is the level of industrial development.

(vii) While attempting to isolate the factors which affect the level of industrialisation, we found that (a) out of all the demand and supply side factors, there are supply side factor which have a bearing in the early phase of industrialisation. With the passage of time, demand side factors are found to assume greater importance; and (b) over all the factors like consumer's purchasing power, inter industry demand, demand of industrial goods emanating from agriculture sector, agglomeration economies and infrastructure are found to be of crucial for the industrial development. Out of the ^{sub-components} $\angle$ constituting agglomeration economies and infrastructure; urbanisation from among agglomeration components ^{the} and power from infrastructure appear to be $\angle$ most important.

(viii) Another feature which deserves mention is that we observed a negative association between the level of industrial development and the demand for industrial goods from agriculture sector. This is probably because of the fact that higher level of mechanisation and modernisation leads to a higher use of power. Thus both the sectors might have started vying for scare power resources, with each other, leading to an adverse

impact on the industrial growth. Given the government policies to give a boost to agriculture this type of a situation warrants a serious thinking at the level of policy formulation. Unless a regionally as well as sectorally balanced planning strategy for growth is evolved, we are not likely to come out of such traps.

- (ix) Findings on the role of urbanisation suggest that in future more stress will have to be laid on the decentralisation of industries and locating them in some middle order towns, to begin with, which already have some minimum critical level of infrastructure developed. At the same time this statement has to be taken with caution. Prima-facie, a policy of growing industries where nothing grows is not likely to pay dividends in the near future, and more so, given the scarcity of resources for such development in the country.

- (x) With respect to infrastructure, it appears that power sector has been the most crucial factor in determining the industrial development. Thus any investment in this sector is more likely to pay rich dividends in terms of industrial growth.

Table 4.1Share of Manufacturing in the Secondary Sector in Selected States

States	1961	1969	1978
Andhra Pradesh	60.88	60.46	63.08
Assam	89.75	64.68	76.72
Bihar	-	58.86	59.80
Gujarat	81.01	76.62	79.43
Haryana	69.90	71.98	-
Jammu and Kashmir	66.34	44.63	36.76
Karnataka	46.11	61.51	57.09
Kerala	81.92	76.80	70.90
Madhya Pradesh	84.94	62.08	60.39
Maharashtra	81.80	79.42	76.22
Orissa	58.69	74.82	69.60
Punjab	64.64	59.84	64.50
Rajasthan	64.38	54.42	54.38
Tamil Nadu	85.34	74.06	73.57
Uttar Pradesh	70.57	59.75	64.26
West Bengal	83.40	75.72	72.16
All India	72.81	68.03	68.69

Source : Calculated from data in RBI Bulletin April 1978
and September 1981.

Table 4.2

Percentage Share of Value - Added Generated in Manufacturing
Segments as a Proportion of State Domestic Product (SDP)
(At constant Prices)¹

Name of the State	Census Sector ²			Sample Sector ²		
	1961	1969	1978	1961	1969	1978
Andhra Pradesh	2.08	3.98	4.72	0.67	0.42	0.70
Assam	5.94	10.00	5.27	1.06	1.15	0.40
Bihar	6.65	7.29	7.74	0.64	0.37	0.40
Gujarat	10.59	12.10	12.70	2.33	2.20	1.98
Haryana	3.11	6.93	7.26	0.66	1.11	0.98
Jammu & Kashmir	1.03	1.06	1.73	0.30	0.37	0.84
Karnataka	4.38	6.90	8.05	1.39	0.78	0.48
Kerala	5.10	9.20	5.91	1.58	1.06	1.03
Madhya Pradesh	2.78	3.83	6.17	0.43	0.39	0.60
Maharashtra	15.97	20.09	20.77	2.22	1.96	2.51
Orissa	2.92	5.29	6.66	0.29	0.22	0.31
Punjab	3.17	3.94	3.87	1.40	1.78	1.32
Rajasthan	1.53	2.50	3.35	0.35	0.31	0.37
Tamil Nadu	7.13	9.85	13.56	1.67	1.47	1.96
Uttar Pradesh	2.80	4.26	4.61	0.40	0.45	0.57
West Bengal	13.03	13.54	11.39	1.18	1.17	0.78
All India	7.25	8.96	8.57	1.25	1.14	1.03

Contd..

Table 4.2 (contd.)

Name of the State	Organised (factory) Sector			Un-organised Sector		
	1961	1969	1978	1961	1969	1978
Andhra Pradesh	2.75	4.40	5.42	4.39	5.57	4.86
Assam	7.01	11.15	5.67	7.07	7.36	4.15
Bihar	7.29	7.66	8.14	2.87	8.73	2.63
Gujarat	12.92	14.30	14.68	6.56	6.07	3.91
Haryana	3.77	8.04	8.24	7.46	5.53	3.42
Jammu & Kashmir	1.33	1.43	2.57	4.67	4.35	3.84
Karnataka	5.77	7.69	8.53	4.02	3.42	3.48
Kerala	6.68	10.26	6.94	6.17	4.69	6.58
Madhya Pradesh	3.21	4.22	6.77	4.49	4.81	5.30
Maharashtra	18.19	22.05	23.28	5.30	4.95	5.69
Orissa	3.21	5.51	6.97	4.68	2.78	2.50
Punjab	4.57	5.72	5.19	5.54	5.49	5.31
Rajasthan	1.88	2.81	3.72	7.45	7.35	4.61
Tamil Nadu	8.80	11.32	15.52	7.44	9.16	6.53
Uttar Pradesh	3.20	4.71	5.18	4.30	4.73	5.78
West Bengal	14.21	14.71	12.18	4.93	5.31	4.45
All India	8.50	10.10	9.60	6.10	6.08	5.70

Contd..

Table 4.2 (contd.)

Name of the State	Total manufacturing sector			Census sector as a proportion of factory sector		
	1961	1969	1978	1961	1969	1978
Andhra Pradesh	7.15	9.98	10.29	75.69	90.50	87.04
Assam	14.08	18.52	9.82	84.87	89.77	92.91
Bihar	10.17	16.40	10.77	91.24	95.20	95.11
Gujarat	19.49	20.37	18.59	81.99	84.62	86.55
Haryana	11.23	13.57	11.67	82.40	26.23	88.16
Jammu & Kashmir	6.00	5.79	6.42	77.45	74.27	69.20
Karnataka	9.80	11.12	12.02	75.92	89.81	94.33
Kerala	12.85	14.95	13.53	76.35	89.70	85.14
Madhya Pradesh	6.60	8.71	11.59	86.59	90.70	91.11
Maharashtra	23.50	27.01	28.98	87.79	91.11	89.20
Orissa	7.90	8.29	9.48	90.88	96.00	95.51
Punjab	10.08	11.22	10.51	69.43	68.90	74.48
Rajasthan	9.33	10.17	8.33	81.36	89.26	90.16
Tamil Nadu	16.24	20.48	22.05	80.98	86.98	87.35
Uttar Pradesh	7.51	9.41	10.96	87.55	90.39	89.02
West Bengal	19.15	20.03	16.64	91.75	92.05	93.56
All India	14.60	16.20	15.30	85.34	88.69	89.26

Notes: 1. Data for 1961 and 1969 are at 1960-61 prices and for 1978 at 1970-71 prices except for the State of Assam which had adopted the base year 1948-49 while Andhra Pradesh, Madhya Pradesh, Orissa and Uttar Pradesh have the base year 1970-71 upto 1969-70. For the year 1970-71 onward, the base year is uniformly the same (1970-71) in rest of all the States.

2. Census and Sample Sectors' Values have been worked out on the basis of their respective proportions in the factory sector (at 1970-71 constant prices) based on the Annual Survey of Industries data given in the last three columns of this table. For organised sector in the S.D.P. corresponds to the Factory Sector which is total sum of the two segments viz. census sector and sample sector.

Source: Percentage are based on the data obtained from the Estimates of State Domestic Product - 1960-61 to 1982-83, for all the States, Published in June, 1984, and for All India from various issues of National Accounts Statistics; both Published by Central Statistical Organisation, Govt. of India, New Delhi.

Table 4.3

Rank Correlation Co-efficients Between the Various Segments of the Manufacturing Sector and Coefficient of Variation therein.

Rank Correlation Between the Segments	Years		
	1961	1969	1978
Organised and Unorganised Sectors	+0.1705	+0.2794	+0.0441
Census and Sample Sectors	+0.7735*	+0.6382*	+0.3970
Census and Unorganised Sectors	+0.1705	+0.2941	+0.0558
Sample and Unorganised Sectors	+0.2941	+0.3205	+0.4823***

Note : * Statistically significant at 1% level

*** Statistically significant at 10% level.

Source : Table 4.2

Table 4.4

Per capita Value Added Generate in the manufacturing Sector
by States¹

(Values in Current Prices)			
Name of the States ³	Organised manufacturing Sector (Rupees)		
	1961	1969	1978
<u>Category I - Industrially Developed States</u>			
Maharashtra	73.08	146.85	383.22
West Bengal	62.95	90.94	186.44
Gujarat	53.09	87.73	243.09
Tamil Nadu	29.26	52.55	177.76
Assam	29.09	36.72	110.08
<u>Category II - Industrially Backward States</u>			
Karnataka	18.83	45.30	114.34
Kerala	18.18	39.45	81.12
Punjab	16.73	41.25	131.76
Bihar	15.15	27.38	77.16
Haryana	12.33	48.60	178.56
Andhra Pradesh	10.05	21.89	75.83
Madhya Pradesh	9.39	18.21	61.42
Uttar Pradesh	8.88	22.35	104.54
Orissa	6.68	23.21	66.04
Rajasthan	5.31	16.00	44.93
Jammu and Kashmir	3.56	5.83	30.15
All India	26.33	51.08	130.67

- Notes: 1. In order to arrive Per capita value we used the Estimates of mid year population for various states published by the Registrar General of India, N. Delhi.
2. Value added (per capita) are not available at any single base period price for all the state, therefore estimates suffer with the limitation that inter-regional price variation effect is not captured.
3. States are arranged in the descending order according to their per capita value added in the organised manufacturing sector and the categorisation is based taking all India per capita value added as the cutoff point in 1961.

Source : As in Table 4.1

Table 4.5

Relative Shares of State in the Factory Sector

Name of the State/Region	Shares in value added		Shares in Employment		Shares in fixed capital	
	1961	1969	1961	1969	1961	1969
Category I - Industrially Developed States:						
Maharashtra	26.97	26.41	25.21	20.86	19.09	17.66
West Bengal	20.59	14.51	11.18	20.23	17.34	12.87
Gujarat	10.19	8.79	9.33	10.00	8.93	9.14
Tamil Nadu	8.16	9.36	10.02	8.16	10.11	9.98
Assam	2.76	1.28	4.66	2.09	1.76	1.76
Category II - Industrially Backward States:						
Karnataka	3.45	5.37	6.36	4.08	4.59	4.97
Kerala	2.41	3.94	2.80	4.48	4.26	3.65
Punjab	-	2.41	2.93	-	2.57	3.24
Bihar	6.80	5.57	5.43	5.32	5.06	5.37
Haryana	-	2.07	2.66	-	1.80	1.90
Andhra Pradesh	2.80	3.88	4.93	5.67	6.63	8.89
Madhya Pradesh	2.88	3.31	3.77	3.46	3.96	4.13
Uttar Pradesh	6.33	7.25	6.23	7.99	7.07	9.38
Orissa	1.22	1.74	1.93	0.83	1.89	1.58
Rajasthan	1.06	1.59	2.51	1.46	1.90	2.27
Jammu and Kashmir	0.10	0.10	0.41	0.25	0.30	0.32
All India ²	100.00	100.00	100.00	100.00	100.00	100.00

Notes: 1. Serial order and grouping of the states is as per note 3, Table 4.4.

2. The total for all the states may not add up to 100.00 because of the rounding values to the 2nd decimal point, and (b) all the regions have not been included in the analysis. However, the share of all the excluded regions taken together is very insignificant and hardly exceeds 0.80 percent of the total.

3. Source: Annual Survey of Industries (various issues), 1966.

Table 4.6

Annual Compound Rates of Growth by States¹

Name of the States ²	Value added (V. A)			Trend ⁴ Rate of Growth (V.A)
	1961-69	1969-78	1961-78	
<u>Category I Industrially Developed States</u>				
Maharashtra	5.97	5.52	5.65	5.34*
West Bengal	2.09	3.04	2.59	1.15***
Gujarat	3.24	6.77	5.10	6.08*
Tamil Nadu	6.83	6.87	6.85	6.35*
Assam	(-)4.04	9.15	2.73	4.76**
<u>Category II Industrially Backward States</u>				
Karnataka	10.08	8.08	9.01	7.45*
Kerala	10.81	2.12	6.12	6.07*
Punjab	3.33	8.40	7.11	8.21*
Bihar	3.97	5.76	4.91	4.30*
Haryana	13.61	9.02	10.16	10.46*
Andhra Pradesh	8.48	8.92	8.71	9.56*
Madhya Pradesh	7.75	7.60	9.65	9.65*
Uttar Pradesh	7.85	4.29	5.95	6.23*
Orissa	11.34	7.32	9.19	6.77*
Rajasthan	10.51	11.55	11.06	11.67*
Jammu and Kashmir	4.07	10.15	7.25	3.92**
All India	5.70	6.07	5.89	5.56*

Contd..

Table 4.6 (contd.)

Name of the States ²	Employment			Trend ⁴ Rate of Growth Employment
	1961-69	1969-78	1961-78	
<u>Category I Industrially Developed States</u>				
Maharashtra	2.72	3.18	2.96	3.22*
West Bengal	1.87	0.68	1.24	0.54
Gujarat	2.41	4.35	3.43	3.80*
Tamil Nadu	6.66	3.93	5.20	5.45*
Assam	1.66	3.99	2.89	2.82*
<u>Category II Industrially Backward States</u>				
Karnataka	5.39	5.00	5.18	5.92*
Kerala	3.20	2.30	2.72	3.18*
Punjab	-	6.79	5.12	6.36*
Bihar	3.20	4.78	4.03	3.98*
Haryana	5.49	4.73	4.92	4.99*
Andhra Pradesh	5.89	7.53	6.75	5.42*
Madhya Pradesh	5.63	4.56	5.06	4.60*
Uttar Pradesh	2.29	7.40	4.96	6.43*
Orissa	15.19	1.98	8.00	5.61*
Rajasthan	7.37	6.16	6.73	7.07*
Jammu and Kashmir	6.35	4.79	5.53	6.46*
All India	3.86	4.08	3.97	3.94*

Contd..

Table 4.6 (contd.)

Name of the States ²	Fixed Capital			Trend ⁴ rate of growth (FX)
	1961-69	1969-78	1961-78	
Category I Industrially Developed States				
Maharashtra	13.24	3.42	7.93	7.15*
West Bengal	11.79	4.26	2.98	(-)0.30
Gujarat	13.44	7.76	10.40	9.13
Tamil Nadu	21.90	(-)0.10	9.72	8.24*
Assam	17.76	(-)1.14	7.38	5.56*
Category II Industrially Backward States				
Karnataka	22.40	3.69	12.11	10.76*
Kerala	18.56	6.23	11.86	13.06*
Punjab	(-)2.78	8.89	5.84	9.12*
Bihar	9.53	11.49	10.56	9.31*
Haryana	3.94	5.02	4.74	5.40*
Andhra Pradesh	24.17	2.66	12.28	11.90*
Madhya Pradesh	28.72	2.75	14.25	6.08**
Uttar Pradesh	23.23	5.26	13.41	12.21*
Orissa	23.69	(-)3.48	8.46	1.12*
Rajasthan	29.41	6.12	16.50	15.94*
Jammu and Kashmir	5.49	27.17	16.46	18.72*
All India	25.13	4.70	20.23	

Notes: 1. Values used per country growth rates are at constant 1970-71 prices in the case of V.A and fixed capital.

2. States are arranged in descending order according to the note 3 in Table 4.3.

3. Growth rates are for 1966-69, 1969-78 and 1966-78.

4. * Significant at 1 percent level of significance.

** Significant at 5 percent level of significance.

*** Significant at 10 percent level of significance.

Table 4.7

Indices of Regional Industrial Inequality in India: Factory Sector

Years	Weighted co-efficient of variation ($\bar{v}$)			Thiels inequality indices			Gini Ratio's		
	V.A.	Emp.	FX	V.A.	Emp.	FX	V.A.	Emp.	FX
1	2	3	4	5	6	7	8	9	10
1961	140.45	120.88	123.40	33.92	25.60	24.07	0.568	0.533	0.535
1962	149.06	122.84	109.09	35.75	25.98	24.48	0.583	0.535	0.528
1963	145.07	117.03	107.57	34.27	23.82	22.54	0.557	0.515	0.510
1964	140.55	113.69	93.89	31.24	22.34	16.27	0.556	0.501	0.462
1965	136.81	114.07	92.57	29.18	21.84	13.80	0.551	0.503	0.462
1966	133.41	112.66	87.27	27.82	21.31	12.40	0.540	0.497	0.442
1967	136.77	110.31	85.50	30.62	21.06	10.88	0.551	0.495	0.441
1968	127.82	105.36	80.86	25.16	20.16	10.07	0.523	0.480	0.419
1969	131.76	105.72	84.29	25.42	19.23	8.41	0.527	0.483	0.427
1970	130.93	104.59	85.98	25.24	18.59	6.98	0.524	0.482	0.421
1971	135.04	103.02	86.89	27.21	18.48	7.02	0.526	0.478	0.419
1972	-	-	-	-	-	-	-	-	-
1973	130.88	101.15	85.22	24.75	17.61	6.92	0.521	0.470	0.397
1974	128.12	100.87	85.40	23.62	16.10	8.00	0.518	0.473	0.397
1975	120.05	96.12	82.01	20.36	14.61	6.95	0.499	0.462	0.395
1976	117.91	95.01	85.92	20.46	13.48	7.06	0.482	0.457	0.403
1977	119.18	93.12	82.36	21.59	12.72	6.91	0.482	0.452	0.406
1978	120.31	93.26	83.07	22.05	13.29	7.99	0.486	0.455	0.422

contd..

Table 4.7 contd.

	1	2	3	4	5	7	8	9	10	
Trend Rate of Growth (% per annum)		-1.26	-1.71	-1.68	-3.29	-4.30	-8.01	-1.11	-0.99	-1.69
% change between										
1961-1969		-6.18	-12.54	-31.69	-25.06	-24.88	-65.06	-7.22	-9.38	-20.18
1969-1978		-8.69	-11.79	-1.44	-13.25	-30.89	-4.99	-7.78	-5.80	-1.17
1961-1978		-14.34	-22.85	-27.64	-34.99	-48.08	-66.81	-14.44	-14.63	-21.12

Source: Annual Survey of Industries (various issues), CSO.

Table 4.8

Industrial Base/Specialisations of Regions in India -
Location Quotients: 1978-79

Industry Groups States	Consumer Goods Industries		
	Agro-based	Fiber based	Others
	2	3	4
1. Andhra Pradesh (0.4635)	Dairy Products (7.31), Grain Mills prods. (3.53), Bakery Products (1.16) Cocoa, Chocolate & Sugar confectionary (4.0), Tobacco mfg. (6.43)	Other Textiles, n.e.c. (1.28)	Canning and preservation of fish & sea food (1.25), Wine Industries (9.0), Malt and country liquor (1.95), Soft drinks (2.50), Jewellery and Mint (4.54); Distilling and Rectifying & Blending of spirit (1.84)
2. Assam (0.7185)	Canning and fruit preservation (1.16), Grain Mill Prods (1.50), Food prods, nec. (10.48)		
3. Bihar (0.5218)	Sugar, Gur and Khandsari (1.31) Tobacco & Tobacco prods. (3.09)		Mfg. of Footwear (1.44)
4. Gujarat (0.3097)	Mfg. of Dairy Products (1.62), Canning and Fruit Preservation (1.00)	Mfg. of Textiles (2.05)	Canning and preservation of fish & sea food (1.25); Mfg. of leather and leather products n.e.c. (1.0), Jewellery & Mint (2.09).

contd..

Table 4.8 contd.

1	2	3	4
5. Haryana (0.3416)	Grain Mill Prods. (1.58)		Soft Drinks (1.87), Malt liquor, Malt and country liquor (2.54), Mfg. of Motor cycles & Bicycles (6.83).
6. Himachal Pradesh (0.6318)	Canning & Preser- vation of Fruits & Vegetables (4.33), Grain Mills prods. (1.12).		Distilling, recti- fying and blending of spirit (19.63); Watches & Clocks (17.54).
7. Jammu & Kashmir (0.5252)	Canning and fruit Mfg. of preservation Textiles (24.83), Grain (1.95) Mill prods. (2.93)		Mfg. furniture & fixture (1.43), Mfg. of misc. products n.e.c. (15.55); Distilling, rectify- fying & blending of spirit (9.45).
8. Karnataka (0.3178)	Canning & fruit preservation (4.50), Bakery Prods. (1.08), Sugar, Gur & Khandsari (1.80), Cocoa, Chocolate & sugar conf. (3.50), Tobacco & tobacco prods. (1.86).	Mfg. other textiles, n.e.c., (1.34), Textiles, Garments etc. (1.41).	Canning and preser- vation of fish and sea food (1.87); Distilling & recti- fying of spirit (2.68), Wine indu- stries (23.50), Malt liquor & country liquor (2.90), soft drinks (1.50), Photogra- phic materials (1.20), Watches & Clocks (9.90).
9. Kerala (0.4644)	Canning and Fruit Knitting preservation Mills (3.66); Mfg. of (36.29), food prods. n.e.c. Other (3.14); Tobacco textile and tobacco prods. n.e.e. (1.97). (2.54)		Canning and preser- vation of fish & sea food (12.25), Distilling and rectifying & blending of spirit (3.78).

contd..

Table 4.8 contd.

10. Madhya Pradesh (0.3525)	Grain Mills Prods. (1.71); Mfg. of cocoa chocolate & sugar conf. (1.0); Tobacco & Tobacco prods. (1.24)	Mfg. of Textiles (1.12)	Malt and country liquor (1.54); misc. industries n.e.e. (1.60).
11. Maharashtra (0.2026)	Bakery prods. (1.27); Sugar & gur and Khandsari (1.22)	Mfg. of textiles (1.02); Knitting Mills (12.11) Other Textiles n.e.c. (1.06) Textile Garments (1.43)	Soft drinks (1.50); Furniture & fixture (2.82); Leather prods; ne.c. (2.0); Mfg. of motor cycles & bicycles (1.49); Mfg. of photographic materials (1.40); Misc. Industries n.e.c. (1.88).
12. Orissa (0.5430)			Canning and Preservation of fish & sea food (2.37).
13. Punjab (0.3588)	Dairy products (8.44); Canning and fruit preservation (1.00); Grain mill prods. (5.43); Bakery Prods. (1.35); Sugar, Gur, Khandsari (1.24).	Mfg. of Textiles (1.11); Knitting Mills (42.70); Other Textiles n.e.e. (3.22)	Distilling & Rectifying of spirit (7.21), Malt and country liquor (3.22); Mfg. of misc. Industries n.e.c. (1.61).
14. Rajasthan (0.3265)		Mfg. of Textiles (1.30); Other Textiles n.e.c. (1.64)	Malt liquor & country liquor (1.68).

contd..

Table 4.8 contd.

1	2	3	4
15. Tamil Nadu (0.1852)	Mfg. of Dairy Products (1.14); Grain Mill prods. (1.35); Mfg. of Cocoa, chocolate and sugar confectionary (3.50); Misc. food prods. n.e.c. (1.05).	Mfg. of textiles (1.16); Knitting Mills (1.82).	Canning and preservation of fish and sea food (2.0); Leather prods. n.e.c. (4.0).
16. Uttar Pradesh (0.2385)	Canning & Fruit preservation (1.50); Grain Mill Prods. (1.52); Sugar, Gur and Khandsari (3.97); Misc. food prods. n.e.c. (1.10); Tobacco and Tobacco prods. (1.52).		Distilling, rectifying & blending of spirit (4.84); Mfg. of footwear (except rubber & plastics) (1.55); Leather & Leather prods n.e.c. (4.00).
17. West Bengal (0.2195)	Canning and fruit preservation (1.16); Mfg. of bakery products (2.18).	Mfg. of textiles (1.12)	Wine industry (19.50); Mfg. of footwear (except rubber & plastics) (5.00); Mfg. of watches & clocks (1.22), Misc. Industries / Mfg. n.e.c. (1.50).
18. Delhi (0.3690)	Mfg. of Dairy prods. (7.45); Canning & fruit preservation (1.33); Grain Mill Prods. (1.50); Mfg. of Bakery prods. (3.62).	Knitting Mills (5.29); Textile Garments (3.34)	Soft Drinks (14.12); Furniture & Fixture Mfg. (1.65); Mfg. of photographic materials (1.20); Mfg. of Watches & Clocks (1.22); Misc. Mfg. Industries n.e.c. (2.63).

contd.

Table 4.8 contd.

Ind. Groups States	Capital Goods Industries		
	Basic Metal	Machinery	Transport Equipment
	5	6	7
1. Andhra Pradesh (0.4635)		Manufacturing of Ele. machinery and appliances (2.47)	Ships and Boat Building (3.84); Transport Equipments n.e.c. (9.16); Repair of Motor vehicles (2.02)
2. Assam (0.7185)			
3. Bihar (0.5218)	Iron, Steel and ferrous alloys (3.05); Non-ferrous basic Industries (1.70)		Mfg. of Motor vehicles and parts (4.26); Mfg. of Transport equipment n.e.c. (27.66)
4. Gujarat (0.3097)			Mfg. of Transport equipments n.e.c. (1.16)
5. Haryana (0.3416)	Mfg. of Metal Prod. (except mach. & transport equipments (2.37)	Mfg. of Machinery and machine tools (except ele. machinery) (2.61)	Mfg. Railway & Loco. equipment (1.10); Repair of Motor vehicles (1.19)
6. Himachal Pradesh (0.6318)		Mfg. of Mach. & machine tools (except ele. mach.) (5.42).	Repair of motor vehicles (6.88).

contd..

Table 4.8 contd.

	5	6	7
7. Jammu & Kashmir (0.5252)			Repair of motor vehicles (3.52).
8. Karnataka (0.3178)	Non-ferrous basic industries (3.64); Mfg. of metal products (except mach. & transport) (1.12).	Mfg. of ele. machinery & equipment (2.74)	Mfg. of motor vehicle & parts (1.62); Repair of Motor vehicles (2.05).
9. Kerala (0.4644)	Non-ferrous Basic metal (4.32)	Mfg. of Electric Mach. & equipment (1.17).	Repair of motor vehicles (1.63); Mfg. of Transport equipment n.e.c. (17.16).
10. Madhya Pradesh (0.3525)	Iron, steel & ferrous alloys (2.16), Non-ferrous basic Ind. (4.29).	Elect. mach. & equipment (2.43)	
11. Maharashtra (0.2026)	Mfg. of metal products (1.39)	Mfg. of mach. and mach. tools (1.11)	Ship & boat building (1.35); Mfg. of Transport equipment n.e.c. (1.83).
12. Orissa (0.5430)	Iron steel & ferrous alloys (4.35); Non-ferrous basic metal ind. (1.16).		

contd..

Table 4.8 contd.

	5	6	7
13. Punjab (0.3588)	Iron, steel & ferro-alloys (1.27); Mfg. of Metal prods. (2.28)		Mfg. of motor vehicles (1.95), Repair of motor vehicles (1.10) Aircraft and parts (6.94)
14. Rajasthan (0.3265)	Mfg. of non- ferrous basic Ind. (6.37)	Mfg. of machi- nery & mach. tools (except elect. mach.) (1.07); Ele- ctric mach. & Appliances (1.19).	
15. Tamil Nadu (0.1852)		Machine & Machine tools (except ele. Mach. & equipment) (1.48)	Railway locomotive equipment Mfg. (1.14); Mfg. of Motor vehicles & parts (1.94); Repair of motor vehicles (1.42); Mfg. of transport equipment n.e.c. (8.00).
16. Uttar Pradesh (0.2385)	Mfg. of metal prods. and parts (except mach. & trans- port equipments) (1.39); Non- ferrous basic Indust- ries (2.21).	Mfg. of ele. machinery & apparatus (1.73)	Railway, Locomo- tive equipment Mfg. (2.42); Repair of Motor vehicles (1.23).

contd..

Table 4.8 contd.

	5	6	7
17. West Bengal (0.2195)	Iron & steel & ferro-alloys (1.96); Mfg. of Metal prods. and parts (except machine & transport equipments) (1.15)	Mfg. of ele. machinery & apparatus (1.16)	Ship and boat building (2.23); Mfg. of railways & locomotive equipments etc. (3.36); Mfg. of Aircraft & parts (1.78); Mfg. of transport equipment n.e.c. (1.83).
18. Delhi (0.3690)	Mfg. of metal prods. & parts (except mach. & trans. equipment) (2.14).	Mfg. of ele. machinery and apparatus (1.69)	Mfg. of motor vehicles & parts (1.02); Repair of motor vehicles (3.13); Mfg. of motor cycles & Bicycles (1.85).

contd..

Table 4.8 contd.

Industry Groups States	Intermediate Goods Industries		
	Mineral Based	Chemical based	Others
	8	9	10
1. Andhra Pradesh (0.4635)	Mfg. of cement and lime plaster (2.61); Non-metallic mineral products, n.e.c. (6.48)	Mfg. of in-edible oil (6.46)	Mfg. of paper and paper board (1.84); Medical surgical and scientific instruments (1.38).
2. Assam (0.7185)	Petroleum refineries (13.62); Mfg. of Petroleum and coal prods. (2.01)	Mfg. of non-metallic mineral prods. (3.15)	Mfg. of wood and wood products (16.27)
3. Bihar (0.5218)	Petroleum refinery (3.10) Mfg. of structural clay prods. (2.59); Glass and glass prods. (1.21), Non-metallic mineral prods, n.e.c. (1.82).		
4. Gujarat (0.3097)	Mfg. of petroleum & coal products (2.09); Structural clay products (1.08); Glass & Glass prods. (1.60); Earthware & china-ware (1.56)	Industrial Heavy org. & in-org. chemicals (1.74); Mfg. of inedible oils (2.92); Mfg. of paints, varnishes, drugs & chemicals n.e.c. (1.12).	

contd..

Table 4.8 contd.

	8	9	10
5.	Haryana (0.3416)	Structural clay prods. (1.79); Glass and Glass Prods. (1.76); Earth & china wares (4.82); Non-metallic mineral prods. n.e.c. (2.52).	Rubber and Rubber prods. (4.35)
			Mfg. of paper and paper boards (2.55); Medical surgical and scientific instru- ments (1.82).
6.	Himachal Pradesh (0.6318)	Cement & lime plaster (1.16); Non-metallic Min. prods. n.e.c. (4.47).	Industrial chemical (1.67)
			Mfg. of wood & wood products (1.29); Printing & parts of all types (2.31).
7.	Jammu & Kashmir (0.5252)	Mfg. of Non- metallic mineral Prods. n.e.c. (2.39)	Paints, varni- shes & chemi. n.e.c. (1.25)
			Wood & wood prods. (7.87); Printing & publishing (1.50); Tanning & finishing of leather (2.00); Medical, Surgical, Sc. instruments (15.11).
8.	Karna- taka (0.3178)	Mfg. of structur- al clay prods. (1.32); Earth & chinaware (2.56); Cement & lime plaster (1.55); Non-metallic min. products (2.16)	Wood & wood prods. (2.25); Mfg. of paper and paper board (1.05).

contd..

Table 4.8 contd.

	8	9	10
9. Kerala (0.4644)	Petroleum Refine- ry (3.73); Stru- ctural clay prods.(3.47); (5.83), Earth ware and china ware (1.13)	Rubber and Rubber prods. Paints, Varnishes & chemi. n.e.c. (1.08)	Wood & wood prods. (7.43), Paper and paper board (1.92); Medical, surgical, sc. instruments (5.26).
10. Madhya Pradesh (0.3525)	Mfg. of cement & lime plaster (6.89)	Mfg. of inedi- ble oils (2.92)	Wood & wood prods. (1.46); Paper and Paper prods.(1.44); Printing & publi- shing (1.42).
11. Mahara- shtra (0.2026)	Petroleum Refi- neries (1.26); Mfg. of petro- leum & coal Prods. (3.26); Glass & glass prods. (1.10)	Industrial Heavy org. & Inorg. chemical & fert. (1.34); Paints, varni- shes, drugs & medicines & chemicals n.e. c. (2.15)	Mfg. of medical, surgical & scienti- fic instruments (1.05).
12. Orissa (0.5430)	Mfg. of structur- al clay products (9.12); Mfg. of cement & lime plaster (1.22).	Indust. Heavy Org. & Inorg. chemicals & fertilizer (1.73); Mfg. of inedible oils (1.73)	Mfg. of wood & wood prods. (1.06); Mfg. of paper & paper prods. (3.71); Printing & publi- shing (4.81).
13. Punjab (0.3588)		Mfg. of inedi- ble oils (1.07)	Tanning, curing and finishing of leather (1.17).

contd..

Table 4.8 contd.

	8	9	10
14. Raja- sthan (0.3265)	Mfg. of earth- ware & china- ware (1.08), cement & lime plaster (6.47); Non-metallic Min. Products (2.17).	Rubber and Rubber Prods. (2.79); Ind. Heavy org. & Inorg. che- micals & ferti- lizers (1.70)	
15. Tamil Nadu (0.1852)	Mfg. of Petroleum & Coal products (1.17); Earth ware & chinaware (2.35), Mfg. of cement & lime plaster (1.28)	Rubber & rubber prods. (1.30); Industrial Heavy Org. & Inorg. Che. fertilizers etc. (1.10)	Printing & publish- ing (1.45); Tann- ing curing & finishing of leather (7.10); Mfg. of medical, surgical & scien- tific instruments (1.29).
16. Uttar- pradesh (0.2385)	Mfg. of glass & glass prods. (2.76)	Rubber and rubber prods. (1.08)	
17. West Bengal (0.2195)	Mfg. of glass & glass Prods. (1.49)	Rubber & rubber Prods. (1.61)	Mfg. of medical, surgical and scientific inst- ruments (1.23)
18. Delhi (0.3690)	Mfg. of earthenware & chinaware (1.08)	Rubber & rubber Prods. (4.07); Paints, varni- shes, drugs, medicines and chemi. n.e.c. (1.30)	Printing & publi- shing (6.87); Mfg. of medical, surgi- cal & scientific instrument (4.67).

Note: Location Quotients (L.Q.) and specialisation co-efficients calculated for organised manufacturing (factory) sector, statewide and industry wise value-added data (at constant prices, base 1970-71 = 100) for 1978-79, obtained from ASI (CSO). Only the industries with L.Q. equal to or greater than one have been included in the Table. Figures in parenthesis in col. 1 indicate the value of specialisation co-efficient of the region and those in other columns, the value of location quotient of respective industry for the specific region/state.

Table 4.9

Changes in the Shares¹ of Major Industry Groups
in Manufacturing (Registered) Sector at all
India level: Three digit classification - years:
1961, 1969, 1978

Sr. ² No.	Industry ³ code	Value Added		
		1961	1969	1978
1	2	3	4	5
1	231	25.99	20.69	20.28
2	209	9.26	6.06	4.79
3	341	6.96	7.26	9.47
4	319	6.19	6.15	6.78
5	311	4.57	5.58	8.47
6	207	4.47	4.25	2.44
7	360	4.34	7.40	8.24
8	370	3.34	5.18	6.94
9	220	3.26	2.78	2.45
10	350	2.98	3.31	2.05
11	382	2.96	3.09	1.76
12	300	2.47	2.44	1.68
13	342	2.46	2.35	1.29
14	280	2.33	2.76	1.32
15	383	2.12	3.17	3.92
16	205	2.01	1.02	1.01
17	271	1.34	2.13	2.05
18	334	1.27	1.47	1.03

contd..

Table 4.9 contd.

1	2	3	4	5
19	321	1.24	1.54	1.19
20	251	1.13	0.58	0.58
21	339	0.97	0.95	1.20
22	239	1.01	0.69	0.50
23	384	0.92	1.23	1.38
24	399	0.86	0.99	0.76
25	331	0.74	0.65	0.62
26	332	0.50	0.56	0.49
27	381	0.45	0.46	0.95
28	333	0.41	0.32	0.23
29	385	0.39	0.52	0.73
30	260	0.39	0.37	0.38
31	291	0.35	0.28	0.29
32	206	0.32	0.48	0.37
33	386	0.21	0.31	0.19
34	391	0.18	0.33	0.35
35	211	0.17	0.14	0.19
36	232	0.17	0.24	0.16
37	394	0.16	0.18	0.11
38	243	0.16	0.13	0.43
39	202	0.15	0.41	0.61
40	213	0.15	0.19	0.22
41	214	0.14	0.26	0.08

contd..

Table 4.9 contd.

1	2	3	4	5
42	312	0.13	0.12	0.26
43	233	0.09	0.08	0.16
44	329	0.07	0.22	0.88
45	203	0.07	0.06	0.06
46	389	0.05	0.09	0.06
47	208	0.05	0.02	0.04
48	212	0.04	0.01	0.02
49	241	0.03	0.09	0.18
50	204	0.02	0.06	0.08
51	392	0.02	0.06	0.05
52	393	0.01	0.16	0.22
53	293	0.01	0.02	0.01

- Notes:
1. Shares are the proportions of the total values of all the industries taken together except electricity, gas and steam and water works.
 2. Industries are given in discending order according to their share in the value added in the year 1961.
 3. For detailed classification and the names of various industry groups.
 4. Total may not add to 100.00 due to rounding of the values to second decimal point.

Source: Annual Survey of Industries: Factory Sector (various issues), CSO.

Table 4.10(a)
Share of the States in All India : Value Added (Important Industries) 1961
(Percent)

Name of the States	Industry Codes							
	231	209	341	319	207	360	311	370
	1	2	3	4	5	6	7	8
Andhra Pradesh	1.39	2.34	1.20	1.46	8.51	1.02	1.81	1.83
Assam	0.05	29.13	0.02	0.27	0.10	0.08	-	-
Bihar	0.31	1.02	30.31	0.98	10.87	2.02	5.36	4.60
Gujarat	21.34	9.76	3.21	9.53	0.75	10.03	18.32	3.09
Haryana	-	-	-	-	-	-	-	-
Himachal Pradesh	-	-	-	-	-	0.05	0.05	-
Jammu and Kashmir	0.22	0.08	-	0.02	-	-	0.05	-
Karnataka	2.72	2.50	2.03	2.61	6.33	6.36	1.01	3.00
Kerala	0.89	11.26	0.66	2.47	-	0.80	3.01	2.43
Madhya Pradesh	4.40	0.95	5.17	0.93	1.96	1.06	1.10	0.10
Maharashtra	30.83	11.45	14.58	54.60	18.98	29.27	44.59	30.37
Orissa	0.09	0.02	10.23	0.16	0.05	0.35	-	-
Punjab	2.81	1.29	3.80	0.14	4.10	7.82	0.92	2.24
Rajasthan	0.72	0.06	0.62	0.04	0.07	0.23	-	0.66
Tamil Nadu	12.22	10.93	2.15	5.75	7.68	9.20	8.95	4.14
Uttar Pradesh	5.32	4.79	2.13	2.55	39.07	5.17	3.11	7.10
West Bengal	14.18	13.90	22.96	17.32	1.50	23.45	11.73	37.15
Delhi	2.40	0.30	0.81	0.80	-	2.30	0.22	2.89

Contd...

Table 4.10(a) contd..

Name of the States	Industry Codes							
	220	350	382	300	342	280	383	205
	9	10	11	12	13	14	15	16
Andhra Pradesh	26.99	1.00	-	-	-	2.81	3.74	17.11
Assam	-	0.27	1.44	-	-	0.95	-	3.35
Bihar	7.29	1.36	2.30	-	15.00	2.38	5.54	2.68
Gujarat	5.93	4.69	3.84	1.00	7.33	5.76	6.73	3.10
Haryana	-	-	-	-	-	-	-	-
Himachal Pradesh	-	-	-	-	-	-	-	-
Jammu and Kashmir	-	0.04	-	-	-	0.12	-	-
Karnataka	6.74	1.55	0.51	1.25	-	1.31	9.22	2.70
Kerala	2.40	0.71	-	4.83	0.86	2.33	-	1.53
Madhya Pradesh	6.39	1.15	-	-	2.21	1.22	-	9.25
Maharashtra	19.74	32.02	14.92	47.88	26.62	32.64	31.65	15.70
Orissa	0.44	1.02	0.09	-	0.49	0.95	-	3.16
Punjab	-	5.61	2.10	1.82	3.26	2.98	1.78	4.02
Rajasthan	0.21	0.28	7.72	-	1.05	0.77	-	1.13
Tamil Nadu	8.36	7.81	1.16	5.11	2.39	16.99	16.25	13.67
Uttar Pradesh	2.87	5.73	12.26	0.07	5.52	6.72	8.35	6.08
West Bengal	2.36	34.01	53.51	36.46	35.09	13.96	16.39	14.64
Delhi	0.26	2.90	-	0.93	-	8.09	0.31	1.85

Contd..

Table 4.10(a) contd..

Name of the States	Industry Codes						
	271	334	321	251	339	239	384
	17	18	19	20	21	22	23
Andhra Pradesh	3.42	6.69	14.21	2.88	4.39	5.11	4.61
Assam	-	-	27.39	13.02	-	0.82	2.26
Bihar	10.50	10.86	-	1.24	13.71	1.29	1.99
Gujarat	7.54	10.75	-	2.96	9.71	9.87	8.14
Haryana	-	-	-	-	-	-	-
Himachal Pradesh	-	-	-	-	-	-	0.44
Jammu and Kashmir	-	-	-	0.19	-	-	0.24
Karnataka	4.43	6.30	-	24.79	3.15	6.64	4.39
Kerala	1.48	4.45	-	20.83	0.17	9.45	3.63
Madhya Pradesh	2.58	12.66	-	1.26	4.83	5.67	1.17
Maharashtra	17.24	8.21	58.40	16.12	27.62	26.86	22.98
Orissa	1.36	2.22	-	1.20	0.19	-	0.90
Punjab	5.86	-	-	1.49	1.33	6.79	1.75
Rajasthan	-	4.08	-	0.25	1.12	3.59	0.36
Tamil Nadu	6.82	14.73	-	1.59	9.43	13.02	18.39
Uttar Pradesh	9.11	6.11	-	1.16	1.61	2.99	9.40
West Bengal	29.56	12.93	-	12.91	17.42	5.75	11.60
Delhi	0.07	-	-	0.22	3.30	2.10	7.19

Source : Annual Survey of Industries, Factory Sector
(Census + Sample Sector)
Central Statistical Organisation,
Govt. of India, New Delhi.

Table 4.10(b)

Share of the States in All India: Value Added (Important Industries) 1969

(Percent)

Name of the States	Industry Codes							
	231	209	341	319	207	360	311	370
	1	2	3	4	5	6	7	8
Andhra Pradesh	1.39	3.36	1.37	1.42	12.15	3.38	6.42	4.45
Assam	0.19	24.72	0.11	0.10	0.10	0.33	0.26	0.06
Bihar	0.59	1.00	21.68	0.42	5.53	4.62	7.34	1.30
Gujarat	20.30	8.32	3.67	10.69	0.83	10.19	20.60	2.85
Haryana	0.96	0.32	1.69	0.89	0.83	5.63	0.35	1.02
Himachal Pradesh	0.01	0.01	0.07	0.02	-	0.23	0.04	0.13
Jammu and Kashmir	0.03	0.10	0.02	0.08	-	-	4.08	0.01
Karnataka	3.18	5.22	0.53	1.36	6.12	5.20	2.77	9.36
Kerala	1.07	17.87	0.36	2.21	0.15	0.49	6.55	0.97
Madhya Pradesh	4.17	1.55	7.80	0.49	0.30	1.19	2.94	7.37
Maharashtra	32.13	11.03	14.89	60.19	23.27	29.46	32.00	34.42
Orissa	0.38	0.08	13.77	0.09	0.46	0.21	0.41	0.46
Punjab	2.27	1.44	2.50	0.25	0.36	4.48	0.51	0.84
Rajasthan	1.40	0.35	0.44	0.16	0.41	0.45	0.89	0.27
Tamil Nadu	9.87	8.46	6.06	4.50	11.80	16.99	6.03	9.17
Uttar Pradesh	5.02	5.73	2.87	0.99	36.68	4.71	6.03	4.72
West Bengal	15.27	9.81	21.85	13.26	1.15	10.53	6.39	20.84
Delhi	1.72	0.61	0.82	1.50	-	1.34	0.36	1.43

Contd..

Table 4.10(b) Contd..

Name of the States	Industry Codes									
	220	350	382	300	342	280	383	205		
	9	10	11	12	13	14	15	16		
Andhra Pradesh	28.12	0.86	0.61	2.10	0.90	3.43	0.37	8.98		
Assam	-	0.45	1.52	-	0.02	0.73	-	4.56		
Bihar	12.13	3.70	1.77	1.66	14.30	2.52	33.87	4.91		
Gujarat	6.10	4.87	2.26	0.93	3.20	3.35	0.78	3.14		
Haryana	-	4.40	1.79	2.84	1.19	1.80	1.75	1.31		
Himachal Pradesh	-	0.14	-	-	-	0.38	-	-		
Jammu and Kashmir	-	0.05	-	-	-	0.30	0.03	0.19		
Karnataka	10.31	3.59	2.98	3.12	2.60	3.13	6.92	4.20		
Kerala	3.15	1.15	-	5.15	0.71	2.78	-	1.26		
Madhya Pradesh	4.42	0.91	1.08	0.87	0.77	1.00	0.20	7.28		
Maharashtra	12.96	40.81	11.99	24.87	17.25	41.15	25.53	22.92		
Orissa	0.15	0.29	0.61	-	0.44	1.15	-	3.49		
Punjab	0.05	3.94	0.29	1.81	0.08	0.60	2.71	3.33		
Rajasthan	0.10	0.30	6.12	-	1.12	0.97	0.02	1.18		
Tamil Nadu	2.67	7.30	12.94	12.51	5.02	11.53	19.36	8.37		
Uttar Pradesh	15.99	6.82	21.65	4.33	20.89	5.70	0.90	7.67		
West Bengal	3.00	21.42	33.99	37.48	31.02	12.33	7.08	13.64		
Delhi	0.53	2.17	0.35	2.24	0.43	6.42	0.36	3.03		

Contd..

Table 4.10(b) Contd..

Name of the States	Industry Codes							
	271	334	321	251	339	239	384	
	17	18	19	20	21	22	23	
Andhra Pradesh	2.89	10.23	6.99	2.69	4.88	2.42	7.93	
Assam	0.03	0.56	26.49	16.58	-	0.20	1.24	
Bihar	3.76	9.20	11.78	4.41	11.25	0.16	2.13	
Gujarat	9.23	10.21	8.04	4.70	5.64	15.52	10.38	
Haryana	4.58	-	-	1.83	0.89	3.50	1.40	
Himachal Pradesh	-	0.18	-	0.06	0.97	-	1.37	
Jammu and Kashmir	-	0.19	-	0.18	0.46	-	0.31	
Karnataka	7.43	9.74	-	13.01	3.17	3.91	8.03	
Kerala	3.60	1.31	7.99	16.88	0.66	6.91	4.18	
Madhya Pradesh	11.88	11.24	-	4.91	3.91	5.58	2.23	
Maharashtra	19.09	10.40	38.00	12.61	35.46	26.47	21.43	
Orissa	11.43	1.50	-	3.44	0.22	0.01	1.36	
Punjab	0.05	-	-	1.07	0.34	6.86	1.37	
Rajasthan	0.03	10.20	-	0.34	4.04	5.81	1.45	
Tamil Nadu	4.06	14.37	-	3.20	10.65	12.19	14.66	
Uttar Pradesh	3.22	2.82	-	1.29	1.66	3.25	7.08	
West Bengal	18.61	8.97	-	11.84	8.21	6.22	8.06	
Delhi	0.06	-	0.68	0.43	3.00	0.98	5.01	

Source : As in Table 4.10 (a).

Table 4.10(c)

Share of the States in All India: Value Added (Important Industries)

Name of the States	Industry Codes							(Percent)
	231	341	319	207	360	311	370	
	1	2	4	5	6	7	8	
Andhra Pradesh	2.09	1.92	1.49	4.76	3.70	1.27	10.21	
Assam	10.32	1.49	0.88	0.38	0.28	0.12	0.20	
Bihar	0.33	0.16	2.80	7.48	5.24	8.00	1.67	
Gujarat	20.35	20.28	11.40	3.86	8.39	17.71	3.68	
Haryana	1.99	3.21	0.44	1.07	6.94	0.62	2.32	
Himachal Pradesh	0.01	2.61	0.06	-	0.78	0.24	0.06	
Jammu and Kashmir	0.32	0.05	0.26	-	0.05	0.09	0.05	
Karnataka	3.06	2.91	2.88	9.09	4.70	3.04	12.80	
Kerala	1.46	0.32	2.27	0.43	0.82	0.71	2.46	
Madhya Pradesh	4.35	8.63	1.86	1.51	0.81	2.61	8.72	
Maharashtra	27.92	10.11	57.09	33.55	30.51	29.17	24.68	
Orissa	0.45	9.48	0.22	0.06	0.77	11.81	0.32	
Punjab	2.47	2.90	0.29	2.85	1.98	1.18	1.32	
Rajasthan	12.21	0.60	0.22	0.49	1.84	2.91	2.06	
Tamil Nadu	11.86	6.78	5.46	8.94	15.71	10.55	6.08	
Uttar Pradesh	5.84	4.00	2.73	25.62	5.70	6.98	9.17	
West Bengal	13.61	22.98	8.30	0.64	10.09	2.28	11.61	
Delhi	0.91	0.71	1.00	-	1.00	0.68	2.35	

Contd..

Table 4.10(c)

Name of the States	Industry Codes									
	220	350	362	300	342	280	383	205		
	9	10	11	12	13	14	15	16		
Andhra Pradesh	30.65	1.59	2.92	3.13	0.19	3.81	0.58	16.82		
Assam	0.09	0.38	2.42	-	-	0.69	0.03	2.58		
Bihar	16.59	0.65	0.89	1.20	9.59	3.63	25.60	2.50		
Gujarat	4.62	7.15	1.12	1.08	1.63	5.47	1.37	3.19		
Haryana	-	6.29	2.93	11.51	2.19	2.39	2.61	4.07		
Himachal Pradesh	-	0.09	-	-	-	0.33	-	0.16		
Jammu and Kashmir	0.11	0.09	-	-	-	0.26	0.02	0.48		
Karnataka	9.35	5.65	4.20	3.42	8.07	4.73	8.15	3.95		
Kerala	4.10	1.97	-	7.73	4.91	2.10	-	0.46		
Madhya Pradesh	4.97	1.19	0.89	0.28	8.06	3.65	1.07	6.53		
Maharashtra	11.58	38.09	9.40	18.53	21.30	20.77	24.13	7.32		
Orissa	0.83	0.17	0.78	-	3.30	10.82	0.03	2.54		
Punjab	0.28	5.21	-	1.64	1.01	0.17	4.46	11.96		
Rajasthan	0.20	0.71	3.57	4.76	8.79	0.55	0.31	1.78		
Tamil Nadu	3.02	6.86	15.10	13.62	4.30	14.20	20.32	13.80		
Uttar Pradesh	9.80	7.17	15.63	12.36	14.42	4.97	1.27	9.52		
West Bengal	3.01	13.46	39.21	18.90	11.24	11.90	8.49	10.02		
Delhi	0.64	2.95	0.50	1.51	0.33	9.50	1.41	2.01		

Contd..

Table 4.10(c) Contd..

Name of the States	Industry Codes							
	271	334	321	251	339	239	384	
	17	18	19	20	21	22	23	
Andhra Pradesh	9.34	12.82	3.03	1.92	8.78	6.21	8.92	
Assam	1.30	-	25.33	24.18	3.79	0.14	1.76	
Bihar	4.54	11.98	8.42	0.56	6.25	0.29	1.93	
Gujarat	5.05	8.98	5.17	5.12	9.71	17.55	8.53	
Haryana	6.74	2.10	-	1.16	6.66	0.39	2.16	
Himachal Pradesh	-	0.17	-	0.18	0.64	-	0.99	
Jammu and Kashmir	-	-	-	1.31	0.41	-	0.60	
Karnataka	7.58	7.77	-	12.07	10.82	9.28	9.24	
Kerala	3.98	0.93	8.12	16.07	0.66	5.23	3.40	
Madhya Pradesh	5.72	15.37	-	5.71	3.29	3.48	2.13	
Maharashtra	19.03	2.35	34.55	11.29	22.74	28.47	19.54	
Orissa	10.58	3.50	-	3.02	0.70	0.04	1.08	
Punjab	0.30	-	0.01	0.83	0.17	7.23	2.53	
Rajasthan	0.03	11.05	-	0.07	3.71	2.76	1.90	
Tamil Nadu	8.89	13.44	3.05	2.94	10.49	9.60	14.81	
Uttar Pradesh	4.97	1.85	-	2.00	2.61	0.51	7.90	
West Bengal	11.66	6.84	11.56	3.43	6.72	7.82	8.06	
Delhi	0.25	0.10	0.18	0.39	1.75	0.28	4.30	

Source : as per Table 4.10(a).

Table 4.11

Industrial Specialisation Co-efficiency for the States

States/Regions*	<u>Specialisation Co-efficiencies</u>		
	1961	1969	1978
<u>Highly Diversified Regions.</u>			
Tamil Nadu	0.2182	0.2132	0.1852
Maharashtra	0.1854	0.1932	0.2020
West Bengal	0.3186	0.2331	0.2195
Uttar Pradesh	0.3125	0.2805	0.2385
Gujarat	0.4182	0.3723	0.3097
Karnataka	0.3686	0.3317	0.3178
<u>Moderately Diversified Regions.</u>			
Rajasthan	0.4518	0.4033	0.3265
Haryana	-	0.3864	0.3416
Madhya Pradesh	0.4128	0.3748	0.3525
Punjab	-	0.4040	0.3588
Andhra Pradesh	0.4742	0.4942	0.4635
Kerala	0.4827	0.4703	0.4644
<u>Less Diversified Regions.</u>			
Bihar	0.6182	0.5451	0.5218
Jammu & Kashmir	0.6170	0.5321	0.5252
Orissa	0.5936	0.6135	0.5430
Assam	0.8067	0.8059	0.7175

* Classification is based on the values for 1978 and the States are given in ascending order accordingly.

Source: State-wise Co-efficients of Specialisation calculated from Tables of location Quotients for the states of India, for the years 1961, 1969 and 1978; and the data on net-output (value added) in the organised manufacturing (factory) sector were obtained from Annual Survey of Industries; C.S.O.

Table 12 Contd..

- Notes : 1) The Suffix for the variable i.e. 1,2, and 3 represent the years 1961, 1969, 1978 except in equation 4 where results relate to the pooled data (pd).
- 2) Figures in parentheses are the standard errors of b coefficients.
- 3) Only final results are presented. For notations please see the text.
- 4) PCVAF3 stands for per capita value added generated in the registered factory sector.
- 5) * Significant at 1 per cent level of significance.
** Significant at 5 per cent level of significance.
***Significant at 10 per cent level of significance.

Source : As per the text.

Table 13

Estimated Regression Equations - considering the components of the Agglomeration Economics and Infrastructure:

$$Y = b_0 + b_1 A_1 + b_2 A_2 + b_3 A_3 + e_1$$

and

$$Y = b_0 + b_1 T_1 + b_2 P_2 + b_3 W_3 + e_2$$

(a)	Dependent Variable (Y): PCVA/FS	Agglomeration Economies		Infrastructure		n
		Dependent Variable (Y): PCVA/FS	$\bar{R}^2$	(a) Dependent Variable (Y): PCVA/FS	$\bar{R}^2$	
1.	Y(1961) = 32.4997 + 0.2679* A ₁ (0.0330)		0.8018*	1. Y(1961) = 3.2658 + 0.3946* P (0.1848)	0.4013*	17
2.	Y(1969) = 50.2702 + 0.1836* A ₁ (0.0283)		0.7072*	2. Y(1969) = 36.1792 + 0.4708* P _w (0.1598)	0.3874*	18
3.	Y(1978) = 71.6391 + 0.1124* A ₁ (0.0404)		0.2837***	3. Y(1978) = 76.3434 + 1.3032* P _w (0.4551)	0.3121*	18
4.	Y (pd) = 53.3082 + 0.1805* A ₁ (0.0210)		0.5826*	4. Y (pd) = 45.0227 + 0.4435* P _w (0.1068)	0.2377*	53

Notes : As mentioned in Table 12.

Source: As per the text.

Aggregation Scheme of The Various Industrial Sectors at 3 digit level

(A) Aggregation of National Industrial Classification (NIC) corresponding to Annual Survey of Industries (ASI) Classification Code :

Sr. No.	Name of the Industry Group (ASI)	ASI Code	NIC Aggregation (Name of the industry groups and NIC Codes)
(1)	(2)	(3)	(4)
1	Manufacturing of dairy products	202	Manufacturing of dairy products (201).
2	Canning and preservation of fruits and vegetables	203	Canning and preservation of fruits and vegetables (202).
3	Canning and preservation of fish and sea food	204	Canning, preservation and processing of fish, crustacean and similar foods (203).
4	Grain mill products	205	Grain mill products (204).
5	Manufacturing of bakery products	206	Manufacturing of bakery products (205).
6	Sugar, gur and khandasari	207	Manufacturing and refining of sugar (206) + Production of indigenous sugar, boora, gur and khandasari etc. (207).
7	Manufacturing of cocoa, chocolate and sugar confectionary	208	Manufacturing of cocoa, chocolate and sugar confectionary (including sweet meats) (209).
8	Food products, not elsewhere classified (n.e.c.) and meat products	201+209	Slaughtering, preparation and preservation of meat (200) + production of common salt (208) + manufacture of hydrogenated oils, vanaspathi, ghee etc. (210) + other edible oils and fats etc. (211) + Tea processing (212) + coffee curing, roasting and grinding (213) + cashewnut processing (214) + Animal feeds (216) + manufacture of starch (217) + Manufacture of food products (n.e.c.) (219) + cold storage (241).
9	Distilling, rectifying and blending of spirits	211	Distilling, rectifying and blending of spirits (220).
10	Wine industries	212	Wine industries (221).
11	Malt liquors, malt, country liquor and toddy	213	Malt liquors and malt (222) + Production of country liquor and toddy (223).
12	Softdrinks and carbonated water industries	214	Soft drinks and carbonated water industries (224).
13	Manufacturing of tobacco and tobacco products	220	Manufacture of bidi (226) + Manufacture of cigar, cigarettes, cheroots and cigarette tobacco (227) + manufacturing of chewing tobacco, sarda and snuff (228). tobacco and tobacco products (n.e.c.) (229).
14	Manufacturing of textiles	231	Cotton spinning, weaving, shrinking, sanforising and finishing of cotton textiles (231) + Printing, dyeing and bleaching of cotton textiles (232) + Cotton spinning other than in mills (charkha) (233) + Production of Khadi (234) + Cotton textiles in handloom other than khadi (235) + cotton textiles in powerlooms (236) + Cotton textiles (n.e.c.) (239) + Wool spinning, weaving and finishing in mills (241) + Wool spinning and weaving other than mills (242) + Dyeing and bleaching of wool textiles (243) + Manufacture of wool (n.e.c.) (244) + Spinning, weaving and finishing of silk textiles (245) + Printing, dyeing and bleaching of silk textiles (248) + Silk and synthetic fibre textiles (n.e.c.) (249) + Jute and mesta-spinning and weaving (251) + Dyeing, printing and bleaching of jute textiles (252) + Preparing, spinning, weaving and finishing of hemp and other coarse fibre (253) + Manufacture of jute bags and other jute textiles (n.e.c.) (259) + Embroidery and making of crepes, laces and fringes (262) + Weaving carpets, rugs and other similar textile products (263) + Dyeing and bleaching of silk textiles (246) + Spinning and finishing of other textiles (247).
15	Knitting mills	232	Knitting mills (260).
16	Manufacturing of all types of threads, cordage, ropes, twines, net, etc.	233	Manufacture of all types of threads, cordage, ropes, twines, nets, etc. (261).
17	Other textiles (n.e.c.)	239	Cotton ginning, cleaning and baling (230) + Wool cleaning, baling and processing (240) + Jute and mesta pressing and baling (250) + manufacture of madras textile goods (except garments) such as curtains, mosquito nets, etc. (266) + manufacture of waterproof textiles (267) + Manufacture of coil and coil products (268) + manufacture of textiles (n.e.c.) (269).
18	Manufacture of footwear (except rubber and plastic)	241	Manufacture of footwear except rubber and plastic footwear (291).
19	Tailoring, umbrella, raincoats and textile garments	243	Manufacture of all types of textile garments including wearing apparel (264) + Manufacture of umbrella, raincoats, hats, etc. (265)
20	Manufacture of wood and wood products	(251+252+253)	Manufacture of veneer, plywood and their products (270) + Sawing and planing of wood (other than plywood) (271) + Manufacture of wooden and cane boxes, crates, drums, containers, baskets, reeds, and rattan etc. (272) + Manufacture of structural wooden goods (273) + Manufacture of wooden industrial goods (274) + Cork and cork products (275) + Manufacture of wood and wood products, n.e.c. (279).
21	Manufacturing of furniture and fixtures	260	Manufacture of wooden furniture and fixtures (276) + Bamboo and cane furniture and fixtures (277) + Manufacture of furniture and fixtures primarily of metal (282).
22	Manufacturing of paper and paper products	271	Manufacture of pulp, paper and paper board including news print (280) + Manufacture of pulp products n.e.c. (282) + Manufacture of paper and paper board articles n.e.c. (283) + Manufacture of various types of paper and paper products (284).
23	Printing and publishing of all types	280	Printing and publishing of newspapers (284) + Printing and publishing of periodical books, atlases, maps, journals, etc. (285) + Printing of bank notes, currency notes, postage stamps, etc. (286) + Engraving, etching, blockmaking etc. (287) + Book binding (288) + Printing, publishing and allied activities, n.e.c. (289).
24	Tanning, curing and finishing of leather	291	Tanning, curing, finishing, embossing and japanning of leather (290).
25	Manufacturing of leather products n.e.c.	293	Manufacture of wearing apparel of leather and substitute of leather (292) + Manufacture of leather consumer goods (other than apparel and footwear) (293) + Dressing, curving, tanning, bleaching and drying of fur and other pelts for the trade (294) + Manufacture of wearing apparel of fur and pelts (295) + Manufacture of fur and skin rugs and other articles (296) + Manufacture of leather and fur products n.e.c. (299).
26	Rubber and rubber products	300	Tyre and tube industries (300) + Manufacture of footwear made of rubber and plastic (301) + Manufacture of rubber products n.e.c. (302).
27	Manufacture of industrial organic and inorganic chemicals, fertilisers and pesticides, turpentine, synthetic resins and fibres, explosive and fireworks, etc.	311	Manufacture of basic industrial organic and inorganic chemicals (310) + Manufacture of fertilisers and pesticides (311) + Manufacture of turpentine, synthetic fibre and resins, etc. (316) + Manufacture of explosives, ammunition and fireworks (318).
28	Manufacture of inedible oils	312	Manufacture of inedible oil (315).
29	Manufacture of paints, varnishes, drugs and medicines and chemicals, n.e.c.	319 (313+319)	Manufacture of paints, varnishes and lacquers (312) + Manufacture of dyes and medicines (313) + Manufacture of perfumes, cosmetics and other toilet preparations (314) + Manufacture of matches (317) + Manufacture of chemical products n.e.c. (319).
30	Petroleum refineries	321	Petroleum refineries (304).
31	Manufacture of petroleum and coal products	329	Petroleum products, n.e.c. (305) + Production of coal tar in coke ovens (306) + Manufacture of other coal and coal tar products n.e.c. (307).
32	Manufacture of structural clay products	331	Manufacture of structural clay products (320).

Appendix I. (contd.)

Sl. No.	Name of the Industry Group (ASI)	ASI Code	WIC Aggregation (Name of the industry groups and WIC Codes)
33	Manufacture of glass and glass products	332	Manufacture of glass and glass products (327)
34	Manufacture of earthen ware and chinaware etc.	333	Manufacture of earthenware and earthen pottery (327) + Manufacture of chinaware and porcelainware (323) + Manufacture of earthen and plastic statues and other products.
35	Manufacture of cement, lime and plaster	334	Manufacture of cement, lime and plaster (324)
36	Manufacture of miscellaneous non-metallic mineral products, n.e.c.	339	Manufacture of mica products (325) + Manufacture of structural stone goods, stone ware, stone dressing and crushing (326) + Manufacture of asbestos, cement and other cement products (328) + Manufacture of miscellaneous non-metallic mineral products, n.e.c. (329).
37	Manufacture of iron and steel and ferro-alloys	341	Iron and steel industries (330) + Foundries for casting and forging iron and steel (331) + Manufacture of ferro-alloys (332) + Manufacture of structural material products (341).
38	Non-ferrous basic industries	342	Copper manufacturing (333) + Brass manufacturing (334) + Aluminium manufacturing (335) + Zinc manufacturing (336) + Other non-ferrous metal industries (337)
39	Manufacture of metal products and parts (except machinery and transport equipments)	350	Manufacture of fabricated metal products (340) + Manufacture of hand tools and general hardware (343) + Enamelling, japanning, lacquering, galvanizing, plating, and polishing of metal products (344) + Manufacture of metal utensils, cutlery and kitchenware (345) + Manufacturing of metal products except machinery and transport equipment, n.e.c. (349).
40	Manufacture of machine and machine tools (except electrical machinery)	360	Manufacture of agricultural machinery and equipment and parts (350) + Manufacture of drills, coal cutting machines, earth movers, lifting and housing machinery, cranes, conveyors and road rollers and other heavy machinery and equipment used in construction and mining industries (351) + Manufacture of prime movers, boilers and steam generating plants (352) + Industrial machinery for food and textile industries (353) + Industrial machinery other than food and textile industry (354) + Manufacture of air conditioners, refrigerators, firefighting equipments and parts (355) + Non-electrical-general items, machinery, parts and components, n.e.c. (356) + Manufacturing of machine tools and their parts (357) + Manufacture of office computing and accounting machinery and parts (358) + Manufacture and repair of non-electrical machinery, equipments, components and accessories, n.e.c. (359).
41	Manufacture of electric machinery and apparatus	370	Manufacture of electrical industries machinery and apparatus and parts (360) + Manufacture of insulated wires and cables (361) + Manufacture of dry and wet batteries (362) + Manufacture of electrical apparatus, appliances and their parts (363) + Telecommunication and transmission equipments and parts (364) + Radiographic X-Ray apparatus and tubes and parts (365) + Manufacture of electronic computers, control equipments and other equipments (366) + Manufacture of electronic components and accessories n.e.c. (367) + Manufacture of electrical machinery, appliances and parts n.e.c. (369).
42	Ship and boat building	381	Ship and boat building and repairing (370)
43	Railway locom equipments etc.	382	Manufacture of locomotives and parts (371) + Manufacture of railway wagons and coaches and parts (372) + Manufacture of other rail-road equipments (373)
44	Manufacture of motor vehicles and parts	383	Manufacture of motor vehicles and parts (374)
45	Repair of motor vehicles	384	Repair of motor vehicles and motor cycles (375)
46	Manufacture of motor cycles and bicycles	385	Manufacture of motor cycles, scooter and parts (375) + Manufacture of bicycles, cycle rickshaw and parts (376).
47	Manufacture of air-crafts and parts	386	Manufacture of aircrafts and parts (377)
48	Manufacture of transport equipments, n.e.c.	389	Dullock carts, push carts and hand carts etc. (378) + Manufacture of transport equipment, n.e.c. (379).
49	Manufacture of medical, surgical and scientific equipments	391	Manufacture of medical, surgical and scientific equipments (380)
50	Manufacture of photographic materials	392	Manufacture of photographic and optical goods (381)
51	Manufacture of watches and clocks	393	Manufacture of watches and clocks (382)
52	Manufacture of jewellery and mint	394	Manufacture of jewellery and related articles (383) + Minting of coins (384)
53	Manufacture of miscellaneous products, n.e.c.	399 (395+399)	Manufacture of ice (315) + Manufacture of plastic products n.e.c. (303) + Manufacture of sports and athletic goods (385) + Manufacture of musical instruments (386) + Manufacture of stationery articles (387) + Manufacture of miscellaneous products, n.e.c. (389)
(18) Aggregation of ASI Sectors (at 3 digit level) According to Input-based Classification			
Name of the input-based Sectors		Industry Groups constituting the sectors (ASI 3 digit level classification)	
1. Basic goods		311 + 314 + 341 + 342	
2. Intermediate goods		332 + 333 + 351 + 351 + 300 + 312 + 321 + 322 + 331 + 339 + 350	
3. Capital goods		360 + 370 + 381 + 382 + 383 + 386 + 389	
4. Consumer goods		260 + 384 + 385 + 391 + 393 + 394	
(a) Consumer durables		262 + 263 + 264 + 265 + 266 + 267 + 268 + 269 + 211 + 212 + 213 + 214 + 215 + 216 + 217 + 218 + 219 + 220 + 221 + 222	
(b) Consumer non-durables		+ 241 + 242 + 271 + 280 + 293 + 319 + 332 + 333 + 387 + 399	
(19) Aggregation of ASI Sectors (at 3 digit level) According to Input-based Classification			
Name of the input-based sectors		Industry Groups constituting the input-based sectors	
1. Agro-based		202 + 203 + 204 + 205 + 206 + 207 + 208 + 209 + 211 + 213 + 214 + 220 + 231 + 232 + 233 + 239 + 241 + 242 + 251 + 260 + 271 + 280 + 291 + 293 + 300 + 312	
2. Chemical-based		311 + 319 + 321 + 329 + 342	
3. Metal based		341 + 342 + 350 + 360 + 370 + 381 + 382 + 383 + 384 + 385	
4. Non-metallic mineral based		386 + 389 + 391 + 393 + 394 + 399	
		311 + 312 + 333 + 334 + 339	

Notes: (1) Sectors are aggregated to the nearest possible inter-related group.

(2) An industry group is defined as a constituent of a particular sector if more than 75 per cent of its products directly contribute to that sector.

Source: Based on the information published by the ASI (CB).

THE DATA BASE

Reliability of the empirical result depends on the nature, accuracy and consistancy of the data used for the analysis. The data requirements of the present study consist of data for analysing (i) industrial growth and trends thereof across states between 1961 and 1978, and (ii) evidence relating to various aspects of inter-state (interregional) variations in the level of industrial development in overall macro-economic terms. We outline the sources and nature of the data available for our purpose, in what follows.

1. The Data on Manufacturing Sector¹

The major source of data for the registered factory sector is Annual Survey of Industries (ASI), published annually by the Central Statistical Organisation (CSO), Government of India. The survey covers only registered segment of the manufacturing sector, under sections 2 m(i) and 2m(ii) of the Factory Act 1948. For the purpose of the survey, factories in ASI frame are divided into two sub-sectors viz. census and non-census (sample). Generally,

1/ It may be mentioned that we have analysed only registered factory sector or registered manufacturing sector in the interregional context of India.

factories employing 50 or more workers and using power or employing 100 or more workers without using power constitute census sector and are completely enumerated in the survey; while registered factories employing 10 to 49 workers and using power or 20 to 99 worker without using power are covered on the basis of 50 per cent probability sample annually. The information about large scale factories (census sector) is available on a timeseries basis for the years between 1961 and 1978-79,^{1/} except for the year 1972 when survey was not conducted. No separate information about sample sector is available after 1971-72. Moreover, the data for the period 1973-74 to 1978-79 are provisional ones.

The information about unregistered or unorganised segment of the manufacturing sector is extremely scarce. From no source, data on unorganised sector are available on regular or comparable basis. Hence, analysis by and large, leaves out the unregistered or unorganised sector. However, we have used some information, provided by the National Accounts Statistics, for this sector.

1/ However, now information is available for more years i.e. for 1970-80 - 1981-82. At the time of our actual analysis, latest data were available upto 1978-79 only.

1.1 The limitations of the Data on Registered Factory Sector:

The limitations in terms of availability and comparability over time as well as across industries have been extensively documented in the literature. Some of the major data limitations are:

- (i) The annual survey of industries upto 1965 was conducted for the calendar year while afterwards, it is being conducted for the financial year.
- (ii) All the factories covered under the Factory Act do not submit returns punctually. Consequently some proportion of the registered factor sector remains unreported every year. Since no correction is made from year to year for non-reporting units, the comparability over time becomes restricted.
- (iii) If any industry group consists of less than three reporting units in a given year, it is included under the classification of industries not elsewhere classified; while the states having less than 3 reporting units in a particular industry group are pooled together. However in the footnotes of the industry information, the number of reporting units in respective states is mentioned against their values.

- (iv) Another problem was posed in ASI data by change in the industrial classification from ASI to National Industrial Classification (NIC), which is used since 1973-74. As a result industries under NIC do not bear one to one correspondence with ASI in some cases.
- (v) The data provided by ASI are at current prices. Therefore comparison over time is not ideal without adjusting the series for price variations.

These limitations make comparison of industries over time and across states somewhat difficult. However, despite the limitations, the ASI data are the best available set for what is termed as registered manufacturing sector in the National Accounts Statistics. Therefore, ASI data have been employed for the purpose of our analysis, after making certain adjustments as follows.

1.2 Adjustment in the Industrial Data: In order to arrive at registered factory sector, we aggregated the census and the sample sector data for the years 1961 to 1971-72 (henceforth referred to as 1971). Since 1973-74, CSO has been publishing information on the registered factory sector as such.

For the purpose of segregating pooled information, particularly at the states' level, we divided the aggregate information, as given under the column 'others', using

proportion of value added of a state among the clubbed states and the number of units pertaining to the state in question as weights; where

X_{ij} = value of a particular variable X (like fixed capital, employment or value added etc.) in i^{th} industry group in the clubbed j^{th} state;

VA_j = aggregate value added pertaining to the state j ;

n_j = total number of factories mentioned against the state j (in the footnote); and

V_j = weight of the j^{th} state among all the clubbed states.

Then:

$$V_j = \frac{VA_j \cdot n_j}{\sum_{j=1}^n VA_j \cdot n_j} \quad \dots (1)$$

$$X_{ij} = V_j \cdot X_i \quad \dots (2)$$

It may be mentioned that in adopting this methodology there is a chance of error or under estimating the region specific values of a variable. However, to provide an overall check on the accuracy of the data, the figures relating to a specific industrial characteristic were aggregated across all the industry groups and compared with the total of that characteristic pertaining to a particular state.

Since the census sector and the sample sector information can be matched only at the three digit level of disaggregation, the census sector data was aggregated at three digit level of ASI using a key of correspondence in the sample reports. Thereafter, NIC sectors also were suitably aggregated to correspond with the earlier period.^{1/} Though, as mentioned earlier, a one to one correspondence could not be made possible even at three digit level; it was matched to the best possible extent. In all, 53 sector classification of industry groups was arrived at for the purpose of the analysis. Similarly these sectors were further aggregated in order to arrive at use base and input base sectoral classification.^{2/}

As the data on industries are available at current prices, we feel that the nominal values are somewhat unreliable as indicators, given the persistent inflation. It is quite likely that the inflation will effect different industry groups differently. Therefore, any comparison over time will be meaningless, if made on the basis of current prices. The analysis is, thus, carried out taking the series of fixed capital and value added in constant terms, with 1970-71 as the base. The series of value-added were

1/ The aggregation scheme is presented in Appendix II.

2/ See section 'B' and 'C' of the Appendix II.

deflated by the appropriate wholesale price indices as provided in Chandhok (1978). There are known limitations in using such price indices,^{1/} and the ideal way of deflating the series is to use double deflation method. For want of information, we have not been able to do so, and resorted to the single deflation method. Similarly, fixed capital series was deflated by the index of plant, machinery and transport equipment for the respective years. Fixed capital also represents depreciated value of some other fixed assets like land and building etc. along with the other components. Therefore, using the aforesaid deflator may not be very desirable. However, since plant and machinery and transport equipments account for the major proportion of the fixed capital, we can use this price deflator as the nearest proxy.^{2/}

At this juncture one more point may be made clear. The ideal way of deflating various region/state specific fixed capital or value added series is to use region and industry-specific of a price deflators. But the dearth of such indices is too well known. Therefore, even for the

1/ For example in adopting this method we implicitly assume that the prices of inputs change at the same rate as that of the output.

2/ It may be mentioned that no adjustments have been made to correct for the vintage involved in the plant and machinery.

states, we have used all India price deflators. Consequently the estimates suffer to the extent the regional variations in the price movements across industry groups are not captured. Nevertheless, we are, atleast able to capture the inter industry price movements, and are able to correct for the growth of the various states, emanating from the sectoral composition. However, one has to keep these limitations in mind while viewing at the results. '

As mentioned earlier, the focus of the study is the organised or registered manufacturing sector. However, the data on unorganised sector has been used to understand the overall variations in the manufacturing sector and its sub-sectors viz. organised and unorganised; and relationship between these segment across states in the chapter 4. The data are obtained from the Estimates of State Domestic Product (ESDP): 1960-61 to 1982-83, published by the CSO (1984); and the various issues of the National Accounts Statistics (NAS).

2. Other Data

In analysing the determinants of interregional industrial variations and testing the various hypotheses, we required variety of data on a number of variables; which offer some explanations for the interregional industrial variations and declining regional industrial inequalities.

Apart from our major data sources viz. A.S.I., NAS, and ESDP; we obtained information from the various government reports and documents. Thus, for working out inter-industry linkages we used Input-Output table obtained from A Technical Note on the Sixth Plan of India (1980-85), Planning Commission (1981).

In order to gauge the impact of some of the behavioural variables on the inter-regional variations, we selected some proxies to represent these variables. Thus, data related to the various sets of population was obtained from the various volumes of the Census of India; road statistics from the various issues of the Basic Road Statistics of India, Ministry of Shipping and Transport, Govt. of India; information on length of railways in the various state was obtained from the various issues of Indian Railway Year Book, Ministry of Railways, Railway Board, on banking and credit deposit ratios from Chart Book on Financial and Economic Indicators, Reserve Bank of India (RBI) (1978); on forest, mining, agriculture, power, mandays lost, trade unions, geographical area of the various states from the various issues of the Statistical Abstract : India (CSO); inter-urban

distances from the Road Map of India, Geological Survey of India, (1981); on the performance of non-banking financial institutions from the Report of Development Banking in India, Industrial Development Bank of India (1980-81), Operational Statistics of IDBI, various reports on Currency and Finance, RBI; on registration of companies with the Directorate General of Technical Development, from the various annual reports on the Working and Administration of the Company Act 1956, Deptt. of Company Affairs, Govt. of India; on gross block investment in the public sector undertakings from Annual Report on the Working of Industrial and Commercial Undertakings of the Central Government, Bureau of Public Enterprise, Govt. of India; on industrial licenses issued to various states from Hazari Committee Report on Industrial Licensing, Planning Commission (1969) and Assochem Parliamentary Digest (ASO 9, April 1984); data on tractors, oil engines and pumping sets used for irrigation were obtained from the various rounds of Quinquennial Livestock census Directorate of Economics and Statistics, Ministry of Agriculture; while fertilizer use data were obtained from the various issues of Fertilizer Statistics, Fertilizer Association of India. For working out values in per capita terms for non-census years, we used mid year population projection obtained from the Report of the Expert Committee on Population Projections, Office of the Registrar General, Govt. of India

(1978). All the data in monetary terms were suitably deflated by the relevant deflators, as given in Chandhok (1978), at 1970-71 prices. If data for the corresponding years were not available, we have taken the nearest possible information in terms of time to represent that year. Data on agricultural sector were acquired from the various government publications viz. (i) Fertilizer Association of India, Fertilizer Statistics (various issues), (ii) Government of India, Indian Agricultural Statistics: 1964-65, Vol. I (Summary Tables), Directorate of Economics and Statistics, Ministry of Food and Agriculture, New Delhi. (iii) Government of India, Estimates of Area and Production of Principal Crops in India (Various issues), Ministry of Agriculture and Irrigation, New Delhi.

A Technical Note on the Data and Methodology,
Adopted for constructing the various Indices¹

As discussed earlier, we selected certain indicators to be used as proxies for the various behavioural factors affecting interregional industrial structure. Most of these indicators are a combination of some other characters, which have to be combined in order to have a single composite index representing a particular variable. Let us take an example to write the methodology. Suppose there are 4 factors to be merged into one index and each factor is spread over 18 states i.e., has 18 number of observation.² Now, let

CI = Composite Index;

X_j = jth variable, where $j = 1, 4$;

X_i = ith observation (state), where $i = 1, 18$;

X_{ij} = ith observation for jth variable;

X_m = maximum value of X_{ij} for jth sector,

$m = 1, 4$

X_n = minimum value of X_{ijs} for jth sector

$n = 1, 4$

N = total number of state/observations;

1/ The data base has been elaborated in the Appendix 1 of the report.

2/ In order to aggregate these series, which have different units of measurement; for example length of roads and no. of bank offices; we first normalise them by dividing each of the series by the difference of its maximum and minimum values and thus arrive at X_{ij} .

C_j = inverse of the coefficient of variation
for j th variable;

$\bar{X}_j$ = mean of the j th series

w_j = weight for the j th series

then:

$$X_{ij} = X_{ij} / X_m - X_n \quad \frac{1}{2}$$

$$C_j = \bar{X}_j / \left[\frac{1}{N-1} \sum (X_i - \bar{X}_j)^2 \right]^{1/2}$$

$$w_j = C_j / \sum C_j$$

$$CI = \sum X_{ij} \cdot w_j$$

All the composite indices were arrived at following the above methodology. At this stage some of the indices need some clarification. For example, level of agricultural mechanisation. It is a composite index of (i) number of tractors per 1000 hectares; (ii) number of oil engines and pump sets per 1000 hectares, used for the purpose of irrigation; and (iii) use of NPK (fertilizer) kg./Hectare. Data for (i) and (ii) are obtained from the livestock census for the years 1961, 1971-72 and 1977-78. It is assumed that the values obtained for 1971-72 and 1977-78 hold good for the years 1969 and 1978, used for the purpose of our analysis. Moreover, hectares are in terms of the gross cultivated area.

Similarly when we considered urbanisation, defined as proportion of population living in 20000 + towns. We have not adjusted this proportion for boundary changes. Further, the population for 1971 and 1981 is used as proxy for 1969 and 1978 while working out these proportions.

Inter industry demand is quantified as inverse of the coefficient of specialization. Another

interesting indicator we have tried to develop is the index of agglomeration economies, somewhat as suggested by Richardson (1973). Agglomeration index (AI) is thus, defined as

$$A.I = \frac{1 + N_i / Z + \bar{Z}}{(d_{ii}, d_{jj}=0)} \quad d_{ij} / \frac{Z!}{2!(z-2)!}$$

(N_i = population of i th threshold urban centre in the region; Z = number of threshold urban centres, $\bar{Z}$ is number of threshold urban centres per 1000 km^2 , d = distance).

Where first term on the r.h.s. is the relative size of the urban centres (with lakh + population) with more weight ($1 +$) given to the larger centres; second term is the number of these threshold level urban centre per 1000 km^2 of area and the last term is the average inter urban distance between these urban centres. Once we arrive at

area and the last term is the average inter-urban distance between these urban centres. Once we arrived at these three values on the basis of the data obtained from the Census of India, we used the earlier methodology to aggregate these values accordingly (last value being deducted).^{1/} Inter urban distance is approximated on the basis of the Road Map of India, published by the Geological Survey of India. Weight $(1 + \quad)$ is the proportion of the population of the city i in the total urban population of the country.^{2/}

For calculating efficiency wages we need wage rate and total factor productivity. Wage rate for a particular year is defined as the total emolument per worker, calculated on the basis of ASI, while for total factor productivity (TFP), we have used Kendrick's measure defined as:

$$TFP = \frac{V^v}{a.L + b.K}$$

where v is index of value added, K and L are the indices for capital and labour respectively, and a and b are the base year weights of the two factor inputs in terms of their proportionate share in value added in the base year.

1/ It is assumed that higher the inter urban distances, higher will be the cost of transportation, communication and information flow etc. leading to the diseconomies. That is why it is treated as having negative bearing.

2/ The weights incorporate the element of urban hierarchy in the national mapping.

Quantification of the degree of labour militancy is attempted in terms of a composite index of two factors viz. number of mandays lost per 1000 workers owing to industrial disputes, and number of trade unions per thousand workers (here members). It may be mentioned that the information on mandays lost is available only for those disputes which involve more than 10 workers; and reporting of the membership of trade unions is not very regular. However, we have taken average of the three years for trade union activities, with assumption that higher number of trade unions reflect splited trade union movement.

Chapter 5

DYNAMICS OF AGRICULTURE SECTOR - A REGIONAL ANALYSIS

Farming activity continues to dominate the economic scene of the country. Not only it provides employment to a vast majority of the growing population, but also is the largest contributor to the national income. Besides, it also stimulates the process of industrial development and tertiary sector. Thus, despite the declining dominance of agriculture sector,^{1/} as is expected in the process of economic development, its importance can hardly be undermined in an agriculturally dominant economy like India.

Since growth in a country is the sum of growth of its various constituent regions, it will be rewarding to understand the growth profile of the country into its regional matrix. For regions of the same country might vary in their growth performance owing to a variety of reasons like natural conditions,

^{1/} For its share in national income declined to approximately 40 per cent in 1977-78 from 45.64 per cent in 1960-61 (see Table 5.1).

Similarly share of the sector in total employment also fell by approximately 3.9 per cent during 1971 and 1981. For details see Shiala Bhalla, "Workforce Structure 1981 : The Turning of the Tide", in Misra, G.P.(ed.), Regional Structure of Development and Growth in India, Vol.1, New Delhi, Ashish Pub. House, 1985, pp.363-391.

cropping pattern, productivity, level of technology, infrastructure and information net work, production relations, land distribution and the like ones. Therefore, this chapter is devoted to the analysis of agriculture sector in order to

- (i) understand the growth dynamics of the various states and the country; and
- (ii) identify some of the major factors determining the growth profile of the various regions.

Importance of Agriculture Sector in the State Economies

Table 5.1 contains some indicators exhibiting the importance of the agricultural sector in the various states in India. As can be seen from the table, agriculture sector is the most important sector in most of the states in terms of its contribution to the state's State Domestic Product (SDP) as well as in the primary sector. In 13 out of the 16 states, contribution of this sector was more than 50 per cent in SDP in 1960-61. Only in Gujarat, Maharashtra and West Bengal (incidentally, more industrialised states), it contributed less than 50 per cent. Share of agriculture in primary sector, by and large, exceeded 90 per cent. Only Bihar, where mining is very important, was an exception in 1960-61.

Contribution of the sector in SDP ranges between 38.67 and 62.42 per cent in 1960-61, while in primary sector the range was between 89.06 per cent (in Bihar) to 99.56 per cent (in Punjab) in the initial year. Corresponding values for all India were 47.98 and 94.37 per cent respectively. However, like at all India level, importance of this sector in the state economies also reveals a decline over time, except in Orissa and Rajasthan where it became more important during 1960-61 and 1977-78. Maximum decline (approximately 18%) is observed in Tamil Nadu and minimum in West Bengal (0.09 per cent) between this period.

Columns 9, 10 and 11 show the proportion of net sown area to the total reported area in the states. At all India level it increased from 45.64 per cent in 1960-61 to 46.73 per cent in 1977-78. At the regional level Punjab and Haryana have maximum proportion of their reported area under cultivation compared to a meager (approximately 15%) area under cultivation in the states like Jammu & Kashmir and Assam (approximately 34 per cent) even in 1977-78. It might have a bearing on the total output of the sector which is likely to increase as more and more land is brought under cultivation. As a matter of fact a positive association is observed between the area under cultivation and per capita value added generated

in agriculture sector across the states.^{2/} After normalising for rural population of the states it is observed that Punjab and Haryana generated highest income in all the years. These states also had the highest proportion of the reported area, under cultivation (However, ranks do not always confirm to each other in the two sets).

Thus, it is clear that despite the declining dominance, the agriculture sector still remains very crucial sector in most of the state economies as well as at all India level. One may quite reasonably argue that whatever may be the performance of other sectors, unless agriculture sector performs well, it will be difficult to sustain the overall economic growth of the regions and in turn the country.

Relative Position of the States - The Shares

Table 5.2 presents the share, levels and growth rates of the various states in the agriculture sector. Level of agriculture has been defined in terms of Gross Cropped Area (GCA), Net output, and yield. As can be seen from the table,

^{2/} We worked out rank correlation between ranks of the states according to the proportion of the reported area and per capita value added generated in the agriculture sector. The coefficient of rank correlation was found to be 0.6235 in 1960-61 and 0.4764 in 1977-78, which was statistically significant at 1 and 5 per cent level of significance respectively.

Uttar Pradesh (U.P.), has continued to be the largest contributor to the nations net output in agriculture sector (with more than 15 per cent of the share through out the period between 1960-61 and 1977-78, despite a marginal decline between the two end periods. U.P. is followed by Maharashtra (9.10 per cent), Andhra Pradesh (9.02 per cent), Tamil Nadu (8.15 per cent), West Bengal (7.73%), Bihar (7.58%), and Madhya Pradesh (7.04%). These all states contributed more than 7 per cent of the output individually. Thus, taken together these contributed approximately two-thirds (64.89%) of the net output and approximately 62 per cent of the total gross cropped area of the country. There appears to be a strong association between quantum of the output and the gross cropped area of the state. For even in the year 1977-78, these states contributed to the tune of 60.54 per cent in the GCA and approximately 60 per cent in the net output. All the remaining states, which are also relatively smaller in area (with exception of Rajasthan), hardly crossed 5 per cent share in the net output or GCA in the entire period except Gujarat and Karnataka. However, Punjab crossed this 5 per cent mark in its contribution to net output of the country from 1970-71 onwards.

Out of all the 16 states Assam, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Orissa, Punjab, Rajasthan and West Bengal are observed to have gained over time in terms of their share in all India net output. While the remaining

states lost over time. Incidentally all the large size or important states (which contributed more than 7 per cent share in the net output) appear to have lost their share, (with exception of West Bengal) in favour of the remaining, relatively, smaller, states over time. Similarly, in terms of GCA, states like Assam, Haryana, Jammu & Kashmir, Kerala, Madhya Pradesh, Orissa, Punjab, Rajasthan and West Bengal gained some of the share at the cost of Andhra Pradesh, Bihar, Gujarat, Karnataka, Maharashtra, Tamil Nadu and Uttar Pradesh between 1960-61 and 1977-78.

Let us look at the changes in the productivity as reflected by the yield per hectare, in cols. 9 to 11 of the table. It is interesting to observe that all the states have improved over time in terms of productivity, except Tamil Nadu. However, despite this increase, states like Gujarat, Madhya Pradesh, Maharashtra, Orissa and Rajasthan continue to constitute the group of low productivity states. In all the years under observation these states performed below the national average in terms of per hectare yield; while Haryana, Karnataka and Punjab where yield levels were below the national level in 1960-61, improved their status to perform above the national level. However, Andhra Pradesh, Bihar, Jammu & Kashmir, Tamil Nadu, Uttar Pradesh and West Bengal continued to perform above the national level throughout the period. Here again, Punjab and Haryana show a quantum

jump in their yield level in 1977-78 over 1960-61; an increase almost by 100 per cent (infact Punjab increased its yield by approximately 118 per cent, from Rs.795 per hectare to Rs.1730 per hectare, between 1960-61 and 1977-78). Only Tamil Nadu made an exception on the other side registering a declining of approximately 3.5 per cent points between the corresponding period. Another interesting observation to make is that most of the small states like Assam, Jammu & Kashmir, Kerala and Punjab registered a very high yield (more than Rs.1600 per hectare) in 1973, while only West Bengal from the other group registered this performance with yield of Rs.2029 per hectare. Obviously, productivity appears to have played a crucial role in determining the changes in the share of net output across states, a point we shall come a little latter.

The Growth Rates

Cols. 12 to 20 portray annual compound rates of growth (CRG), in percentage terms, for GCA, net output and yield between 1960-61 to 1970-71, 1970-71 to 1977-78 and 1960-61 to 1977-78. Over the entire period (1960-61 to 1977-78) all the states show an increasing trend in terms of all the indicators viz. GCA, net output and yield. However, Gujarat, Tamil Nadu are exceptions in some respects. For example, Gujarat shows a decline in GCA between 1960-61 and 1977-78; while the

later shows a decline in all the three indicators in this direction. However, if we look at the growth rates in the two sub-periods, only eight states viz. Assam, Haryana, Jammu & Kashmir, Karnataka, Rajasthan, Punjab, Uttar Pradesh, and West Bengal are found to have experienced positive growth in all the variables, in both the sub-period viz. 1960-61 to 1970-71 and 1970-71 to 1977-78. Bihar, Gujarat and Orissa experienced a decline in GCA during 1960-61 and 1970-71; Tamil Nadu experienced a decline in net output and yield, while Maharashtra experienced a decline in all the indicators in this sub-period. In the second sub-period (1970-71 to 1977-78) Andhra Pradesh, Gujarat and Tamil Nadu registered a negative growth in GCA and Madhya Pradesh in yield; while Kerala lost heavily in terms of net output and yield in this duration.

We can look at it from another angle too. If states are classified according to the increasing or decreasing rates of growth between the first and the second sub-periods, all the states are observed to fall into four categories : (1) the states which experienced a higher rate of favourable growth in the second sub-period compared to the first sub-period in all the indicators. Assam, Jammu & Kashmir, Maharashtra and West Bengal fall in this category. In the cases of Assam, Jammu & Kashmir and West Bengal, growth in GCA for yield grew at a relatively modest rate compared to

the other two during the second sub-period. In the case of Maharashtra, the rate of growth in net output appears more to be a function of the yield compared to the GCA. However, both of them appear to have positive bearing on the net output in all the cases;

- (ii) those states which experienced adverse growth in GCA while favourable growth in net output and yield. States constituting this group are Andhra Pradesh, Tamil Nadu and Uttar Pradesh. Most probably favourable growth in net output in these states;
- (iii) States where GCA experienced a positive/favourable growth in the second sub-period over the first one while net output and yield did not perform better in the second sub-period. States like Bihar, Gujarat, Haryana, Karnataka, Orissa, Punjab and Rajasthan fall under this category. Albiet in most of the case growth of most of the states in this category was positive, but probably was not commensurate with the growth of GCA. It is interesting to note that most of the states grew at a relatively very high rate of growth in terms of net output and yield during the first sub-period (1960-61 to 1970-71); and this rate could not be sustained in the second sub-period as compared to the GCA which had growth at a relatively lower pace in the first sub-period. However, over all these states have performed

much better in the entire period (1960-61 to 1977-78) under observation compared to any other group; and

- (iv) the states which experienced considerable growth in the second sub-period in all the indicators. Only two states, Kerala and Madhya Pradesh form the group. GCA grew at a slower pace in the second sub-period in these states, but growth was atleast positive, while in the case of Madhya Pradesh only yield showed an adverse and negative rate of growth, in Kerala the growth in net output as well as yield was not only lower than the first sub-period in the second sub-period, but was negative. Consequently, in the entire period (1960-61 to 1977-78) the growth rate of these states are found to be the lowest among all the states, except Tamil Nadu

Highest rate of growth between 1960-61 and 1977-78, in terms of GCA was registered by Kerala and West Bengal (see Col. 14 of Table 5.2); in terms of net output by Punjab (5.67%) closely followed by Haryana (4.75 per cent per annum); and in terms of yield also Punjab and Haryana emerge as the top states with 4.67 and 3.82 per cent CRG per annum, closely followed by Gujarat (3.62%). Growth of GCA in these states was recorded only 0.9536, 0.8973 and -0.4586 per cent per annum,

indicating their net output to be mainly an outcome of the yield or productivity.

Growth of Output - A Disaggregated Analysis

In the light of the above discussion it might be interesting to explore the dynamics of change in terms of various major crops in different states. Table 5.3 presents the growth and production of the major groups of the crops at all India level during 1960-61, 1970-71 and 1977-78. As can be seen from the table, the growth profile has been moderate during these two decades. Production of foodgrains increased from 80.78 million tonnes in 1960-61 to an impressive 122.98 million tonnes by 1977-78, of course at a barely 2.50 per cent compound rate of growth per annum. However, all the sub-sectors within the foodgrain sector did not behave alike. For example 'green revolution crops' like wheat registered an impressive CRG of 6.54 per cent per annum while crops like Jowar registered a negative growth and declined from 9.81 million tonnes in 1960-61 to 9.16 million tonnes in 1977-78. Similarly, pulses lost approximately 0.58 million tonnes of output between the corresponding period. Major crops which show a steady improved trend among foodgrains are, thus, Rice, Wheat, Maize and Bajra.

Senerio at the non-foodgrains crops was still worse. Oil seed grew at a meager 1.60 per cent CRG per annum, Sugar

came at 1.94 per cent and Meta at 2.67 per cent per annum between 1960-61 and 1977-78. Performance of Jute was far from satisfactory. As a matter of fact it declined at a rate of 7.58 per cent per annum compound. Its output fell to barely 1.31 million bales (1980 kg. each) from 5.01 million bales in 1960-61 and 5.43 million in 1970-71. Thus, the fall was more dramatic between 1970-71 and 1977-78, which was -18.38% CRG per annum.

However, in absolute terms production of Sugarcane increased from 11.48 million tonnes in 1960-61 to 12.79 million tonnes in 1970-71 and to further 15.93 million tonnes in 1977-78. Similarly groundnut output increased by almost 1.85 million tonnes during this period (see Table 5.3).

Among all the foodgrains production of rice from 34.26 million tonnes in 1960-61 to 49.47 million tonnes in 1977-78; of wheat from 10.37 to 31.91 million tonnes and Bajra from 3.13 to 7.18 million tonnes during the corresponding period was equally impressive. Jowar among foodgrains and cotton (lint) among non-foodgrains have shown very marginal downward/upward movement during the period under observations.

Now we turn our focus to the regions/states in order to see the behaviour of these crops over time into the

regional matrix. Table 5.4 presents the annual compound rates of growth of the major agriculture crops/groups across the various states for two sub-periods only, i.e., for 1960-61 to 1970-71 and 1970-71 to 1977-78. Even a cursory glance at the table reveals high variations in the growth profiles of the states across the various sectors and within one sector across the various states. Thus in the first sub-period (1960-61 to 1970-71), production of rice increased at a CRG of 5.75 per cent per annum in Jammu & Kashmir (which was the highest) and 0.19 per cent per annum in Bihar the lowest. During the second period Punjab experienced highest rate (16.35%) per annum, followed by Haryana (11.98%) while Karnataka, Kerala and Orissa experienced a negative rate of growth. At all India level CRG was 2.03 and 2.39 per cent per annum respectively for the first and the second sub-periods.

In the case of wheat the CRG varied between 24.36 per cent (in Assam) to 1.41 per cent in Maharashtra during the first sub-period. In the second sub-period, however Maharashtra improved its performance substantially by the CRG of 9.85 per cent per annum in the production of wheat. The other state which performed equally well or slightly better was Andhra Pradesh (10.14%). It is worth noticing that in most of the states, as at all India level, production of wheat slowed down in the second sub-period than the first

one. It happened in as many as 9 of the 14 states (as Kerala and Tamil Nadu did not produce wheat). Almost similar paradigm is observed in the case of total cereals where except Punjab, all the other states showed a deceleration in growth in the second sub-period compared to the first sub-period.

In the case of pulses where picture even at all India level was not very encouraging, shows a mixed trend at the level of states. In the first sub-period Bihar, Kerala, Maharashtra, Punjab and Uttar Pradesh registered a negative rate of growth, while in the second sub-period Kerala and Maharashtra improved their performance and registered a ~~positive~~ rate of growth, Jammu & Kashmir and West Bengal seem to have replaced them by registering negative growth. Rest of the states remained unaltered.

Thus on the front of total foodgrains, where India grew at a relatively modest but stable rate of 2.55 and 2.37 per cent per annum during 1960-61 to 1970-71 and 1970-71 to 1977-78, the performance of the various states was quite unstable. For example, foodgrains production in Gujarat grew at an impressive rate of 6.40 per cent per annum during 1960-61 and 1970-71 and slumped down to a meager 0.56 per cent during the next period, i.e. 1970-71 to 1977-78. Somewhat similar trend was observed for the states of Jammu &

Kashmir, Karnataka, Rajasthan, Tamil Nadu and West Bengal. The opposite situation prevailed in the states of Andhra Pradesh, Maharashtra and Punjab where production was quite unimpressive in the first sub-period, which picked up substantially during the second sub-period.

In the case of major non-food crops, Bihar revealed a negative trend in the case of sugarcane in both the sub-periods, while performance of Gujarat, Maharashtra, Orissa, Rajasthan and Tamil Nadu was quite impressive, for these states registered above the national growth in both the sub-periods. The production of 5 Major oilseeds at all India level experienced a sharp decline by 2.22 percentage points in 1970-71 to 1977-78 period. This abysmally low performance was probably owing to a sharp (negative) decline in the growth rates in the states of Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Punjab and Uttar Pradesh during the second sub-period. Notice that all these states happen to be the major producers of the oilseeds in India. Somewhat similar is the case of cotton (lint). In the first sub-period Andhra Pradesh experienced a negative (-0.77%) rate of growth, Assam (-10.76%), Jammu & Kashmir (-6.11%), Kerala (-2.25%), Madhya Pradesh (-0.18%), Maharashtra (-9.14%), Tamil Nadu (-0.51%) and Uttar Pradesh with -2.58% rate of CRG seem to have affected the national growth of the production of cotton during 1960-61 to 1970-71. In the second sub-period, the situation

deteriorated for worst when as many as 8 out of the 14 cotton growing states experienced a negative rate of growth ranging from -0.18 per cent per annum (Haryana) to -20.17 per cent per annum (Madhya Pradesh). Production of Jute suffered the maximum decline out of all the food and non-foodgrain crops in the entire period. In the second sub-period, all the major jute producing states suffered a negative rate of growth, while in the first sub-period, Bihar and Uttar Pradesh experienced negative growth and remaining three jute producing states also grew at a snail's pace. Jute production during the first sub-period in Assam grew at 0.38 per cent per annum compound, in Orissa 2.42 per cent and in West Bengal 2.18 per cent. At all India level its rate of growth was barely 0.80 per cent per annum. Similar kind of wide variations are observed across the various crops within the state economies, leaving no state as exception (see Table 5.4).

At this stage we are faced with the question as to what causes this sort of variations within the states across the crops and across states in the output/production. One may postulate that the variations will be observed to the extent there are variations in the level of productivity/yield. However, theoretically speaking productivity itself is a function of a variety of factors such as fertility of the soil, cropping pattern, technological development, infrastructure

production relations, land distribution and the size of land holding etc. The list is obviously not exhaustive. There are likely to be many more variables which determine the ^{/region's} growth and in turn variations in the level of agriculture growth. To begin with a simple relationship can be postulated : growth of agricultural output is a function of yield, area under various crops and cropping pattern. This postulation will indicate the contribution of area, yield and cropping pattern to the growth, which requires decomposition of growth analysis.

Decomposition of Growth

Main approaches generally adopted to explain the output growth are (i) production function approach^{3/} and (ii) decomposition of growth analysis.^{4/} Some studies have also used both the methods simultaneously.^{5/} The decomposition

^{3/} For example a study in Production Function framework was done by Raj Krishna, "Growth of Aggregate Output in Punjab", Indian Economic Journal, Vol. XII, No.1, 1964, is worth the mention.

^{4/} For pioneering work in this framework see Minhas, B.S., and A. Vaidyanathan, "Growth of Crop Output in India : 1951-54 to 1958-61 : An Analysis by Component Element", Journal of the Indian Society of Agricultural Statistics, Vol. XVII, No.2, 1965.

^{5/} For example, see Parikh, A., "Statewise Growth Rate in Agriculture Output - An Econometric Analysis", Arthavijnan, Vol. 8, No.1, March, 1966.

method can be additive or multiplicative. Since the objective here is to understand the contribution of some of the broad components, in the growth of agricultural output, we have used additive decomposition scheme.^{6/} We have attempted to decompose the increase in crop output using the following model:^{7/}

$$\begin{aligned}
 P_t - P_o &= (A_t - A_o) \sum_i W_i C_{io} Y_{io} + A_o \sum_i W_i C_{io} (Y_{it} - Y_{io}) \\
 &+ A_o \sum_i W_i (C_{it} - C_{io}) Y_{io} + (A_t - A_o) \sum_i W_i (Y_{it} - Y_{io}) C_{io} \\
 &+ (A_t - A_o) \sum_i W_i (C_{it} - C_{io}) Y_{io} + A_o \sum_i W_i (C_{it} - C_{io}) (Y_{it} - Y_{io}) \\
 &+ (A_t - A_o) \sum_i W_i (Y_{it} - Y_{io}) (C_{it} - C_{io})
 \end{aligned}$$

where :

$$P_t = A_t \sum_i W_i C_{it} Y_{it}$$

$$P_o = A_o \sum_i W_i C_{io} Y_{io}$$

6/ For arguments in favour of additive over multiplicative decomposition scheme See Minhas, B.S., "Rapporteur's Report on Measurement of Agricultural Growth", Indian Journal of Agricultural Economics, Vol.21, No.4, Oct.- Dec. 1966.

7/ The model is a modified version of the pioneering work by Minha, B.S., and A Vaidyanathan, as suggested by Minhas.

- A_t = total cropped area in the terminal period
 A_o = total cropped area in the initial period
 $C_t C_{it}$ = Proportion of area devoted to i^{th} crop from the total cropped area in the terminal period
 C_{io} = Proportion of the gross cropped area under i^{th} crop in the initial period
 Y_{it} = per hectare yield i^{th} crop in the terminal period
 Y_{io} = Per hectare yield of i^{th} crop in the initial period,
 W_i = farm harvest price of i^{th} crop-constant at the average for 1969-70 to 1971-72(Rs./kg).

The first term on the right hand side of the equation reveals the effect of change in gross cropped area on the crop output, in the absence of the shifts in yield and cropping patterns in the region. Subsequent term indicates the yield shift, keeping the area and cropping pattern at the initial level. Third element is indicative of the effect of changes in the cropping pattern with cropped area fixed at initial level and assuming no changes in yield. The remaining elements reveal the interaction effect of the aforesaid three major components under various alternative situation.

However, before interpreting the results so obtained some of the limitation of the approach may be noted here. At the outset, it should be noted that it is only a partial approach which ignores the effect of some crucial factors like irrigation, fertilizer, HYV, land distribution, production relations, infrastructure and government and farmers' attitude and the like ones. Further, the information used is only for two points of time, hence, the technique leaves seasonal or year to year fluctuations out of its purview, a point we shall come to, a little later.

Contribution of Components : Overall Trend.

We attempted a decomposition of total growth into its major components - the area effect, the yield effect, the cropping pattern effect and four various interaction effects viz. area and yield, area and cropping pattern, yield and cropping pattern and area, yield and cropping pattern interaction effect, as discussed in the methodology, for the various states for three periods viz. 1960-61 to 1977-78, 1960-61 to 1970-71 and 1970-71 to 1977-78. The results are given in Table 5.5.

In the entire period, i.e., between 1960-61 and 1977-78, all the interaction effects are quite small in magnitude at all India level, while contribution of yield appears to dominate in the growth profile followed by cropping pattern

which explains approximately 18.57 per cent of the total growth. Contribution of increase in area under various crops is estimated to be approximately 12.62 percentage points. It is also reflected in the interaction effects where interaction between area and yield or area and cropping pattern is much less than the interaction between yield and cropping pattern. It indicates a possibility that growth in total output was observed mainly due to the growth in yield which appears to a consequence of the shifts in the cropping pattern over the period. However area also contributed positively to the overall growth.

Picture, by and large, remains somewhat similar if we break this entire period into two sub-periods, as earlier. During the first sub-period (1960-61 to 1970-71) yield contributed approximately 61.60 per cent, cropping pattern 15.96 per cent, area 15.45 per cent, yield and cropping pattern interaction 5.90 per cent. Yield and area interaction effect 3.02 per cent, area and cropping pattern 0.78 per cent and interaction between all the three components 0.29 per cent. However, in the second sub-period (1970-71 to 1977-78), to an extent similar trends were observed as earlier, however, the magnitude changed drastically in favour of cropping pattern, an increase of almost 100 per cent over the first sub-period, and that too at the cost of yield. Area also increased its contribution, while all the interaction effects became much less significant.

The trend during the second sub-period indicates that the growth though was an outcome of the yield, the shift in cropping pattern might have taken so drastically precisely owing to the increase in the area. Actually, area and cropping and cropping pattern exhibit similar (increasing) trend. Under these circumstances one would expect that there will be high interaction effect of these two (area and cropping pattern) factors, which is not so. This effect is almost 50 per cent of that of yield and cropping pattern effect. However, the effect has shown significant improvement over the earlier sub-period. It increased from 0.78 per cent (in 1960-61 to 1970-71) to 1.23 per cent (during 1970-71 and 1977-78). At the same time area and yield interaction declined substantially (to 1.86 per cent) during the second sub-period from 3.08 per cent in the first one.

Thus, over all trends reveal two major factors (i) that interaction effects, by and large, remain a relatively very small contributor to the growth; and (ii) that though yield contributed maximum to the growth in agriculture production, the contribution of cropping pattern becomes quite significant over time along with the area. The contribution of yield at all India level, therefore, itself appears to be strongly affected by the net increase in area and the changes in cropping pattern, especially during the second sub-period.

Contribution of the Components in the States

(a) AREA : The table shows a wide variation in terms of contribution of area to the growth across the various states. In the entire period the area contribution varied from -158.22 per cent in Assam to 47.61 per cent in West Bengal. It is interesting to observe that the contribution of area was found to be less than 20 per cent in as many as 10 states and negative only in three states viz. Assam, Bihar and Tamil Nadu. Only in Assam the contribution was found to be much above 100 per cent during this period, though negative.

During the first sub-period contribution of the area was found to be negative in Bihar, Maharashtra and Orissa; below 20 per cent in Andhra Pradesh, Assam, Gujarat, Haryana, Jammu & Kashmir, Kerala, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh. In Madhya Pradesh and West Bengal it was 25.37 and 27.9 per cent respectively; while in Karnataka it contributed marginally above 54 per cent.

In the second sub-period the variation was quite glaring. It ranged from -59.91 per cent in Assam to 248.95 per cent in West Bengal. Another interesting feature of this period is that it contributed negatively in as many as five states viz. Andhra Pradesh (-1.34), Assam (-59.91), Bihar (-11.14), Gujarat (-27.60) and Tamil Nadu (-8.25).

On the other hand in **almost** all the remaining states its contribution showed a substantial increase in this period (1970-71 to 1977-78) over the first sub-period except in Kerala and Uttar Pradesh.

What are the implication of this trend ? Probably more expansion of cultivated area might have taken place in the second sub-period via. increasing cropping intensity or double cropping. However, the opposite may be true in the case of the states which experienced negative contribution.

(b) **YIELD :** Contribution of yield to the growth shows a high percentage in the first sub-period. In all the states it was found to be positive. However, it ranged from a low as 2.77 per cent in Karnataka to as high as 138.90 in Bihar. In most (12) of the states its contribution is found to be more than 50 per cent. Moreover, the yield effect constitutes the major and predominant component of growth in most of the states; only Assam, Karnataka and Maharashtra being the exception during the first sub-period.

In the second sub-period (1970-71 to 1977-78), it appears to have somewhat lost its dominance. In Bihar and Gujarat it became negative; to the tune of -192.52 in Gujarat; while became less important in Andhra Pradesh, Haryana, Jammu & Kashmir, Kerala, Orissa, Punjab, Rajasthan,

and Uttar Pradesh. In the states like Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu and West Bengal it improved its performance significantly. Thus, by and large, the state which experienced increase in yield/productivity due to the advent of 'Green Revolution' in the first sub-period, could not sustain it in the long-run, while other states plausibly started taking to new technology a little later, and thus experienced a favourable contribution of the yield. However, over all the fact that yield contributed maximum to the growth of most of the states holds good, when we consider the entire period.

(c) CROPPING PATTERN : The table shows that the shift in cropping pattern from low to higher value crops is making substantial contribution to the output growth in most of the states while in the first sub-period four states viz. Andhra Pradesh, Bihar, Madhya Pradesh and West Bengal showed a negative contribution of cropping pattern to growth; in the subsequent sub-period such states were Karnataka, Madhya Pradesh and West Bengal; only Madhya Pradesh being common in both the sub-periods. By and large, cropping pattern shows a tremendous improvement in terms of its contribution over time. While in Gujarat area and yield effects were found to be negative, it was due to a favourable shift in the cropping pattern which made Gujarat to sustain its growth. For example, shift for sugarcane and oilseeds can be noticed

distinctly. Similarly favourable contribution of the cropping pattern during the second period over the first can be attributed in Andhra Pradesh, Assam, Bihar, Haryana, Jammu & Kashmir, Kerala and Uttar Pradesh. A sharp decline in West Bengal may plausibly be attributed to the performance of jute in that state.

Thus, if we look at the trend in yield and cropping pattern, we observe that increase in the contribution of yield in the output growth is largely owing to the shifts in cropping pattern in most of the cases, and less due to ^{the} the increase in area as such.

(d) INTERACTION EFFECTS : So far we discussed the contribution of each of the important factors viz. area, yield and cropping pattern. However, possibly that do not behave independent of each other, and effect one-another directly and indirectly. If some more area is brought under cultivation, it is possible that it will have (i) different cropping; and (ii) different, mostly higher, yield. These interactions are captured in the analysis with various combinations.

As noted earlier, interaction effect constitutes a relatively small portion of the total contribution to the output growth in most of the cases. For, three major components individually contribute quite a substantial chunk to the growth in most of the states. Out of the four

interactions viz. between area and yield, Area and cropping pattern, yield and cropping pattern, and all the three taken together, i.e. yield, area and cropping pattern; it is the interaction between ~~yield and cropping pattern~~ ^{the} which is most important followed by area and yield. On the other hand area and cropping pattern, and area, yield and cropping pattern together contribute relatively insignificantly in most of the states and periods.

During the first sub-period Bihar experienced an adverse interaction effect in all the four groups, while in Andhra Pradesh interaction only between area and yield was positive. Similarly Orissa had positive effect only in case of yield and cropping pattern. Madhya Pradesh and West Bengal had positive interaction effect in area and cropping pattern, and yield and cropping pattern. Maharashtra had negative interaction in the case of area and yield and area and cropping pattern while Tamil Nadu experienced an adverse interaction between yield and cropping pattern and interaction between all the three. All other states had a favourably interaction effect in all the cases.

In the second sub-period picture changed slightly. Andhra Pradesh and Tamil Nadu had adverse impact of area-yield, area-cropping pattern and all interactions; Madhya Pradesh and West Bengal experienced a negative interaction in terms of area - cropping pattern, yield and cropping pattern;

Karnataka in area-yield and total interaction; while Jammu & Kashmir had adverse impact of only yield and cropping pattern.

Overall, only 6 states viz. Assam, Bihar, Karnataka, Madhya Pradesh, Tamil Nadu and West Bengal experienced negative interaction in one or some of the groups. Remaining 8 states did not experience any adverse interaction effect during the overall period between 1960-61 to 1977-78. It implies that where yield and cropping pattern have positive interaction effect, plausibly area shift has taken from low to high value crops which in turn led to the faster rate of output growth where yield and cropping pattern made positive contribution individually but their interaction term was negative, as in the case of Tamil Nadu in the first sub-period or Assam and Jammu & Kashmir in the second implies that though the area shift might have been from low to high value crops, the increase in the yield might have occurred faster in low than high value crops. The case where contribution of yield has been positive and cropping pattern negative with a positive interaction, like in Andhra Pradesh, Bihar, Madhya Pradesh and West Bengal during the first sub-period, implies that the crop pattern shifted from low to high value crops in such a way that the decline in yield was faster in the low value crops than the high value ones. The case where individually contribution of yield was negative and cropping pattern was

positive, with a negative interaction effect, implied opposite to the preceeding one. Bihar and Gujarat are the examples of such a behaviour, during second sub-period. Similar interpretations can be given to other interactions also.

As stated earlier, while discussing the limitations of the decomposition framework, there are many other factors which effect the growth performance of the various regions. Many researchers have attempted to probe into the aspects of regional variations in agriculture sector in an inter as well as intra state context. While scanning the literature on the subject one finds two major strands of arguments, apart from the decomposition analysis :

- (i) arguments centering round the institutional factors such as land distribution, production relations and some historical factors like public sector investment in the states during the British period, or peasant movements etc.,^{8/} and
- (ii) arguments highlighting on some technical factor like tractorization/machanisation, etc. which are primarily power (man power or bullock power) saving; and

^{8/} For a detailed and crucial survey of literature on the subject, see Joshi, P.C., "Land Reforms : A Trend Report", in A Survey of Research in Economics, Vol. IV, Agriculture - Part II, (ICSSR), New Delhi, Allied Publishers, 1975.

technological breakthrough, like HYV, fertilizer use, irrigation facilities, which directly affect the productivity.^{9/}

However, here our concern is second stream of research work carried out on the subject. Some of the major studies and their findings are presented in tabular form in Table 5.7. As can be seen from the table a variety of factors have been held responsible for the variations in the level of agriculture output and growth across the regions. By and large, findings converge on the factors like use of high yield variety seeds (HYV), fertiliser use, mechanisation, irrigation, cropping pattern and area under crops, infra-structural facilities, price responsiveness, availability of institutional finance etc. It is an amazingly diverse variety of factors which is difficult to treat at a time. Therefore, we take recourse to a relatively simple tool like coefficient of correlations (rank and Karl-Pearson's) and try to understand the variations across the major states in India. In the light of the major findings by various researchers (see Table 5.6) we have restricted our choice of variables to cropping intensity, extension of irrigation, use of

9/ For details see Shah, C.H., "Some Aspects of Agricultural Economics : A Trend Report", A Survey of Research in Economics, Vol. III, Agriculture - Part-I, (ICSSR), New Delhi, Allied Publishers, 1975.

fertilizers, level of agricultural mechanisation and use of electricity (taken as an indicator for modernisation).

A priorily these factors are taken to determine the productivity (yield per hectare) and in turn level of net output in agriculture sector. First we rank correlated the levels of productivity and net output with the levels of the indicators determining agricultural development in order to find if level of productivity and net output confirm to the levels of development indicators. And then, in order to find some clues to the dynamics of agriculture growth we correlated (Karl Pearson's Correlation) the growth rates of productivity as well as net output with the growth rates of the various determining factors, mentioned earlier.

The second approach, though we agree, is somewhat crude way to look at the growth dynamics of the regional agriculture sector, it is likely to, atleast, give some clue to the association between the growth of productivity and net output with the various indicators. We assume that a significant positive relationship between let us say Y (productivity) in an indicator X during the period t would indicate that the variations in the growth of Y is a significant extent are explained by the growth profile of variable X across the cross section of the states. Overtime if this relationship is observed to have strengthened, an obvious conclusion will be that the variable X in question is assuming greater importance in determining the variations

across states. The implicit policy implication will be that if balanced regional growth in the productivity is to be achieved, planners will have to lay more emphasis on the variable in question in such a way that it has equalising effect among the states with reference to agricultural sector.

The results of correlation exercise are presented in Table 5.7. Let us consider the association in the levels first. It can be readily seen from the tables that very few coefficient of the rank correlation are found to be statistically significant and that too in only a few years.

During 1960-61, level of productivity seems to be associated significantly only with the use of fertilizer while in the subsequent period it is replaced by cropping intensity and to an extent irrigation facilities. This is broadly in conformity with the findings of the various studies presented in a tabular form in Table 5.6. While the level of net output ^{does} not appear to be related in any meaningful manner with any of the indicators. It is obvious; for the rank coefficient correlation between productivity and net output itself turned out to be extremely insignificant.

Since the productivity was found to be better associated with some of the development indicators, we thought it might have been due to the modern approach for the farmers in adopting new farm practices. We took income generated in the manufacturing sector as a proxy for modern outlook across the states, under the assumption that higher level of

industrialisation will induce more modern outlook via. industrial culture and developed entrepreneurship. We rank correlated it with the levels of yield and surprisingly we found positive but insignificant association between the two, which over time tended to become even negative. This plausibly implies that the planning process has lacked in striking the balance between the agriculture and industrial sectors of the economy atleast at the regional level, and it might have far reaching consequences in the long run.

Now let us look at the relation of growth of a productivity and the net output with the growth of the various indicators between 1960-61 to 1970-71, 1970-71 to 1977-78 and overall, i.e. between 1960-61 to 1977-78. The values of Karl Pearson's Coefficient of correlation in most of the cases were found to be statistically insignificant. However, there appears to be a strong association between the growth of productivity and growth of net output. It further confirms our earlier observations that in most of the states, yield contributed maximum to the growth of output. Thus, obviously, the pattern of association of net output or yield with other indicators is not much different.

It appears from the table that the growth in productivity to some extent is associated with growth in cropping intensity, fertilizer use and level of agricultural mechanisation in the first sub-period. In the second sub-period

(1970-71 to 1977-78) to the productivity growth, though only marginally, confirms to the growth of irrigation facilities. However, if we look at the overall period, only cropping intensity, use of fertilizer and mechanisation appear to be of some consequence. However, it may be made clear that these associations are between the directional changes in the variables over time and do not capture any causal relationship, which could be captured through regression analysis of the Cobb-Douglas Production Function type.

On the basis of the strength of the correlations, it is therefore difficult to say anything conclusively. It becomes all the more difficult because of the nature of change between one period to the other. For example relationships in the case of productivity with irrigation increased over-time while all the other variables decreased and even became negative in the cases of cropping intensity and electricity use. However only inference which tentatively could be drawn is that irrigation, fertilizer use and mechanisation have to be given greater importance in the planning process, and possibly use of electricity will follow the suit alongwith cropping intensity; especially when planning for a regionally balanced agricultural development.

The Summing Up :

In the preceding sections we analysed the performance of agriculture sector across the states in India. Major observations in brief are as follows :

- (i) the Agriculture sector, though with a declining trend, continues to dominate the economic scene of most of the state economies as well as that of the country as a whole;
- (ii) seven states viz. Uttar Pradesh, Maharashtra, Andhra Pradesh, Tamil Nadu, West Bengal and Madhya Pradesh continue to dominate the country with their cumulative share of approximately 60.54 per cent of the total gross cropped area and 60 per cent of the net output of the country as a whole even in 1977-78. However, recently states like Punjab and Haryana have also shown a bright upward trend;
- (iii) most of the states have improved their levels of productivity over time, though most of the important states (seven dominant states as mentioned earlier) carry a low profile in terms of productivity, compared to the other states like Punjab, Haryana, Assam, Jammu & Kashmir and Kerala.

- (iv) while decomposing growth it was observed that, by and large, contribution of yield to the growth of output was the highest followed by cropping pattern and area. The interaction effect of these variables in most of the cases was quite low;
- (v) major factors effecting yield per hectare or productivity appear to be extension of irrigation, use of fertilizer and level of mechanisation. However, on the strength of the association it is difficult to say any thing conclusively; and
- (vi) interestingly enough, the association between agriculture and industry was observed to be insignificant. Positive in the initial stages, though, it turned out to be negative in the latter years. Thus it appears that these two sectors have not grown correspondingly across the states. Therefore, we argue that a sectorally balanced strategy has to be evolved in the planning process which would take care of the anomaly and thus help in attaining highest possible rate of overall economic growth.

Table 5.1

Relative Importance of Agriculture Sector in the
State Economies(Rupee values in constant 1970-71
prices)

Sr. No.	States	% Share in Primary sector			% Share in State Domestic Product		
		1960-61	1970-71	1977-78	1960-61	1970-71	1977-78
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Andhra Pradesh	95.91	96.03	94.23	56.42	54.90	45.39
2	Assam	92.93	90.22	85.55	52.85	57.57	50.22
3	Bihar	89.06	89.77	86.66	51.66	56.34	50.33
4	Gujarat	97.26	96.51	94.19	40.67	47.20	36.91
5	Haryana	99.17	99.47	98.39	62.42	64.42	56.65
6	Jammu & Kashmir	86.57	90.23	87.95	58.59	51.10	48.52
7	Karnataka	93.09	94.74	94.94	57.02	56.44	48.81
8	Kerala	95.43	93.92	94.30	53.42	46.43	41.63
9	Madhya Pradesh	90.31	89.98	89.77	57.84	55.85	52.26
10	Maharashtra	95.92	94.32	94.20	40.13	26.99	28.44
11	Orissa	92.13	93.96	92.61	58.23	63.23	58.44
12	Punjab	99.56	99.53	99.55	3.77	58.09	50.23
13	Rajasthan	97.04	93.49	96.06	55.32	63.57	58.03
14	Tamil Nadu	97.63	95.70	95.51	50.76	38.15	32.42
15	Uttar Pradesh	98.12	96.92	97.17	59.04	58.40	51.54
16	West Bengal	90.90	91.87	90.08	38.67	41.14	38.58
	All India	94.37	94.49	92.95	47.98	47.73	40.10

Table 5.1 (contd.)

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(Rs values in constant 1970-71 prices)

Sr. No.	States	% of Net shown area to total reported area		Value added generated in Agri. per capita of rural Population (Rs)*			
		1960-61	1977-78	1960-61	1970-71	1977-78	1978
		(9)	(10)	(11)	(12)	(13)	(14)
1	Andhra Pradesh	41.99	41.92	40.71	365	394	397
2	Assam	30.07	28.96	34.00	310	335	338
3	Bihar	48.15	48.32	48.81	236	247	242
4	Gujarat	53.39	53.79	51.34	385	458	499
5	Haryana	80.60	80.87	82.28	483	677	739
6	Jammu & Kashmir	15.51	15.28	15.34	362	372	377
7	Karnataka	55.35	54.15	54.20	442	532	517
8	Kerala	52.04	56.30	56.33	316	345	387
9	Madhya Pradesh	37.35	41.51	42.07	330	354	292
10	Maharashtra	58.54	57.64	59.33	443	313	410
11	Orissa	37.61	39.32	39.49	260	347	323
12	Punjab	80.54	80.58	82.61	500	815	975
13	Rajasthan	40.84	42.55	44.18	361	480	435
14	Tamil Nadu	46.85	47.64	46.05	442	399	525
15	Uttar Pradesh	53.55	58.12	57.63	332	337	349
16	West Bengal	61.13	62.60	62.84	386	429	426
	All India	45.04	47.73	46.73	367	394	376

* Per capita values have been worked out on the basis of population as per Census of Population and Housing, 1961 for 1960-61, 1971 for 1970-71, and proportions of rural to total population in 1981 population census are multiplied to 1978 'Mid Year Population Projections' for calculating rural population for the year 1977-78. The all India wise rural population thus arrived is used for calculating per capita value added generated in agriculture sector for rural population-by states.

- Source : (1) Government of India, Estimates of State Domestic Product - 1960-61 to 1982-83, (CSO), June 1984;
 (2) National Accounts Statistics, (Various issues), (CSO).
 (3) Office of the Registrar General India, Report of the Expert Committee on Population Projections (Chairman : P. Padmanabhan), New Delhi, October, 1978.
 (4) Government of India, Indian Agricultural Statistics : 1964-65, Vol. 1, (Summary Tables), Directorate of Economics & Statistics, Ministry of Food and Agriculture, New Delhi.
 (5) Fertilizer Association of India, Fertilizer Statistics, (various issues).

Table 5.2

Levels and Growth of Average Area, Output and Productivity

Sr. No.	States	Gross Cropped Area		Net Output		Output in '00,000 Rupees Area in '000 hectares (Rupee value in constant 1970-71 prices)				Yield Rupees per hectare	
		1950-51	1970-71	1977-78	1960-61	1970-71	1977-78	1960-61	1970-71	1977-78	1977-78
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Andhra Pradesh	12842 (8.19)	13043 (7.93)	12958 (7.57)	119426 (9.02)	134268 (8.22)	148732 (8.08)	929	1029	1147	
2	Assam	2742 (1.75)	2881 (1.71)	3177 (1.85)	34809 (2.63)	43697 (2.67)	55123 (2.99)	1266	1515	1735	
3	Bihar	11082 (7.07)	10924 (6.64)	11287 (6.60)	100352 (7.58)	123960 (7.59)	138466 (7.52)	905	134	1226	
4	Gujarat	11027 (7.03)	10339 (6.28)	10198 (5.96)	63749 (4.81)	98301 (5.32)	107913 (5.86)	578	950	1058	25
5	Haryana	1683 (2.96)	4982 (3.03)	5451 (3.18)	29889 (2.25)	55839 (3.42)	65819 (3.57)	638	1121	1207	
6	Jammu & Kashmir	843 (0.53)	867 (0.53)	923 (0.54)	11017 (0.83)	13069 (0.80)	15482 (0.84)	1306	1507	1577	
7	Karnataka	10761 (6.85)	10829 (6.62)	11159 (6.52)	81753 (6.17)	11071 (6.78)	122590 (6.66)	759	1017	1098	
8	Kerala	2447 (1.56)	2936 (1.78)	2981 (1.74)	46307 (3.49)	60481 (3.70)	59807 (3.25)	1892	2059	2006	
9	Madhya Pradesh	18406 (11.74)	20584 (12.52)	21356 (12.49)	93158 (7.04)	111832 (6.84)	113140 (6.15)	506	543	529	
10	Maharashtra	18963 (12.09)	13762 (11.41)	19664 (11.49)	120491 (9.10)	117820 (7.21)	153274 (8.33)	635	627	779	
11	Orissa	6947 (4.43)	6816 (4.14)	7733 (4.52)	42512 (3.21)	61417 (3.76)	71881 (3.90)	612	901	929	

...

Table 5.2 (contd...)

Sr. No.	States	Gross Cropped Area			Net Output			Yield Rupees per hectare		
		1960-61	1970-71	1977-78	1960-61	1970-71	1977-78	1960-61	1970-71	1977-78
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
12	Punjab	5323 (3.39)	5634 (3.42)	6255 (3.65)	42340 (3.19)	85420 (5.23)	108232 (5.88)	795	1516	1730
13	Rajasthan	14883 (9.49)	15923 (9.68)	17164 (10.03)	65709 (4.96)	84515 (5.17)	103286 (5.61)	441	530	601
14	Tamil Nadu	7289 (4.65)	7396 (4.49)	7235 (4.23)	107901 (8.15)	90708 (5.5)	103350 (5.62)	1430	1226	1428
15	Uttar Pradesh	21964 (14.01)	23067 (14.03)	23098 (13.51)	215344 (16.27)	238885 (14.63)	282209 (15.34)	980	1035	1221
16	West Bengal	6354 (4.05)	7183 (4.37)	7958 (4.65)	102352 (7.73)	132173 (8.09)	161496 (8.78)	1610	1840	2029
	All India	156736 (100.00)	164403 (100.00)	170995 (100.00)	1323196 (100.00)	1632621 (100.00)	1838933 (100.00)	844	993	1075

Table 5.2 (contd...)

Output in '00,000 Rupees Area in '000
hectares
(Rupee value in constant 1970-71 prices)

Sr. No.	States	Annual compound rates of growth (per cent)									
		Gross Cropped Area		Net Output		Yield per Hectare					
		1960-61 to	1970-71 to	1960-61 to	1970-71 to	1960-61 to	1970-71 to				
		(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	
1	Andhra Pradesh	0.1592	-0.0988	0.0529	1.1783	1.4722	1.2992	1.0275	1.5629	1.2477	
2	Assam	0.2482	1.7277	0.8548	2.3001	3.3740	2.7409	1.8184	1.9463	1.8710	
3	Bihar	-0.1435	0.4681	0.1078	2.1352	1.5935	1.9118	0.2813	1.1206	1.8017	
4	Gujarat	-0.6421	-0.1959	-0.4586	4.4259	1.5416	3.1447	0.0944	1.5501	3.6202	87
5	Haryana	0.6203	1.2935	0.8973	6.4537	2.2638	4.7531	0.7982	1.0615	3.8215	
6	Jammu & Kashmir	0.2811	0.8931	0.5347	1.7227	2.4500	2.0215	1.4418	1.5386	1.4816	
7	Karnataka	0.1183	0.3505	0.2138	3.0849	1.4577	2.4118	2.9693	1.1007	2.1957	
8	Kerala	1.8585	0.2175	1.1679	2.7063	-0.1559	1.5162	0.8494	-0.3718	0.3447	
9	Madhya Pradesh	1.1246	0.5274	0.8782	1.8438	0.1662	1.1496	0.7082	-0.3724	0.2618	
10	Maharashtra	-0.1065	0.6730	0.2137	-0.2239	3.8296	1.4256	-0.1267	3.1495	1.2095	
11	Orissa	-0.1902	1.8195	0.6325	3.7475	2.2729	3.1377	3.9435	0.4381	2.4855	

Table 5.2 (contd...)

Sr. No.	States	Annual compound rates of growth (per cent)									
		Gross Cropped Area		Net Output		Yield per Hectare					
		1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1970-71	1970-71 to 1977-78		
		(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
12	Punjab	0.5694	1.5049	0.9536	7.2706	3.4392	5.6760	6.6677	1.9042	4.6799	
13	Rajasthan	0.6777	1.0779	0.8423	2.6477	2.9067	2.7543	1.8553	1.8122	1.8375	
14	Tamil Nadu	0.1458	-0.3139	-0.0437	-1.7207	1.8814	-0.2531	-1.8652	2.2027	-0.2101	
15	Uttar Pradesh	0.4911	0.0192	0.2965	1.0428	2.4095	1.6033	0.5475	2.3890	1.3017	28
16	West Bengal	1.2338	1.4744	1.3328	2.5899	2.9037	2.7190	1.3442	1.4066	1.3699	
	All India	0.4787	0.5632	0.5135	2.1236	1.7171	1.1949	1.6390	1.1399	1.4332	

Note : 1 Yield = Net output/Gross cropped Area

Source : As in Table 5.1.

Table 5.3

Growth and Production of Major Crops in India

Group/ Commodity	Units Million Tonnes	Years				(Triennium centering the years mentioned)			
		1960-61 to 1970-71		1970-71 to 1977-73		% Growth rate (Compound per annum)		1960-61 to 1970-71	
		1960-61 to 1970-71		1970-71 to 1977-73		1960-61 to 1970-71		1970-71 to 1977-73	
Food Grains	Million Tonnes	80.78	104.36	122.98		2.55	2.37	2.50	
(a) Cereals	Million Tonnes	68.37	92.82	111.15		3.10	2.60	2.89	
Rice	"	34.26	41.91	49.47		2.03	2.39	2.18	
Wheat	"	10.87	23.44	31.91		7.98	4.50	6.54	
Jowar	"	9.81	8.50	9.16		-1.42	1.07	-0.42	
Maize	"	4.03	6.09	7.06		4.21	2.13	3.35	
Bajra	"	3.18	6.22	7.18		6.93	2.07	4.90	
Others	"	6.22	6.66	6.37		0.68	-0.63	0.14	
(b) Pulses	"	12.41	11.54	11.83		-0.72	0.35	-0.28	
Non-Foodgrains									
(a) Oilseeds (5 Major)*	"	6.81	8.58	8.92		2.33	00.11	1.60	
Groundnut	"	4.64	5.30	6.49		2.66	1.61	2.23	
Rapeseed & Mustard	"	1.32	1.65	1.86		2.25	1.72	2.03	
(b) Sugarcane (Gur)	"	11.48	12.79	15.93		1.08	3.18	1.94	
(c) Cotton (Lint)	"	5.43	5.76	5.62	Bales**	0.59	-0.35	0.20	
(d) Jute	"	5.01	5.43	1.31	Bales***	0.80	-18.38	-7.58	
(e) Mesta	"	1.08	1.18	1.69	"	0.88	5.26	2.67	

Notes : * Includes groundnuts, rapeseed and mustard, sesamum, tinseed and castorseed.

** Bale = 170 kgs.

*** Bale = 130 kgs.

Source : Government of India, Economic Survey, (Various Issues).

Table - 5.4

Annual Compound Growth Rate of Production of Foodgrains -
by States - (per cent)

(Triennium Centering the years mentioned)

Sr. No.	States	Rice			Wheat			Total cereals			Total pulses		
		1960-61	1970-71	1977-78	1960-61	1970-71	1977-78	1960-61	1970-71	1977-78	1960-61	1970-71	1977-78
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	Andhra Pradesh	1.51	3.36	1.67	10.14	0.51	3.13	0.56	2.28				
2	Assam	1.54	1.35	24.36	16.57	1.63	1.64	1.84	2.11				
3	Bihar	0.19	2.25	12.57	4.91	1.55	2.91	-0.49	-4.68				
4	Gujarat	2.84	1.57	8.70	4.63	6.87	0.46	2.41	2.76				
5	Haryana	4.54	11.38	6.87	3.93	4.86	3.25	6.39	1.31				
6	Jammu & Kashmir	5.75	1.59	6.11	-0.66	5.44	0.78	12.76	-0.86				
7	Karnataka	4.39	-0.82	6.29	7.23	4.37	0.89	2.30	2.65				
8	Kerala	2.02	-0.11	-	-	1.98	-0.16	-1.75	2.45				
9	Madhya Pradesh	0.49	0.27	1.91	1.62	1.25	0.71	0.78	0.25				
10	Maharashtra	1.00	4.91	1.41	9.85	-0.98	7.52	-1.06	3.71				
11	Orissa	1.17	-0.63	17.23	21.83	1.65	0.04	5.40	4.61				
12	Punjab	4.54	16.35	6.87	3.41	4.95	22.94	-14.09	-0.77				
13	Rajasthan	3.58	7.17	4.13	5.55	3.29	0.60	1.09	4.40				
14	Tamil Nadu	3.10	0.23	-	-	2.14	0.73	0.68	7.43				
15	Uttar Pradesh	2.06	4.33	6.09	4.34	3.51	2.82	-1.04	-2.77				
16	West Bengal	2.59	0.72	3.48	3.08	3.64	0.99	3.09	-5.28				
	All India	2.03	2.39	7.98	4.50	3.10	2.60	-0.72	0.35				

Table 5.4 (contd...)

Sr. No.	Total foodgrains		Sugarcane		Oil seeds (5 major)		Cotton		Jute	
	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1870-71	1970-71 to 1977-78
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	0.52	3.09	5.33	0.29	7.07	-3.05	-0.77	-10.39	-	-
2	1.64	1.64	3.13	2.02	3.19	3.83	-10.76	2.12	0.38	(-) 23.07
3	1.27	2.15	-1.29	-3.49	2.30	0.57	10.50	3.16	-4.22	-17.71
4	6.40	0.56	6.71	6.69	2.96	3.54	4.06	-12.36	-	-
5	1.98	2.80	1.69	3.56	1.29	2.76	6.39	-0.18	-	-
6	5.59	0.73	3.54	2.59	1.75	5.76	-6.11	0.11	-	-
7	4.21	1.02	5.53	3.37	3.03	-1.57	0.38	+14.87	-	-
8	7.94	-0.14	1.22	-1.13	2.75	-1.42	-2.25	+21.59	-	-
9	1.16	0.62	2.94	2.04	0.76	-0.73	-0.18	-20.17	-	-
10	-1.06	7.06	3.46	6.49	-2.51	0.61	-9.14	-2.06	-	-
11	1.92	0.51	9.16	4.83	11.49	6.41	-	-	2.42	-17.10
12	1.90	4.39	-5.02	2.45	1.29	-2.09	0.32	-16.19	-	-
13	2.78	1.43	2.52	10.76	6.03	2.15	4.39	-13.42	-	-
14	2.11	0.87	7.63	5.48	-0.86	1.41	-0.51	-17.36	-	-
15	2.55	2.01	2.75	2.70	2.75	-1.06	-2.58	+31.02	-1.49	(-) 21.05
16	3.61	0.66	0.91	-0.11	2.30	6.14	-	-	2.18	-17.79
All India	2.55	2.37	1.03	3.13	2.33	0.11	0.59	-0.35	0.80	-13.38

Source : Based on Go. of India, Estimated of Area and Production of Principal Crops in India, (Various Issues), Ministry of Agriculture and Industries, New Delhi.

Table 5.5

Relative contribution of Different Components to crop
Output Growth in the Various States for Different periods

(per cent)

Sr. No.	State Components	Andhra Pradesh	Assam	Bihar	Gujarat
<u>1960-61 to 1977-78</u>					
1.	Area	0.52	187.22	-11.27	0.62
2.	Yield	83.19	95.92	-154.99	54.15
3.	Cropping pattern	6.45	-158.15	280.61	38.80
4.	Area and yield	0.75	14.93	-2.87	0.38
5.	Area and cropping pattern	0.06	-24.62	5.19	0.27
6.	Yield and cropping pattern	8.95	-13.24	-16.37	5.74
7.	Area, yield and cropping pattern	0.08	-2.06	-0.30	0.04
	Total	100.00	100.00	100.00	100.00
	% compound Rate of Growth (Annual)	1.2992	2.7409	1.9118	3.1447
<u>1960-61 to 1970-71</u>					
1.	Area	2.00	6.68	-7.45	2.02
2.	Yield	106.07	34.89	138.90	67.54
3.	Cropping pattern	-5.09	45.35	-43.50	17.27
4.	Area & Yield	1.70	0.88	-1.98	1.41
5.	Area & Cro.Patt.	-0.03	1.14	0.62	0.36
6.	Yield & Cro.Patt.	-4.53	10.79	13.60	11.17
7.	Area, yield & crop. pattern	-0.07	0.27	-0.19	0.23
8.	Total	100.00	100.00	100.00	100.00
	Annual compound rate of growth(A)	1.1783	2.3001	2.1352	4.4259
<u>1970-71 to 1977-78.</u>					
1.	Area	-1.34	-59.91	-11.14	-27.60
2.	Yield	+60.77	29.90	-4.30	-192.52
3.	Cropping pattern	31.52	131.45	119.25	399.92
4.	Area & Yield	-0.42	3.51	-0.14	2.63
5.	Area & Cro.Patt.	-0.22	16.71	3.96	-5.45
6.	Yields & Cro.Patt.	9.76	-19.21	-7.38	-78.03
7.	Area, yield & crop. pattern	-0.07	-2.45	-0.25	1.05
	Total	100.00	100.00	100.00	100.00
	Annual compound Rate of Growth (%)	1.4722	3.3740	1.5935	1.3416

Table 5.5 (contd...)

Sr. No.	Haryana	Jammu & Kashmir	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Orissa
<u>1960-61 to 1977-78</u>							
1	4.66	7.09	15.69	6.90	24.51	2.10	4.02
2	47.81	70.33	2.36	42.43	121.15	55.34	25.58
3	12.03	7.56	263.33	14.95	-86.90	17.65	27.61
4	7.84	6.67	0.09	9.26	29.03	2.05	2.89
5	1.97	0.72	9.74	3.26	-13.93	0.65	3.12
6	22.06	6.97	-134.38	19.06	-37.80	21.42	33.04
7	3.63	0.66	-6.83	4.16	-6.06	0.79	3.74
	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	4.7531	2.0215	2.4118	1.5162	1.1496	1.4256	3.1377
<u>1960-61 to 1970-71</u>							
1	3.12	3.12	54.59	18.65	25.37	-4.38	-1.06
2	73.54	90.86	2.77	63.98	95.15	9.60	34.62
3	6.74	1.20	1.39	2.62	-38.12	90.54	35.93
4	4.70	2.59	25.27	12.79	11.26	-0.10	-0.65
5	0.43	0.03	12.19	0.52	-4.51	-0.96	-0.68
6	10.78	2.14	0.38	1.20	9.70	5.36	32.45
7	0.69	0.06	3.46	0.24	1.15	-0.06	-0.61
8	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	6.4587	1.7227	3.0849	2.7063	1.8438	-0.2239	3.7475
<u>1970-71 to 1977-78</u>							
1	19.44	29.05	96.49	1.52	29.94	3.94	36.16
2	14.25	32.28	37.52	39.69	138.15	78.88	19.12
3	55.57	37.21	-31.26	37.64	-62.50	6.23	33.39
4	1.34	2.09	-33.68	0.61	20.14	3.79	2.57
5	5.23	2.40	28.06	0.58	-9.22	0.30	4.49
6	3.81	-2.85	28.03	19.66	-14.05	6.55	3.76
7	0.36	-0.18	-25.16	0.30	-2.46	0.31	0.51
	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	2.3638	2.4500	1.4577	-0.1599	0.1662	3.8296	2.2729

Table 5.5 (contd...)

Sr. No.	Punjab	Rajas- than	Tamil Nadu	Uttar Pradesh	West Bengal	All India
<u>1960-61 to 1977-78</u>						
1	5.70	20.82	-0.65	6.44	47.60	12.62
2	63.29	57.11	91.26	46.83	67.40	52.80
3	8.65	6.38	19.49	31.99	-25.84	18.57
4	11.08	8.37	-0.68	2.42	17.02	4.80
5	1.52	1.00	-0.14	1.65	-6.52	1.69
6	8.31	4.93	-9.35	10.12	0.27	8.73
7	1.45	0.79	0.07	0.52	0.07	0.79
	100.00	100.00	100.00	100.00	100.00	100.00
	5.6760	2.7543	-0.2531	1.6033	2.7190	1.1949
<u>1960-61 to 1970-71</u>						
1	3.23	13.94	2.10	11.30	27.96	12.45
2	72.62	70.05	72.12	63.62	63.62	61.60
3	10.61	7.14	25.12	16.39	-6.92	15.96
4	4.24	5.15	1.06	3.18	8.30	3.02
5	0.62	0.52	0.37	0.82	-0.90	0.78
6	8.20	2.98	-0.67	4.47	7.02	5.90
7	0.48	0.22	-0.01	0.22	0.92	0.29
	100.00	100.00	100.00	100.00	100.00	100.00
	7.2706	2.6477	-1.7207	1.0428	2.5899	2.1236
<u>1970-71 to 1977-78</u>						
1	24.58	52.40	-8.25	0.65	248.95	17.03
2	54.50	28.73	81.40	26.28	94.97	46.45
3	8.90	3.80	20.36	71.05	-208.07	30.75
4	6.00	2.24	-1.77	0.04	10.25	1.86
5	0.98	0.30	-0.44	0.11	-22.45	1.23
6	4.63	11.63	8.89	1.85	-21.35	2.58
7	0.51	0.90	-0.19	0.02	-2.30	0.10
	100.00	100.00	100.00	100.00	100.00	100.00
	3.4392	2.9067	1.8814	2.4095	2.9037	1.7171

Table 5.6

Some Studies in Agriculture Economics Identifying Major Sources
of Output/Yield : A Tabular Survey

Sr. No.	Name of the Author(s)	Coverage	
		Area/Region(s)	
1	M.D. Gopal Krishna & T. S. Rao	Regions of Andhra Pradesh	1964
2	Madan Gopal and N.M. Banerjee	West Bengal and Orissa	1964
3	F.S. Sharma	15 States (merged into 13 regions)	1964
4	J.P. Dhondyal	Aligarh and Gorakhpur (U.P)	1964
5	C.H. Hanumantha Rao	All Districts of Punjab	1965
6	A. K. P. P. P. P.	Bihar, Kerala, Madhya Pradesh, Tamil Nadu, Rajasthan, Uttar Pradesh, West Bengal	1966
7	T.P. Abraham and S.K. Raheja	13 Major States	1967
8	S.A. Sletty	All the states and All India	1969
9	A. Vaidyanathan	All states	1977
10	G.S. Bhalla and Y.K. Singh	282 Districts across all the states in India (Inter district/region variations)	1979
11	A.K. Singh	5 Zones of U.P.	1981
12	K.R.G. Nair	15 Major states	1982
13	Alagh, Y.K., et al.	All the Districts of Gujarat	1985
14	Malini Govind	All the 17 Major states (298 districts)	1986
15	R.T. Tewari	All the Major States	(undated)

Table 5.6 (contd...)

Sr. No.	Name of the Author(s)	Coverage		Period
		Year	Crops	
1	M.D. Gopal Krishna & M.R. Rao	1964	Rice, Cotton, Jowar, Groundnut	1959-60
2	Madan Gopal and N.H. Banerjee	1964	Jute and Rice	1951-52 to 1958-59
3	P. J. Sharma	1964	Rice and wheat	1955-58
4	C.P. Bhondyal	1964	Rice and wheat	1961-62
5	C.H. Panamantha Rao	1965	All crops	1952-62
6	Ashok Parikh	1966	All crops	1952-53 to 1961-62
7	T.P. Abraham and S.K. Mahajan	1967	Rice and wheat	1951-52 to 1964-65
8	S.A. Shetty	1969	Crop production	1921-1955 (for states) & 1946-1963 (for All India)
9	A. Vidyanathan	1977	All Food Grains	1950-51 to 1973-74
10	G.S. Bhalla and V.L. Alagh	1979	Rice, Wheat, Jowar, Bajri, Maize, Ragi, Barley, Pulse (Gram, Tur), 5 Major oil seeds, Fibre crops, Sugar Cane and Tobacco	1962-65 to 1970-73
11	P.T. Singh	1981	10 Major crops	1950-51 to 1975-76
12	K.R.G. Nair	1982	Rice, Wheat, Gram, Groundnut, Cotton.	1967-72
13	Alagh, Y.K., et.al	1985	10 Major crops	1960-61 to 1979-80
14	Nalini Govind	1986	Rice and wheat	1960-1972
15	A.T. Tewari	(un-dated)	Composite Index of Agricultural Development	1971-81

Table 5.6 (contd...)

Sr. No.	Name of the Author(s)	Year	The Identified Factor
1	M.D. Gopal Krishna and T.R. Rao	1964	Development Expenditure, Cropping Pattern and Irrigation
2	Madan Gopal and M.N. Vinerjee	1964	Irrigation
3	P.S. Sharma	1964	Productivity and Resources Potential
4	S.P. Bhondyal	1964	Institutional credit and Better Farm Practices
5	C.H. Easwara Rao	1965	Irrigation
6	Ashok Parikh	1966	Extension of Area, Cropping Pattern, Fertilizer, Irrigation and Technical Progress
7	T.P. Abraham and J.K. Kabeja	1967	Fertilizer and Irrigation
8	S.L. Shetty	1969	Irrigation
9	A. Veidhanathan	1977	Irrigation Potential, Fertilizer, Financial Resources and Availability of Irrigation
10	G.S. Malla and Y.K. Arga	1979	Irrigation, Technology
11	A.K. Singh	1981	Fertilizer use, Irrigation and Bio Technology
12	K.R. Nair	1982	Irrigation
13	Singh, I.K., et.al	1985	Fertilizer, Institutional Credit, H.Y.V. etc.
14	Nelini Govind	1986	Irrigation and Fertilizer.
15	R.T. Tiwari	(undated)	Irrigation and Fertilizer

Table 5.6 (contd...)

Reference :

- 1 Gopal Krishna M.D. and T. Ramakrishna Rao, "The Regional Variations in Agricultural Productivity in Andhra Pradesh", Indian Journal of Agricultural Economics (IJAE), Vol.19, No.1, (Conference Number),
- 2 Gopal Madan and N.N. Bandopadhyaya, "A Comparative Study of Some Aspects of Agricultural Development in Two States of Eastern Zone - West Bengal and Orissa", IJAE, Vol.19, No.1, (Conference Number), 1964.
- 3 Sharma, P.S., "Regional Approach to Agricultural Development in India - Some Preliminary Results", IJAE, Vol. 19, No.1, (Conference Number), 1964.
- 4 Dhondyal, S.P., "Regional Variations in Agricultural Development and Productivity in U.P.", IJAE, Vol. 19, No.1 (Conference Number), 1964.
- 5 Hanumantha Rao, C.H., "Growth of Agriculture in Punjab during the Decade 1952-62", IJAE, Vol. 20, No.3, 1965.
- 6 Parikh, Ashok, "Statewise Growth Rates in Agriculture Output - An Econometric Analysis", Arthavijjanana, Vol. 8, No.1, 1966 -
- 7 Abraham, T.A. and S.K. Raheja, "An Analysis of Growth of Production of Rice and Wheat Crops in India", IJAE, Vol.22, No.3, 1967.
- 8 Shetty, S.A., Long Term Trends in Farm Production in India, Ph.D. Thesis, Department of Economics, University of Bombay, 1969.
- 9 A.Vaidyanathan, "Performance and Prospects of Crop Production in India", Economic & Political Weekly, Vol. 12, Nos.33 and 34 (Special Number), Aug. 1977.
- 10 Bhalla, G.S. and Y.K. Alagh, Performance of Indian Agriculture : A Districtwise Analysis, New Delhi, Sterling Pub. Pvt.Ltd., 1979.
- 11 Singh, A.K., Patterns of Regional Development : A Comparative Study, New Delhi, Sterling Pub.Pvt. Ltd., 1981.
- 12 Nair, K.R.G., Regional Experience in a Developing Economy, New Delhi, Wiley Eastern Ltd., 1982.
- 13 Alagh, Y.K. Usha S. Sharma and Rakesh Basant, Agricultural Growth and Potential in Gujarat, Report of A Study Sponsored by the Planning Commission at Sardar Patel Institute of Economic and Social Research, Ahmedabad, 1985.
- 14 Govind Nalini, Regional Perspectives in Agricultural Development, New Delhi, Concept Pub.House, 1986.
- 15 Tewari, R.T., "Regional Variations in levels of Agricultural Development and Productivity in India; A Temporal Analysis", Working Paper No.71, Giri Institute of Development Studies, Lucknow (Undated).

Table 5.7

Correlation Coefficients Between Levels and Between
Growth Rates of the Various Factors

Rank Correlations	Years		
	1960-61	1970-71	1977-78
1. Between the state-wise levels of productivity (yield) and levels of:			
(a) Cropping Intensity	+0.3794	+0.7323	+0.6411
(b) Extension of Irrigation	+0.3705	+0.5029	+0.4823
(c) Use of Fertilizer	+0.5617	+0.3823	+0.2470
(d) Index of Mechanisation	+0.1029	+0.0323	-0.0970
(e) Use of Electricity	+0.3852	+0.0500	-0.0735
2. Between the statewise levels of Net Output and levels of:			
(a) Cropping Intensity	-0.3058	-0.0911	-0.1911
(b) Extension of Irrigation	-0.1764	-0.1705	-0.0235
(c) Use of Fertilizer	+0.2970	+0.2249	+0.3382
(d) Index of Mechanisation	+0.1323	+0.0705	+0.2529
(e) Use of Electricity	+0.1294	+0.1176	+0.1617
3. Between the statewise levels of Net output and yield	+0.0500	-0.2470	-0.1764
4. Between statewise yield and income generated in total Manufacturing Sector	+0.1088	-0.1441	-0.0794

contd..

Table 5.7 contd.

Karl Pearson's Coefficient of Correlation	Periods		
	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1977-78
1. Between the Growth Rates of Productivity (yield per Hectare) and growth rates of:			
(a) Cropping Intensity	+0.3975	-0.1986	+0.3722
(b) Extension of Irrigation	+0.1349	+0.4461	+0.0189
(c) Use of Fertiliser (kg./ Hectare)	+0.3921	+0.0100	+0.4429
(d) Index of Mechanisation	+0.5643	+0.2076	+0.4437
(e) Use of Electricity (kwh/hectare)	+0.2492	-0.3237	+0.2351
2. Between the Growth Rates of Net output and growth Rates of:			
(a) Cropping Intensity	+0.1819	-0.0224	+0.5885
(b) Extension of Irrigation	+0.2721	+0.1791	-0.0177
(c) Use of Fertilizer	+0.5340	-0.1033	-0.0814
(d) Level of Mechanisation	+0.3338	-0.1077	+0.3782
(e) Use of Electricity	+0.2417	+0.3890	+0.2560
3. Between the Growth Rates of Net Output and Productivity			
	+0.8227	+0.6421	+0.9340

Source: The coefficients have been worked out on the basis of Table 5.2 and Appendix 5.I and 5.II, to the chapter.

Appendix 5.I

State-wise Relative Advancement of the Agriculture Sector - Some Indicators

Sr. No.	States	Cropping Intensity ¹				Extension of Irrigation ²		
		1960-61	1970-71	1977-78		1960-61	1970-71	1977-78
		2	3	4		5	6	7
1.	Andhra Pradesh	1.12	1.14	1.16		29.48	32.36	33.78
2.	Assam	1.18	1.24	1.19		22.26	20.29	18.35
3.	Bihar	1.33	1.30	1.34		19.89	25.01	33.48
4.	Gujarat	1.06	1.07	1.05		7.72	12.64	17.79
5.	Haryana	1.31	1.40	1.50		31.15	44.76	50.92
6.	Jammu & Kashmir	1.21	1.26	1.33		34.88	38.06	43.01
7.	Karnataka	1.04	1.05	1.08		9.23	12.44	15.22
8.	Kerala	1.23	1.35	1.36		3.10	20.47	11.87
9.	Madhya Pradesh	1.13	1.12	1.14		5.62	7.40	10.47
10.	Maharashtra	1.05	1.06	1.07		6.74	8.82	11.73
11.	Orissa	1.19	1.13	1.26		16.42	23.82	18.74
12.	Punjab	1.32	1.39	1.51		52.15	75.31	83.05
13.	Rajasthan	1.07	1.09	1.15		12.53	15.40	18.45
14.	Tamil Nadu	1.19	1.20	1.21		45.20	32.58	51.44
15.	Uttar Pradesh	1.27	1.33	1.35		26.62	36.17	43.33
16.	West Bengal	1.17	1.31	1.29		21.53	21.45	19.36
	All India	1.15	1.17	1.20		18.79	23.45	26.85

contd..

Appendix 5.I contd.

Sr. No.	States	Fertilizer Use (Kg./Hectare) ³				Level of Agriculture Mechanisation ⁴			
		1960-61	1970-71	1977-78	1960-61	1970-71	1977-78		
		8	9	10	11	12	13		
1.	Andhra Pradesh	5.77	21.44	44.90	95	86	160		
2.	Assam	0.50	2.70	2.71	32	28	26		
3.	Bihar	1.98	9.66	15.38	36	53	86		
4.	Gujarat	1.99	16.25	29.56	118	138	234		
5.	Haryana	3.35	16.50	36.81	190	269	357		
6.	Jammu & Kashmir	1.34	6.12	12.32	29	26	37		
7.	Karnataka	2.11	14.23	28.13	49	55	83		
8.	Kerala	7.30	21.68	27.13	96	71	81		
9.	Madhya Pradesh	0.43	5.40	8.62	30	27	49		
10.	Maharashtra	2.25	11.95	19.21	75	58	94		
11.	Orissa	0.92	5.54	9.36	18	30	44		
12.	Punjab	3.37	52.67	72.18	194	286	447		
13.	Rajasthan	0.36	4.69	6.92	38	41	78		
14.	Tamil Nadu	8.68	46.40	59.70	297	258	358		
15.	Uttar Pradesh	2.16	20.51	38.41	71	102	206		
16.	West Bengal	2.69	13.77	23.41	31	23	28		
	All India	2.60	15.28	26.10	100.00	100.00	100.00		

contd..

Appendix 5.I contd.

Sr. No.	States	Electricity use per '000 hectare ⁵		
		1960-61	1970-71	1977-78
		14	15	16
1.	Andhra Pradesh	4.82	31.95	63.43
2.	Assam	0.18	0.71	0.94
3.	Bihar	1.98	6.40	27.11
4.	Gujarat	4.15	42.17	100.61
5.	Haryana & Kashmir	4.37	62.22	130.80
6.	Jammu & Kashmir	3.55	11.53	30.33
7.	Karnataka	2.60	16.62	33.90
8.	Kerala	9.39	16.01	29.29
9.	Madhya Pradesh	0.22	3.40	12.14
10.	Maharashtra	0.58	18.81	53.79
11.	Orissa	0.14	1.32	3.19
12.	Punjab	5.54	79.28	189.61
13.	Rajasthan	0.27	7.87	30.34
14.	Tamil Nadu	55.01	173.87	251.92
15.	Uttar Pradesh	6.64	31.44	89.70
16.	West Bengal	0.16	3.11	8.63
	All India	5.31	27.38	61.90

- Notes: 1. Cropping intensity = Gross Cropped Area/Net Sown Area.
 2. Extension of Irrigation = Gross Irrigated Area/Gross Cropped Area; and
 is presented in percentage terms.
 3. Fertilizer use is the use of one kilogram of NPK per hectare of gross cropped area.
 4. Level of mechanisation is a composite index of number of oil engines, number of pumping sets used for the purpose of irrigation and number of tractors, each per 1000 hectares of net sown area 1960, 1972 and 1977 are the years respectively taken for 1960-61, 1970-71 and 1977-78.
 5. Electricity use in kilowatt hours (kwh) per 1000 hectares of gross cropped area.

Sources: as in Table 5.1; and Govt. of India, Statistical Abstract of India (various issues)

Appendix 5.II

Annual Compound Growth Rates of the Various Indicators of the Advancement of Agriculture Sector by States

(Per cent)

States	Cropping Intensity		Extension of Irrigation	
	1960-61 to 1970-71 (3)	1970-71 to 1977-78 (4)	1960-61 to 1970-71 (6)	1970-71 to 1977-78 (8)
Sr. No.				
(1)	(2)			
1. Andhra Pradesh	0.0889	0.3750	0.9364	0.8041
2. Assam	0.4972	-0.5862	-0.9223	-1.1298
3. Bihar	-0.2278	0.4338	2.3170	3.1105
4. Gujarat	0.0939	-0.2691	4.9593	4.9775
5. Haryana	0.5001	0.9904	3.6915	2.9330
6. Jammu & Kashmir	0.4057	0.7753	0.8763	1.2401
7. Karnataka	0.1006	0.2673	3.0295	2.9857
8. Kerala	0.9352	0.1054	20.7746	8.2179
9. Madhya Pradesh	-0.0888	0.2531	2.7896	3.7276
10. Maharashtra	0.0948	0.1342	2.7261	3.3130
11. Orissa	-0.6044	1.6968	3.7903	0.7804
12. Punjab	0.5180	1.1899	3.7432	2.7749
13. Rajasthan	0.1853	0.6423	2.0838	2.3022
14. Tamil Nadu	0.0837	0.1186	-3.2209	0.7636
15. Uttar Pradesh	0.4626	0.1070	3.1131	2.9072
16. West Bengal	1.0591	-0.1102	-0.0372	-0.6229
All India	0.1725	0.3623	2.2401	2.1218

contd..

Appendix 5.II contd.

Sr. No.	States	Fertilizer use		Index of Mechanisation in Agriculture			
		1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1970-71	1970-71 to 1977-78	1960-61 to 1977-78	
		(9)	(10)	(11)	(12)	(13)	(14)
1.	Andhra Pradesh	14.0262	11.13	12.82	-0.9903	9.2741	3.1139
2.	Assam	18.3693	0.0528	10.45	-1.3264	-1.0531	-1.2139
3.	Bihar	17.1739	6.6869	12.8158	3.9435	7.1597	5.1255
4.	Gujarat	23.3672	8.9235	17.20	1.5780	7.8356	4.1094
5.	Haryana	16.5544	12.1458	15.1411	3.5380	4.1260	3.7797
6.	Jammu & Kashmir	16.4031	10.5117	13.9401	-0.7120	4.6040	1.4434
7.	Karnataka	21.0297	10.2251	16.4581	4.1618	6.0549	3.1486
8.	Kerala	11.4996	3.2554	8.0281	-2.9716	1.9002	-0.9944
9.	Madhya Pradesh	28.7930	6.9094	19.2862	-1.0480	8.8870	2.9280
10.	Maharashtra	18.1730	7.0166	13.4449	-2.5376	7.1413	1.3371
11.	Orissa	19.6663	7.7799	14.6209	5.2409	5.6237	5.3984
12.	Punjab	31.6416	4.6045	19.7516	3.9576	6.5874	5.0325
13.	Rajasthan	29.2668	5.7142	18.9920	0.7627	9.6229	4.3209
14.	Tamil Nadu	18.2496	3.6660	12.0113	-1.3978	4.7908	1.1048
15.	Uttar Pradesh	25.2423	9.3768	18.4483	3.6893	10.5629	6.4663
16.	West Bengal	17.7384	7.8757	11.5725	2.9408	2.8500	-0.5969
	ALL India	19.3754	7.9485	14.5306			

contd..

Appendix 5.II contd.

Sr. No.	States	Use of Electricity		
		1960-61 to 1970-71 15	1970-71 to 1977-78 16	1960-61 to 1977-78 17
1.	Andhra Pradesh	20.8209	10.2925	16.3692
2.	Assam	14.7092	4.0902	10.2114
3.	Bihar	12.4479	22.9034	16.6409
4.	Gujarat	26.0943	13.2265	20.6275
5.	Haryana	30.4202	11.1979	22.1324
6.	Jammu & Kashmir	12.5019	14.8169	13.4495
7.	Karnataka	20.3831	10.7195	16.3058
8.	Kerala	5.4806	9.0122	6.9207
9.	Madhya Pradesh	31.4939	19.9396	26.6072
10.	Maharashtra	41.6107	16.1950	30.5335
11.	Orissa	25.1539	13.4345	20.1883
12.	Punjab	30.4864	13.2660	23.0760
13.	Rajasthan	40.1074	21.2550	32.0134
14.	Tamil Nadu	12.1962	5.4400	9.3633
15.	Uttar Pradesh	16.8238	16.1567	16.5486
16.	West Bengal	34.5439	15.6968	26.4375
	All India	17.8240	12.3590	15.5422

Source: Based on Appendix 5.I.

Chapter 6

REGIONAL DIMENSIONS OF POVERTY: SOME EVIDENCES

We have analysed performance of the state economies in terms of production or output - in sectoral as well as aggregate terms, in the preceeding chapters. However, "... discussion of economic growth per se has only limited relevance. More important is economic welfare by reducing the incidence and magnitude of poverty".^{1/} Therefore, in this chapter we address ourselves to the question of the distribution of economic growth among the various regions and the people inhabiting therein.

Generally, development is associated with high rates of economic growth in aggregate as well as per capita (income) term. Underlying assumption in this case is that the benefit of growth will percolate down through 'trickle down process'. However, the development experience in India, as in many other countries, has bled such an optimism and the process has, by and large, been counter productive as far as the percolation effect is concerned. Bulk of the masses still lives under the abject poverty.

Poverty is not a recent phenomenon in India. It was recorded almost a century back by Digby, Dada Bhai Naoroji, Morse, R.C. Dutta, G.V. Joshi and A. O. Hume,

^{1/} - Lakdawala, D.T., "Growth, Unemployment and Poverty", The Indian Journal of Labour Economics, Vol. 21, No. 1 & 2, 1978.

among others.^{1/} However, only after independence some serious thought was given to it by the planners and policy makers in India. But the disquietening feature of the poverty syndrome is that the number of persons below poverty line has gone up compared to, let us say, 15 years back, despite planned efforts. For example 252 million people were estimated to be living below poverty line in 1977-78, in the rural areas. This estimate has shot up to 260 million in 1979-80.^{2/} Consequently, poverty continues to be a major issue on the agenda of Indian planning.

There are four basic interrelated issues round which whole of the discussion on poverty revolves, viz., (i) who are the poor; (ii) how many are the poor; (iii) why they are poor and (iv) the mechanism evolved to alleviate poverty and its outcome. The first issue is more a sort of definitional one, while the second is quantitative in nature, which obviously depends on how poverty is defined. The third issue is more ideological, and hence is subject to various explanations. However, all the three have one commonality that they involve lot of value judgement. The last issue puts government policies to the acid test of its

1/ See Ganguli, B.N., Indian Economic Thought: Nineteenth Century Perspective, Tata McGrawhill, 1977. Also see Sastry, S.A.R., "A Survey of Literature on Poverty, Income Distribution and Development", Artha Vinana, Vol.22, No.1, 1980.

2/ Planning Commission, Govt. of India, Report of the Expert Group on Programmes for Alleviation of Poverty, 1982.

resultant achievements. All these issues have attracted wide attention of academicians and planners and have generated lot of heat as well as light. While there are ample studies at all India level, covering various aspects of the poverty; there is a conspicuous derth of such studies at the regional levels.^{1/} Thus, here our purpose is not to enter into any controversy but to look at the problem into regional perspective.

Pioneering studies at the regional/state level estimating poverty were more notably conducted by Bardhan,^{2/}

1/ For detailed discussion see Sastry (1980); and Gupta, S.P.; Padam Singh and K.L. Datta, "Measurement of Poverty: A Development Index," in Regional Dimensions of India's Economic Development, Proceedings of Seminar held at Nainital, India, on April 22-24, 1982 by Planning Commission, Govt. of India and State Planning Institute, Govt. of U.P. This article also provides an exhaustive Bibliography on the subject. Also see Murty, G.V.S.N. and Nireesh Shah, "Poverty Inequality and Levels of Living in Gujarat", in Lakdawale D.T. (ed.), Gujarat Economy: Problems and Prospects; (Monograph Series 10), Sardar Patel Institute of Economic and Social Research, Ahmedabad. For various Government schemes and their critique 'among others'. See: Rath, Neelkanth, "Garibi Hatao": "Can IRDP DO IT", EPW, Vol.20, No.6, Feb. 1985.

Dantwala, M.L., "Garibi Hatao': Strategy Options", EPW, Vol.20, No.11, March 16, 1985, and Indira Hirway, Programmes For Poverty Eradication: A Critique of Target Group Approach, SPIESR, Ahmedabad (Project Report) 1982.

2/ Bardhan, P., "On the Minimum Level of Living and the Rural Poor: A further Note", Indian Economic Review, April 6; "On the Incidence of Poverty in Rural India", EPW, Annual No.8, Vol.4-6, Feb. 1973.

Rudra^{1/} and Raj Krishna^{2/} among others. Most of the studies al biet, vary in their periods and coverage of the states as well as norms. Some of them also deal with state's specific rural and urban areas separately. Most recent and more notable studies on poverty in the regional perspective by Ahluwalia^{3/}, Misra (1984)^{4/} and Johari & Jani (1982)^{5/} Visaria^{6/}, Sundaram and Tendulkar (1986)^{7/}.

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- 1/ Rudra, A., "Minimum Level of Living: A Statistical Examination in Poverty and Income Distribution," in T.N.Srinivasan and Pranab Bardhan (ed): Poverty and Income Distribution, in India, Statistical Publishing Society, Calcutta.
 - 2/ Krishna Raj, "Report of the Seventh Finance Commission, 1972", App.IV.9.
 - 3/ Ahluwalia, M.S., "Rural Poverty and Agriculture Performance in India": The Journal of Development Studies, April, 1978.
 - 4/ Misra, V.N., "Poverty in Rural India: An Inter-Regional Analysis", Journal of Social & Economic Studies, Vol.1, No.2, (April, June) 1984, pp.117-137.
 - 5/ Johari C.K. and B.K. Jani, "The Structure of India's Poverty", Indian Journal of Industrial Relations, Vol.18, No.1, July 1982.
 - 6/ Visaria Pravin M., "Poverty and Unemployment in India: An Analysis of Recent Evidence", World Development, Vol.9, No.3, 1981, pp.277-300.
 - 7/ Sundaram K and S.D. Tendulkar, Towards an Explanation of Inter-Regional Variations in Poverty and Unemployment in India, Working Paper No.237, Delhi School of Economics, May 1986 (Mimeo).

Though most of the contributions meticulously discuss the variations in poverty incidence across the various region, very few have attempted to explore into the reasons of these variations. Some of the major explanations provided for these variations are for: per capita income, unemployment, per capita income from primary sector, agriculture performance, technological process, wage rates, level of economic development, income distribution, and assets/land distribution.^{1/} However, one important missing fact in most of these studies is the urban poverty. Plausibly they have considered urban poverty as an outflow or 'spill-over' of rural poverty. However, we feel that the problem of poverty in urban areas also needs equal, if not more emphasis.

In this chapter, a modest attempt has been made to understand the nature and magnitude of poverty (urban and rural) across the various regions and some correlates thereof.

1/ For such explanations see: Ahluwalia (1978), op.cit., Misra (1984), op.cit., Visaria (1981), op.cit., Sundaram and Tendulker (1968), op.cit., Kurian, C.T. "Why the Poor are Poor Likely to Remain So", Journal of Social and Economic Studies, Vol.1, No.2, April-June, 1984. Rao V.G., and G.P. Misra, "Rural Poverty: Growth and Determinants", in Sardar Patel Institute of Economic and Social Research, Ahmedabad, Employment Poverty and Public Policy, Monograph Series 9, 1981, Murty, G.V.S.N. and Nireesh Shah, "Poverty, Inequality and Levels of Living in Gujarat", in Lakdawala, D.T., (ed), Gujarat Economy: Problems and Prospects, SPIESR, Ahmedabad, Monograph Series (10), 1982, and Joshi, B.K., "Poverty, Inequality and Social Structure", Working Paper No.31, Giri Institute of Development Studies, Lucknow, 1980.

Methodology and Data base

In order to understand the regional structure of poverty in India, we have used state specific percentages of population below poverty line in the years 1960-61, 1970-71, 1972-73 and 1977-78. It may be mentioned that the series for the various years are not strictly comparable (except for the years 1960-61 and 1970-71 whose identical methodology has been adopted to arrive at the proportion) due to varying methodology adopted to calculate the poverty line. However, in the case of 1972-73 and 1977-78 some sort of similar methodology was adopted. For both the series are reported by the Government of India. The poverty ratios during these two years are compared. Therefore, with some reservations, the exercise is carried out for two sub-periods separately without comparing pre and post 1970-71 periods. Nevertheless, structural comparison of the incidence of poverty across states at any one particular point of time is plausibly reliable, with the assumption that whatever the methodology, it will not effect the relative positions of the states.^{1/} However, for our analysis, we assume away then intricacies.

1/ One might also argue that unless all the factors effecting poverty are considered comprehensively (especially state specific factors like food habits, clothing, weather etc.) even across sectional comparison may be erroneous. For discussion see Shah, N.C., "Measurement of Poverty: An interstate Profile", paper presented in the 24th Indian Econometric Conference held at Sardar Patel Institute of Economic and Social Research, Ahmedabad on 8 to 10 Jan. 1987.

For arriving at the total percentage of population (rural urban) below the poverty line, the rural and urban poverty series were added after assigning due proportion/weightage of population in the two segments as per the population census or the population projection for the relevant years. It may however, be clarified that the percentage of population below the poverty line in Haryana pertains to the year 1964-65, but is assumed for the year 1960-61.

While exploring into the causes of the regional variation in the poverty structure, some of the intuitively important explanatory variables like per capita income, level of agricultural development (as reflected by per capita income/output generated in the agricultural sector), level of industrial development (as reflected by per capita income generated in manufacturing sector), unorganised manufacturing sector, unemployment rates, concentration of land-holding in the rural households, and the proportion of landless and samelandless households in the rural areas, were taken into consideration.^{1/}

We also attempted to associate growth rates of the various explanatory variables with the over-time change in the incidence of poverty in rural and urban areas. However, all the result turned out to be insignificant hence the exercise was dropped.

^{1/} For source of information see footnotes in the relevant tables in the chapter.

Simple statistical techniques like rank correlations, Yule's co-efficient of association, average and coefficient of variation were used for the purpose of the analysis as and when required.

Analysis of the Results

I. Regional Poverty Structure: At the national level poverty seems to have declined between 1972-73 and 1977-78. However, it is not so in the case of the first sub-period (1960-61 to 1970-71). While overall poverty declined by approximately 13.62 per cent during the second sub-period, the decline in the rural poverty was approximately 12.53 per cent and in urban poverty approximately 17.33 percentage points at the national level. The trend at the regional level also confirms the similar pattern where all the states experienced a decline in their poverty ratios (rural, urban as well as overall) during the second sub-period (see Table 6.1).

In the case of first sub-period (1960-61 and 1970-71) an increase was observed in the poverty ratios. It is however, interesting to note that while percentage of population below poverty line did not show any change in urban areas (which remained static at 48.10%), the incidence of poverty increased in rural areas by approximately 9 per cent. It implies that entire increase in the overall

incidence of poverty was solely due to the shift observed in the rural area. Moreover, the states also do not confirm to any uniform directional change. States like Andhra Pradesh, Assam, Jammu & Kashmir, Kerala, Maharashtra, Orissa and Punjab experienced a decline in their rural poverty ratios between 1960-61 and 1970-71. On the other hand the remaining states viz Bihar, Gujarat, Haryana, Karnataka, Madhya Pradesh, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal experienced an increase in their poverty ratios. Taken together, this increase was enough to offset the gains of declining poverty ratios in the other states (see Table 6.1).

Even in the case of urban poverty, there was no change at the national level. At the regional level, however, another drama was being enacted where most of the states viz. Andhra Pradesh, Assam, Haryana, Jammu & Kashmir, Karnataka Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan experienced a decline in their poverty ratios. This shift was just sufficient to offset the adverse effect of the states viz Bihar, Gujarat, Tamil Nadu, Uttar Pradesh and West Bengal, experiencing an increase in poverty in incidence of in the urban areas. It may be noticed from the table that the trend between the change in rural and urban incidence of poverty is not identical across states.

Overall, the states of Bihar, Gujarat, Haryana, Karnataka, Madhya Pradesh, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal were observed to have a higher proportion of population below the poverty line in the year 1970-71 compared to 1960-61. Rest of the states improved during the same period (see Table 6.1).

Thus, in the first period (1960-61 to 1970-71), it is observed that the poverty ratios had an increasing trend (no clear trend is discernable at the regional level). In the second sub-period all the states experienced a decline in their poverty ratio. However, even in the second set, all the states did not behave alike. For, the magnitude of decline varied from state to state, disproportionately.

Trend in the Regional Inequality in Poverty Ratios:

Changes in the relative positions of the states overtime in terms of poverty ratios indicates that the interstate inequality in the poverty levels must also have undergone some change. Given the planned intervention of the Government, one would expect that these inequalities must have declined over time and poverty now might be more equally distributed geographically. Here assumption would be that the government policies will affect the worse off states more favourably than the better off ones.

For measuring the inequalities, coefficients of variation were calculated for all the years, for rural, urban and overall poverty ratios on the basis of cross-section data for the states. The results are presented in Table 6.2.

The results are somewhat unexpected. Surprisingly what emerges from the table is that unlike the trend in the incidence of poverty at the national level between 1960-61 to 1970-71 and 1972-73 to 1977-78, the inequality seems to have declined in the first period and increased from 25.37% to 29.03% during 1972-73 to 1977-78. In the first period values are 24.07 for 1960-61 and 23.33 for 1970-71 showing a marginal decline in the inequality. Same trend can be observed for the interregional poverty inequalities in the case of rural areas; where incidence of poverty had shown an increase. In the case of urban poverty also interregional inequalities have increased during 1960-61 to 1970-71 despite the fact that no change whatsoever was observed in the urban poverty at the national level. During the second sub-period urban inequalities behave in unison with the national trend i.e. an increase from 18.65 to 20.22 between 1972-73 and 1977-78.

Therefore, it may be argued that though the incidence of poverty, irrespective of the states seems to have declined over time, it has declined such that it has benefitted those state more which were already better off. This might have led to a widening gap in the inter state poverty profiles. The argument is further strengthened by a remarkable rank stability of the states over time.^{1/}

Relationship Between Interregional Rural and Urban Incidence of Poverty: It is often argued that urban poverty is a outflow of the rural poverty. Hence it can be considered as a consequence of the incidence of rural poverty. If so, one would expect that the states which have higher incidence of rural poverty, will tend to have higher degree of urban poverty also. To vindicate the hypothesis, we worked out rank correlation between the rural and the urban poverty series for the various years.

Interestingly, the results do not vindicate the proposition in the later years. For initially incidence of rural and urban poverty are observed to be associated

1/ For example rank correlation between cross section of rural poverty in the states in 1960-61 and 1970-71 was +0.7647, which increased to +0.8220 between the series for 1972-73 and 1977-78. Corresponding values for urban series were +0.5510 and + 0.7382 respectively. All the values were found to be statistically significant at 1% level.

with a positive rank correlation (+0.5764) in 1960-61, significant at 1% level. In 1970-71 though it continues to be positive (+0.5102), but significant only at 5% level. In the subsequent years the relationship turn out to be insignificant. It implies that though initially associated with the process of development, urban poverty now behaves independent of the rural poverty. Therefore, it is no more valid to state that the states having higher incidence of poverty will necessarily have higher incidence of urban poverty also. Nevertheless, it warrants for an indepth analysis to inquire into the reasons of such a relationship. At the moment these results atleast give us a lead that the phenomenon of rural and urban poverty have to be explored separately.

II. Interregional Poverty Syndrome: Some Explanations:

In this section we attempt to explore some of the determinants of the interregional variations in the levels of the incidence of poverty. To understand and explain the phenomenon: as to what explains the poverty structure across the regions, one could postulate^{1/} that the poverty

1/ These are the major postulations forwarded in the various studies attempting to inquire into the causes of poverty. We test them, here, in the regional context.

- (a) is inversely related with per capita income.,
- (b) is inversely related with employment (directly related with ~~unemployment~~);
- (c) is inversely related with the level of agricultural development;
- (d) is inversely related with the level of industrial development.,
- (e) is inversely related with the level of the development of unorganised manufacturing sector;
- (f) is directly related with the inequalities in the ownership of land holdings in the rural areas; and
- (g) is directly related with the magnitude of landless and semilandless households across states in the rural areas.

Where postulations 'a' to 'e' are tested for both rural and urban poverty structures, postulations 'f' and 'g' are tested only for the interregional structure of rural poverty. For, the last two variables are directly relevant ^{only the} to the incidence of poverty in rural areas.

Rural Poverty Structure Across the Region/State: Some correlates.

In order to understand the causes of the existing interregional structure of the incidence of poverty, we associated the incidence with the above stated variables. The analysis was carried out with the help of the Yule's coefficient of Association. We deal with each variable separately.

(1) Per Capita Income and Rural Poverty:

It is argued that per capita income reflects the level of economic development of a region. Higher per capita income will lead to a higher standard of living and in turn, therefore, low incidence of poverty. To analyse this aspect, we classify states according to their poverty levels and per capita income levels, national average being the cut off point in both the cases. Table 6.3.1 presents classification of the states for the various years

In all, 10 states confirm the hypothesis in the year 1960-61. For, five states viz. Assam, Gujarat, Haryana, Punjab and West Bengal have higher per capita income compared to the national average and also have lower proportion of population below poverty line. Another 5 states viz. Andhra Pradesh, Kerala, Madhya Pradesh, Orissa and Uttar Pradesh have lower per capita income and higher incidence of poverty. On the other hand six states viz. Bihar, Jammu & Kashmir, Karnataka, Maharashtra, Rajasthan and Tamil Nadu are fall outs in 1960-61.

This relationship becomes stronger in 1970-71. In the year 1972-73 somewhat similar picture is observed as in 1960-61., but by 1977-78 this relationship becomes rather weak. Only three states viz. Gujarat, Haryana and Punjab have higher per capita income coupled with lower

incidence of poverty, whereas, on the other hand as many as six states viz. Andhra Pradesh (A.P.), Jammu and Kashmir (J&K), Karnataka, Kerala, Rajasthan and Uttar Pradesh show lower incidence of poverty despite their lower per capita income compared to the national average. These results are further confirmed by the Yule's coefficients of Association, the values being +0.5151, +0.9047, +0.50000 and +0.1111 for the years 1960-61, 1970-71, 1972-73 and 1977-78 respectively. Therefore, overtime one observes that increasing per capita income per se might not be sufficient to eradicate poverty, plausibly unless equitable distribution of incremental income does not take place. It^{is} also indicative of the fact that income inequalities might be increasing in the rural areas with higher concentration of wealth in fewer hands.

(2) Level of Agricultural Development and Rural Poverty:

Agriculture is the main stay in the rural areas. It has also been often argued that agricultural output has direct bearing on the incidence of poverty which tends to decline in a good harvest year^{1/}. The postulation was tested in terms of per capita output from agriculture sector. Unlike per capita income there appears to be a strong association between the level of agricultural

1/ See Ahluwalia, M.S., 1978, op.cit.

development (as reflected by per capita agricultural output and decline in the incidence of poverty).

In 1960-61 as many as six states have higher per capita agricultural output coupled with lower incidence of poverty. Similarly another six states had lower agricultural output per capita and higher incidence of poverty. By 1970-71 the association becomes very clear, when as many as 13 out of the 16 major states confirm to the postulated relationship. Picture remains similar in the subsequent years 1972-73 and 1977-78 also (See Table 6.3.2). Yule's coefficient of Association works out to be +0.6666, +0.9047, +0.5000 and +0.7647 for the years 1960-61, 1972-73 and 1977-78 respectively. Therefore, it can be strongly argued that more investment in agricultural sector might tremendously help alleviating rural poverty.

(3) Level of Industrial Development and Rural Poverty:

Table 6.3.3 presents association between industrial development (as reflected by per capita income generated in manufacturing sector) and rural poverty. It may be observed that no clear cut trend is discernible from the table except may be in 1970-71, when 12 out of the 16 states confirm the relationship that higher level of industrialisation will be associated with the lower incidence of rural poverty. Even the results of the Yule's

coefficients depict the same trend. For example it was only in 1970-71 when the association turned out to be $+0.748$, whereas for 1960-61 it was $+0.111$, for 1972-73 it was 0.0000 and in the year 1977-78 it became negative with a value ^{of} -0.2000 . The results are not altogether surprising. For industrial sector, by and large, is concentrated mostly in urban centres and the incentives for rural industrialisation given by the government have probably not been effective.

(4) Unorganised Manufacturing Sector and Rural Poverty:

Since most of the manufacturing sector in rural areas (whatever meager it is) plausibly is of tiny nature, it was postulated that this sector might have some bearing on the incidence of rural poverty, given the fact that this sector is a high wage income sector compared to ^{the} farm sector. Since no data are available on rural industrial sector, we used per capita income generated in the unorganised manufacturing sector as a proxy to that.

Like the relationship between industry and poverty, the postulated relationship between poverty and unorganised sector is also not vindicated, except to an extent for the year 1960-61 (see Table 6.3.4). Yule's coefficient of association for the years 1960-61, 1970-71, 1972-73 and 1977-78 works out to be $+0.4705$, $+0.2500$, -0.4705 and

+0.2500 only. All the values expect for 1960-61 appear to be totally insignificant. Therefore, the lesson one derives is that manufacturing activities, irrespective of their scale of operation have hardly any bearing on altering the structure of rural poverty.

(5) Concentration of Land ownership and Incidence of Poverty in Rural Areas

It is argued that higher the concentration of landownership in the few hands in rural areas, higher will be the incidence of poverty.^{1/} The postulation was tested by associating concentration of land holding in the rural areas with the incidence of rural poverty across states for the years 1970-71 and 1977-78. The data for the earlitter period were not available, but were available for 1971 and 1981. Therefore, these two years were matched with 1970-71 and 1977-78, on the basis of nearest correspondance. However, the postulated relationship does not seem to be vindicated in either of the years (See Table 6.3.5). Interesting to observe is that while in 1970-71, the relationship is not very clear (but not negative atleast), in the year 1977-78, it becomes negative. Yule's coefficient of association turns out to be +0.2857 in 1970-71 and -0.2631 in 1977-78. May be, due to the fact that information for the corresponding years is not available, the result are such.

^{1/} Such hypothesis was suggested in United Nations, Dept. of Economic and Social Affairs, Poverty, Unemployment and development Policy: A case Study of Selected Issues with reference to Kerala.

(6) Proportion of Landless and Semilandless Rural Households and the Incidence of Rural Poverty: It is an other way to look at the asset distribution (in terms of land) in the rural areas and its effect on poverty incidence. This is obvious that such households in the rural areas, who, by and large, have to depend on wage employment. And given the semifeudal production relation in the farm sectors, they are more likely subject to very low wages and exploitation. Therefore, it may be postulated justifiably that higher the proportion of landless or semilandless households in rural areas in a region/state, higher will be the incidence of poverty.

Like the information on concentration of landholdings, information on landless and semilandless households is also available only for the years 1971 and 1981 and is matched to correspond with the information on poverty for the years 1970-71 and 1977-78. The association seem to be as the postulated one in the year 1970-71 in which 10 out of the 16 states confirm the relationship. For example Assame, Gujarat, J & K, Karnataka and Maharashtra have lower proportion of landless and semilandless households in rural areas coupled with lower proportion of population below the poverty line, compared to the national average. On the contrary data of A.P., Bihar, Kerala, Tamil Nadu and West Bengal have higher proportion of both (see Table 6.3.6) in 1970-71. Another four states viz. M.P., Orissa,

Rajasthan and Uttar Pradesh have higher proportion of poverty despite having lower proportion of landless and semilandless households, while Haryana and Punjab are contrary examples to this. However, overall picture in 1970-71 indicates the postulated relationship, with +0.5151 coefficient of association.

However, the scene is changed in 1977-78, where no clear-cut trend is visible. It is a typical situation where states vindicating and rejecting the postulation are decided equally, i.e. eight each. The Yule's coefficient of association is also very low and negative to the tune of -0.0322. Therefore, on the basis of available information it is difficult to draw any inference from the analysis.

- (7) Unemployment and Rural Poverty: The lack of employment opportunities in the rural area lead to a higher rate of unemployment, which in turn aggravates the incidence of rural poverty. Therefore, it is postulated that relatively higher incidence of poverty in the rural areas will be directly associated with higher rates of unemployment.^{1/}

The exercise was carried out for the years 1972-73 and 1977-78 for which corresponding data were available on the unemployment rates by states, from the 27th and 32nd

1/ See Visaria, P.M., "Poverty and Unemployment in India: An Analysis of Recent Evidence", World Development Vol.9, No.3, p.282.

rounds of NSS. The association between these two variables appears to be stable and strong one. In 1972-73 as many as 13 out of the 16 states confirm the postulated relationship. Similarly in 1977-78 also the association between the two is fairly strong (see Table 6.3.7). Yule's coefficient of association is also very high in both the years, which is +0.9090 for 1972-73 and +0.7142 for the year 1977-78. In the light of this discussion it is clear that there is a strong bearing of employment opportunities in the rural areas on the incidence of rural poverty. Therefore, one may argue for a case that the government should lay more stress on creating new avenues for employment, even through public works programmes, which provide wage employment. However, we hasten to add that such alternative may be a short term solution but not a long term strategy for poverty eradication.

(B) Urban Poverty Structure Across the Regions/States:

Some correlates: Since we have argued earlier in this chapter that urban poverty should be treated separately than the rural poverty, because it is not simply a outflow of the rural poverty, an attempt is made to see the impact of some of the intuitively important factors which determine the regional structure of the incidence of urban poverty.

- (1) Per Capita Income and Urban Poverty: It is postulated that per capita income is inversely associated with the incidence of poverty. The typology of the relationship is portayed in Table 6.4.1. It can be observed from the table that the postulated relationship holds good in all the years epecially in the initial (1960-61) and the terminal (1977-78) one. In the year 1960-61, six states viz. Gujarat, Haryana, Maharashtra, Punjab, Tamil Nadu, and West Bengal consist of a lower proportion of population below the poverty line and have higher per capita income than the national average. . In the ~~sene~~ year, another nine states viz. A.P, Bihar, J & K, Karnataka Kerala, M.P, Orissa, Rajasthan and U.P. have higher than the average incidence of poverty with per capita income below the national average. Thus, all the states except Assam confirm to the hypothesis in 1960-61. 12 states behave in concurrence with the hypothesis in 1970-71. The number of such states in 1972-73 is 10. In the year 1977-78 also as many as 13 out of the 16 states confirm to the hypothesis. Yule's coefficient of association was found to be +1.0000, +0.8421, +0.5000 and +1.0000 in the years 1960-61, 1970-71, 1972-73 and 1977-78 respectively, establish-
 ing the relationship between per capita income and incidence/
 /of Level of Agricultural Development and Urban Poverty: Since
 urban poverty. foodgrain constitute a very important proportion of consumption basket of the poor people even in urban

areas, one would expect a negative association between poverty and the level of agricultural development of the region. (as reflected by per capita output generated in the agricultural sector of the state).

The association between agriculture and urban poverty, though not as strong as in the case of rural poverty, is positive one. In almost all the years, states with higher than the average per capita output in agriculture sector have lower incidence of poverty, whereas states with lower per capita income suffer from the higher incident of poverty (see Table 6.4.2). Yule's coefficient is +0.5000, +0.8421, 0.0000 and -0.7500 for the years 1960-61, 1970-71, 1972-73 and 1977-78 respectively. It implies that during a good harvest year, the prices of food articles tend to fall. Consequently urban poor get the foodgrain at a cheaper rate. Obviously they are likely to move upward the poverty line in that particular year. This discussion supplements our earlier argument of investing more in the development of agricultural sector.

(3) Level of Industrial Development and Urban Poverty

It has been variously argued that industrialisation is basically ^{an} urban phenomenon, which helps creating new avenues for employment through its backward and forward linkages. If so, it is likely that a region with higher

level of industrial development will have lesser proportion of urban population below poverty line, while a industrially backward region will experience relatively higher incidence of poverty (the level of industrial development is defined as per capita income in the manufacturing sector).

It can be observed from Table 6.4.3 that the hypothesis stands vindicated. In all the years this relationship between industry and urban poverty turn out to be significantly positive. 13 states confirm to the postulated relationship in the year 1960-61. Number of states, confirming the structure in 1970-71 was 11, in 1972-73 it was 12 and similarly in 1977-78 also it was 12. The states like Gujarat, Haryana, Maharashtra, Punjab, West Bengal were not only industrially more developed but also suffered lower incidence of poverty, unlike Bihar, J & K, Karnataka, Kerala, Madhya Pradesh, Orissa and Uttar Pradesh, the states where higher incidence of poverty was coupled with lower per capita output than the national average in the manufacturing sector. Yule's coefficient of association for 1960-61, 1970-71, 1972-73 and 1977-78 workout to be significantly positive, with a value of +0.8947, +0.6666, + 0.8421 and + 0.8421 respectively. Unlike its relation with rural poverty, industrialisation more directly affects incidence of poverty in urban areas.

(4) Unorganised Manufacturing Sector and Urban Poverty:

urban poverty should have a **inverse** relationship with the unorganised sector, because, more often than not, while there are barriers to entry in the organised sector with higher wages, it is easier to make an entry into unorganised manufacturing sector. (It may be mentioned that it is a sector where exploitation is rampant and wage rate relatively low). However, wage rate in this sector is relatively higher than the agricultural wages or some other service or construction sectors where wage rates are very low and **arbitrary**. Nevertheless, this sector provides enough wages to the workers so that they remain above the poverty line and survive.

Keeping these aspects in view we associated the poverty with unorganised sector. It is worth noticing that there exist a strong relationship between these two aspects. In other words, the hypothesis is vindicated by the analysis. For example in 1960-61 as many as six states viz. Gujarat Haryana, Maharashtra, Punjab, Tamil Nadu, West Bengal had above the national average per capita value of output in unorganised sector with lower incidence of poverty. On the other hand in eight state higher incidence of poverty followed the lower level of per capita value generated in unorganised manufacturing sector.

Similar trend is observed during the other periods also (See Table 6.4.4). Yule's coefficient of association was also found to be higher positive with values of +0.9200, +0.8000, +0.4705 and +0.4705 in the years 1960-61, 1970-71, 1972-73 and 1977-78. It may, therefore, be argued that the policy measures have to lay more emphasis on promoting unorganised ~~as~~ small scale/tiny sector in the urban areas in order to alleviate urban poverty.

5) Unemployment Rates and Urban Poverty: Higher incidence of unemployment apriorily leads to higher incidence of poverty in any region, and vice-versa. Therefore, a relationship between the two was tested in the interregional context. Data available for unemployment rates across the states, are for the years 1972-73 and 1977-78. This set of data is obtained from 27th and 32nd round of NSS and associated with the corresponding poverty series.

It is observed from Table 6.4.5 that initially (i.e. in the year 1972-73) the relationship holds good between urban unemployment states and urban incidence of poverty. However, by 1977-78 it withers away, wherein eight states confirm the relationship and the other eight behave to the contrary. For example, Assam, Gujarat, Haryana, Punjab and Rajasthan have low rates of unemployment as well as lower incidence of poverty in 1977-78; whereas Bihar, J&K, M.P., Orissa and U.P. exhibit higher incidence of poverty

despite low rates of unemployment. Therefore, it is difficult to establish any useful relationship between the two. Yule's coefficients of association also behave in the same way, where in 1972-73 the coefficient is found to be +0.7142 but in 1977-78 no association is observed. Rather both these ^{variables} $\angle$ behave independent of each other.

Overall Poverty Syndrome: Overall incidence of poverty (urban + rural poverty) is explained by almost all the variables mentioned above. However, one remarkable feature is that while in 1960-61 and 1977-78, agriculture emerges as more important factor influencing overall incidence of poverty across the states in the years 1970-71 and 1972-73, industry is more important. Unorganised manufacturing sector is important in all the years except 1972-73. Whereas per capita income emerges as an important determinant of the interregional poverty structure throughout the period. It may be so because its' value is addition of the income in all the sectors taken together.

The Yule's coefficients of association which are given below in Table 6.5 also substantiate the relationships.

Table 6.5Yule's Coefficients of Association Over All Poverty

	Years			
	1960-61	1970-71	1972-73	1977-78
Incidence of poverty associated with Agriculture Industry	+0.6666 +0.1111	+0.8421 +0.9090	+0.2000 +0.5000	+0.7500 +0.5000
Unorganised Manufacturing sector	+0.6666	+0.4706	+0.0000	+0.8000
Per capita Income	+0.5151	+1.0000	+0.8421	+1.7500

Therefore, it may be concluded that any policy directed towards poverty alleviation has to consider both the agriculture as well as, industry sectors. The role of industry is also equally important if not more. This argument is further substantiated by the observed trend between the incidence of poverty and performance of the industrial sector at the national level. For example, when industries were facing structural retrogression the incidence of overall poverty also deepened in 1970-71. As it came out of the stagnation phase, the incidence of poverty also started showing a declining trend which still continues.

The Summing up :

In the preceeding sections we analysed the structure of the incidence of poverty in rural and urban areas across the states in India, and some correlates thereof. Major finding emerging out of the analysis are that :

- (i) at the national level the incidence of overall poverty increased in the first sub-period (1960-61 to 1970-71) and declined during the second (1972-73 to 1977-78);
- (ii) in the period 1960-61 to 1970-71, the increase in the incidence of poverty was solely on account of the incidence of rural poverty. There was no change in the magnitude of incidence of urban poverty; during this period;
- (iii) the inter-regional inequalities in the incidence of poverty seem to have been increasing over time despite a declining trend observed in the incidence of poverty - rural, urban and overall;
- (iv) urban poverty is not an outflow of the rural poverty per se, as often argued. It is a phenomenon in itself and behaves independent of the incidence of rural poverty, atleast in the regional context;

- (v) per capita income is inversely related with the incidence of rural, as well as, urban poverty;
- (vi) the level of agricultural development or performance of the farm sector is inversely related with the incidence of rural and urban poverty;
- (vii) the level of industrial development is highly associated, inversely, with the urban poverty, but effects rural poverty only marginally;
- (viii) the performance of unorganised manufacturing sector is also inversely related with the incidence of poverty in the urban areas; and to a limited extent in the rural areas also;
- (ix) the unemployment rates are directly related to the incidence of poverty in rural areas, whereas in urban areas, the trend is not very clear;
- (x) there does not seem to be any direct association between the concentration of land ownership and the incidence of poverty in the rural areas; and
- (xi) like the concentration of land ownership, proportion of landless and semilandless rural households has no significant relationship with the incidence of poverty in the rural areas.

On the basis of the above conclusions one may argue that though, manufacturing sector may be more an urban phenomenon, it has overall helped to some extent, reducing rural poverty, especially if one also considers unorganised manufacturing sector. It become more important also because of the fact that agriculture already suffers from vagaries of the nature, adverse land-man ratio and over crowding. There is probably no alternative, but to look at rural industrial sector, which is more dynamic, as an important instrument for poverty alleviation. However, it does not, by any means, imply that agriculture sector could be ignored. After all it not only sustains the rural economy but also helps reducing the incidence of urban poverty.

Table : 6.1
percentage of population below poverty line by states
(1960-61, 1970-71, 1972-73 and 1977-78)

Name of the States	1960-61			1970-71		
	Rural	Urban	Total	Rural	Urban	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Andhra Pradesh	67.30	57.30	65.60	64.20	49.50	61.26
2. Assam	40.90	48.19	41.47	38.10	22.00	36.65
3. Bihar	54.20	49.80	55.71	64.90	51.50	63.56
4. Gujarat	41.10	46.50	42.50	60.90	47.40	57.12
5. Haryana	29.60	46.40	32.47	38.30	40.00	38.60
6. Jammu & Kashmir	41.40	57.50	44.14	38.80	52.80	41.46
7. Karnataka	51.90	52.70	52.08	62.01	48.20	58.55
8. Kerala	68.40	64.00	67.74	62.90	60.00	62.40
9. Madhya Pradesh	65.40	61.40	64.84	68.80	53.10	66.13
10. Maharashtra	62.60	44.20	57.45	55.90	38.10	50.38
11. Orissa	79.30	60.00	78.14	75.90	44.60	73.08
12. Punjab	32.60	36.70	33.54	27.00	29.90	27.69
13. Rajasthan	52.60	51.20	51.35	62.80	46.40	59.84
14. Tamil Nadu	64.90	43.50	59.12	74.40	61.10	70.27
15. Uttar Pradesh	53.10	57.40	58.01	63.70	57.60	62.84
16. West Bengal	48.00	33.10	44.27	65.60	35.30	58.02
All India	57.00	48.10	55.40	52.10	48.10	59.22

Table : 6.1 (contd...)

Name of the States	1972-73 ^{b/}			1977-78 ^{c/}		
	Rural	Urban	Total 1/	Rural	Urban	Total
	(8)	(9)	(10)	(11)	(12)	(13)
1. Andhra Pradesh	62.40	50.00	60.72	43.89	35.68	42.18
2. Assam	55.30	40.60	53.98	52.65	37.37	51.10
3. Bihar	60.80	47.90	59.51	59.91	46.07	57.49
4. Gujarat	47.00	43.00	45.88	43.20	29.02	39.04
5. Haryana	22.00	36.00	24.52	23.25	31.74	24.84
6. Jammu & Kashmir	43.90	58.60	46.69	32.75	39.33	34.13
7. Karnataka	53.30	50.90	52.70	49.88	43.97	48.34
8. Kerala	62.90	57.10	61.91	46.00	51.44	46.95
9. Madhya Pradesh	65.50	50.30	62.91	59.82	43.09	57.73
10. Maharashtra	60.30	37.50	53.23	55.85	31.62	47.71
11. Orissa	73.60	47.80	71.27	68.97	42.19	66.40
12. Punjab	21.00	27.80	22.63	11.87	24.66	15.13
13. Rajasthan	46.20	45.70	46.11	33.75	33.80	33.76
14. Tamil Nadu	68.10	56.50	64.50	55.68	44.79	52.12
15. Uttar Pradesh	55.80	56.60	55.91	50.23	49.24	50.09
16. West Bengal	67.10	40.30	60.40	58.94	34.71	52.54
All India	58.10	46.20	55.72	50.82	38.19	48.13

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- For arriving at the total percentage of population (rural + urban) below the poverty line, the rural and urban series were added after assigning due proportions of pop. in rural & urban areas as per the population census for the relevant years.
- For Haryana, the percentage pertain to the year 1964-65 in the series for 1960-61.
Source : (a) Annexure I.1 and I.2 from S.P. Gupta et.al., "Measurement of Poverty : A Development Index", in Regional Dimensions of the Indian Economy, Planning Commission, New Delhi, 1982, pp.275-76.
(b) Reply to Unstarred Question No.285 in the Lok Sabha, on March 12, 1980, and published in, "Basic Statistics Relating to Indian Economy", CMIE, 1980, Table : 12.4.
(c) Govt. of India, Sixth Five Year Plan (1980-85), Planning Commission, New Delhi, p.16.

Table : 6.2Averages, Standard Deviations and Coefficients of Variations
In the Incidence of Poverty Across States

<u>Rural Areas</u>	<u>Years</u>			
	<u>1960-61</u>	<u>1970-71</u>	<u>1972-73</u>	<u>1977-78</u>
Averages ($\bar{X}$)	53.64	57.76	54.13	46.66
Standard Deviations (σ)	14.03	14.30	15.21	14.96
Coefficient of Variation (%) (C.V.)	26.16	24.77	23.09	32.07
<u>Urban Areas</u>				
Averages ($\bar{X}$)	50.35	46.09	46.66	38.98
Standard Deviations (σ)	8.80	10.81	8.70	7.88
Coefficients of Variation (%) (C.V.)	17.40	23.46	18.65	20.22
<u>Overall (Rural + Urban)</u>				
Averages ($\bar{X}$)	52.90	55.49	52.67	44.97
Standard Deviation (σ)	12.73	12.95	13.36	13.05
Co-efficient of Variation (%) (C.V.)	24.07	23.33	25.37	29.09

Source : Calculations based on Table 6.1

Table 6.3.1

Relationship Between Per capita Income and Incidence of Poverty in Rural Area Across the Region

States with	States with lower incidence of poverty than the national average	States with higher incidence of poverty than the national average	States with lower incidence of poverty than the national average	States with higher incidence of poverty than the national average
	1	2	1	2
	<u>1960-61</u>			
Per capita income above the national average	1			
	Assam, Gujarat, Haryana, Punjab, West Bengal	Maharashtra, Tamil Nadu	Gujarat, Haryana, Karnataka, Maharashtra, Punjab	West Bengal
Percapita income below the national average	2			
	Bihar, J&K, Karnataka, Rajasthan	A.P., Kerala, M.P., Orissa, U.P.	Assam, J & K	A.P., Bihar, Kerala, M.P., Orissa, Rajasthan, T.N., U.P.
	<u>1972-73</u>			
Per capita income above the national average	1			
	Gujarat, Haryana, Karnataka, Punjab	Maharashtra, West Bengal	Gujarat, Haryana, Punjab	Maharashtra, West Bengal
Percapita income below the national average	2			
	Assam, J & K	A.P., Bihar, Kerala, M.P., Orissa, Rajasthan, T.N., U.P.	A.P., J&K, Karnataka, Kerala, Rajasthan, U.P.	Assam, Bihar, M.P., Orissa, T. N.
	<u>1977-78</u>			

Source: Cross Tabulation based on Table 6.1 and Appendix 6.1.

Table 6.3.2

Level of Agriculture Development and Incidence of Poverty in Rural Areas Across the Regions

States with	States with higher incidence of poverty than the national average		States with lower incidence of poverty than the national average		States with higher incidence of poverty than the national average
	1	2	1	2	
	<u>1960-61</u>				<u>1970-71</u>
Per capita income above the national average	1		Assam, Haryana, J & K, Karnataka, Punjab, Rajasthan		Assam, Gujarat, Haryana, Karnataka, Punjab, Rajasthan
Per capita income below the national average	2		Bihar, Gujarat, West Bengal		J & K, Maharashtra
	<u>1972-73</u>				<u>1977-78</u>
Per capita income above the national average	1		Haryana, Karnataka, Punjab, Uttar Pradesh		A.P., Haryana, Karnataka, Punjab, U.P.
Per capita income below the national average	2		Assam, Gujarat, J & K, Rajasthan		A.P., Bihar, Kerala, Madhya Pradesh, Orissa, Tamil Nadu, U.P., West Bengal

Source : Cross Tabulation based on Table 6.1 and Appendix 6.1.

Table 6.3.3

Relationship Between the Levels of Industrialisation and Incidence of Poverty in Rural Areas Across the Regions

States with	States with lower incidence of poverty than the national average	States with higher incidence of poverty than the national average	States with lower incidence of poverty than the national average	States with higher incidence of poverty than the national average
	1	2	1	2
<u>1960-61</u>				
Percapita income above the national average	1			
	Assam, Gujarat, West Bengal	Maharashtra, Tamil Nadu	Gujarat, Haryana, Karnataka, Maharashtra, Punjab	Tamil Nadu, West Bengal
Percapita income below the national average	2			
	Bihar, Haryana, J & K, Karnataka, Punjab, Rajasthan	A.P., Kerala, M.P., Orissa, U.P.	Assam, J & K	A.P., Bihar, Kerala, M.P., Orissa, Rajasthan, U.P.
<u>1972-73</u>				
Percapita income above the national average	1			
	Gujarat, Haryana, Punjab	Maharashtra, Tamil Nadu, West Bengal	Gujarat, Punjab	Maharashtra, Tamil Nadu, West Bengal
Percapita income below the national average	2			
	Assam, J & K, Karnataka, Rajasthan, U.P.	A.P., Bihar, Kerala, M.P., Orissa	Andhra Pradesh, J & K, Karnataka, Kerala, Rajasthan, U.P.	Assam, Bihar, M.P., Orissa

Source : Cross Tabulation based on Table 6.1 and Appendix 6.1,

Table 6.3.4

Relationship Between Unorganised Manufacturing Sector and Incidence of Poverty in Rural Area Across the Regions

States with	States with higher incidence of poverty than the national average		States with lower incidence of poverty than the national average		States with higher incidence of poverty than the national average
	1	2	1	2	
	<u>1960-61</u>		<u>1970-71</u>		
Per capita income above the national average ¹	Assam, Gujarat, Haryana, Punjab Rajasthan	Maharashtra, Tamil Nadu, West Bengal	Gujarat, Haryana, Maharashtra, Punjab	Kerala, Rajasthan, Tamil Nadu, West Bengal	
Per capita income below the national average ²	Bihar, J & K, Karnataka	A.P., Kerala, M.P., Orissa, U.P.	Assam, J & K, Karnataka	A.P., Bihar, M.P., Orissa, U.P.	
	<u>1972-73</u>		<u>1977-78</u>		
Per capita income above the national average ¹	Gujarat, Haryana, Punjab	A.P., Kerala, Maharashtra, Tamil Nadu, West Bengal	Gujarat, Haryana, J & K, Kerala, Punjab	Tamil Nadu, West Bengal, Maharashtra	
Per capita income below the national average ²	Assam, J & K, Karnataka, Rajasthan, U.P.,	Bihar, M.P., Orissa	A.P., Karnataka, Rajasthan, U.P.	Assam, Bihar, M.P., Orissa	

Source : Cross Tabulation based on Table 6.1 and Appendix 6.1

Table 6.3.5

Concentration of Land Holdings in the Rural Households and Incidence of Poverty in the Rural Areas.

1970-71	
A. State having lower concentration ratio than the national average (1970)	State with lower incidence of poverty than the national average
Assam, Gujarat, Jammu & Kashmir, Karnataka, Rajasthan and Uttar Pradesh.	States with higher incidence of poverty than the national average.
	Madhya Pradesh, Kerala, Maharashtra Orissa, West Bengal.
B. States having higher concentration ratio than the national average (1971)	Andhra Pradesh, Bihar, Tamil Nadu.
1977-78	
a	b
A (1981)	Assam, Bihar, Madhya Pradesh, Karnataka, Kerala, Rajasthan, Maharashtra Orissa, West Bengal. Uttar Pradesh.
B (1981)	Andhra Pradesh, Punjab. Tamil Nadu

Source : Cross tabulation based on Table 6.1 and Appendix 6.II.

Table 6.3.6

Proportion of Landless and Semilandless Households and Incidence of Rural Poverty Across the Regions.

1970-71	
States with lower proportion of population below the Poverty line than the national average. 1	States with higher proportion of population below the poverty line than the national average. 2
State with lower proportion of landless and semilandless households than the national average. (1971) 1	Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh.
Assam, Gujarat, Jammu & Kashmir, Karnataka, Maharashtra.	
States with higher proportion of landless and semilandless household than national average. (1971) 2	Andhra Pradesh, Kerala, Tamil Nadu West Bengal.
Haryana, Punjab.	
1977-78	
(1977) 1	(1977) 2
(1981) 1	Assam, Madhya Pradesh, Maharashtra, Orissa.
Gujarat, Jammu & Kashmir, Karnataka, Rajasthan, Uttar Pradesh.	
(1981) 2	Bihar, Tamil Nadu, West Bengal.
Andhra Pradesh, Haryana, Kerala and Punjab.	

Source : Cross tabulation based on Table 6.1 and Appendix 6.II.

Table 6.3.7

Unemployment and Incidence of Rural Poverty Across the region

Rural (1970-71)	
States with lower proportion of population below the poverty line than the national average.	States with higher proportion of population below the poverty line than the national average
(1)	2 (1)
States with unemployment rate below the national average.	
1.	
Gujarat, Assam, Haryana, Punjab, Rajasthan, Uttar Pradesh.	Madhya Pradesh
(6)	(1)
States with unemployment of rate above the national level.	
2.	
Jammu & Kashmir, Karnataka.	Andhra Pradesh, Bihar, Kerala, Maharashtra, Orissa, Tamil Nadu, West Bengal.
(7)	(2)
Rural 1977-78	
1	2
Gujarat, Haryana, Jammu & Kashmir, Punjab, Rajasthan, Uttar Pradesh.	Madhya Pradesh, Maharashtra.
(6)	(2)
Andhra Pradesh, Karnataka, Kerala.	Assam, Bihar, Orissa, Tamil Nadu, West Bengal.
(1)	(1)

Source : Cross tabulation based on Table 6.1 and Appendix 6.III.

Table 6.4.1

Relationship Between Per capita Income and Incidence of Urban Poverty
Across the Regions

States with	States with lower incidence of poverty than the national average	States with higher incidence of poverty than the national average	States with higher incidence of poverty than the national average
	1	2	1
	2		2
<u>1960-61</u>			
Per capita income above the national average	1	Gujarat, Haryana, Maharashtra, Punjab, Tamil Nadu, West Bengal	Assam
Per capita income below the national average	2	-	A.P., Bihar, J & K, Karnataka, Kerala, M.P., Orissa, Rajasthan, U.P.
<u>1972-73</u>			
Per capita income above the national average	1	Gujarat, Haryana, Maharashtra, Punjab	Karnataka, West Bengal
Per capita income below the national average	2	Assam, Rajasthan, Tamil Nadu, U.P.	A.P., Bihar, J & K, Kerala, M.P., Orissa, Tamil Nadu, U.P.
<u>1977-78</u>			
		Gujarat, Haryana, Maharashtra, Punjab, West Bengal	A.P., Assam, Rajasthan
		-	Bihar, J & K, Karnataka, Kerala, M.P., Orissa, Tamil Nadu, U.P.

Source : Cross Tabulation based on Table 6.1 and Appendix 6.1.

Table 6.4.2

Relationship Between the Level of Agricultural Development and Urban Poverty Across the Regions

States with	States with higher incidence of poverty than the national average		States with lower incidence of poverty than the national average		States with higher incidence of poverty than the national average
	1	2	1	2	2
	<u>1960-61</u>				
Per capita income above the national average	Haryana, Punjab, Tamil Nadu	Assam, J & K, Karnataka, Rajasthan	Assam, Gujarat, Haryana, Punjab, Rajasthan	Karnataka	
Per capita income below the national average	Gujarat, West Bengal	Andhra Pradesh, Kerala, M.P., Orissa, U.P.	Maharashtra, Orissa, West Bengal	A.P., Bihar, J & K, Kerala, M.P., Tamil Nadu, U.P.	
	<u>1972-73</u>				
Per capita income above the national average	Haryana, Punjab, U.P.	A.P., Karnataka, Orissa	Gujarat, Haryana, Punjab, Rajasthan	Karnataka	
Per capita income below the national average	Assam, Gujarat, Maharashtra, Rajasthan, Tamil Nadu	Bihar, J & K, Kerala, M.P., West Bengal	A.P., Assam, Maharashtra, West Bengal	Bihar, J & K, Kerala, M.P., Orissa, Tamil Nadu, U.P.	

Source : Cross Tabulation based on Table 6.1 and Appendix 6.1.

Table 6.4.3

Level of Industrial Development and Urban Poverty Across the Regions

States with	1960-61		1970-71	
	States with lower incidence of poverty than the national average	States with higher incidence of poverty than the national average	States with lower incidence of poverty than the national average	States with higher incidence of poverty than the national average
	1	2	1	2
Per capita income above the national average	1			
	Gujarat, Maharashtra, Tamil Nadu, West Bengal	Assam	Gujarat, Haryana, Maharashtra, Punjab, West Bengal	Karnataka, Tamil Nadu
Per capita income below the national average	2			
	Haryana, Punjab, Bihar, J & K, Karnataka, Kerala, Madhya Pradesh, Orissa, Rajasthan, U.P.	Andhra Pradesh, Bihar, J & K, Karnataka, Kerala, Madhya Pradesh, Orissa, Rajasthan, U.P.	Assam, Orissa, Rajasthan	Andhra Pradesh, Bihar, J & K, Kerala, Madhya Pradesh, U.P.
Per capita income above the national average	1			
	Gujarat, Haryana, Maharashtra, Punjab, Tamil Nadu	West Bengal	Gujarat, Haryana, Maharashtra, Punjab, West Bengal	Tamil Nadu
Per capita income below the national average	2			
	Assam, Rajasthan, A.P., Bihar, J & K, Karnataka, Kerala, M.P., Orissa	A.P., Bihar, J & K, Karnataka, Kerala, M.P., Orissa	Andhra Pradesh, Assam, Rajasthan	Bihar, J & K, Karnataka, Kerala, M.P., Orissa, U.P.

Source : Cross Tabulation based on Table 6.1 and Appendix 6.1.

Table 6.4.4

Relationship Between Unorganised Manufacturing Sector and Urban Poverty Across the Regions

States with	1960-61		1970-71	
	States with lower incidence of poverty than the national average 1	States with higher incidence of poverty than the national average 2	States with lower incidence of poverty than the national average 1	States with higher incidence of poverty than the national average 2
Per capita income above the national average 1	Gujarat, Haryana, Maharashtra, Punjab, Tamil Nadu, West Bengal	Assam, Rajasthan	Gujarat, Haryana, Maharashtra, Punjab, Rajasthan, West Bengal	Kerala, Tamil Nadu
Per capita income below the national average 2	-	A.P., Bihar, J&K, Karnataka, Kerala, M.P., Orissa, U.P.	Assam, Orissa	A.P., Bihar, J & K, Karnataka, M.P., U.P.
1972-73				
Per capita income above the national average 1	Gujarat, Haryana, Maharashtra, Punjab, Tamil Nadu	A.P., Kerala, West Bengal	Gujarat, Haryana, Maharashtra, Punjab, West Bengal	J & K, Kerala, Tamil Nadu
Per capita income below the national average 2	Assam, Rajasthan, U.P.	Bihar, J & K, Karnataka, M.P., Orissa	A.P., Assam, Rajasthan	Bihar, Karnataka, M.P., Orissa, U.P.

Source : Cross Tabulation based on Table 6.1 and Appendix 6.1.

Table 6.4.5

Unemployment and Urban Poverty Structure Across the Regions

Urban (1972-78)		
	State with lower proportion of population below the poverty line compared to the national average.	State with higher proportion of population below the poverty line compared to the national average.
States with urban unemployment rate below the national average. A	(a)	(b)
	Assam, Gujarat, Haryana, Punjab, Rajasthan, Uttar Pradesh. (6)	Jammu & Kashmir, Madhya Pradesh, Orissa. (3)
States with urban unemployment rates above the national average. B	(2)	(5)
	Maharashtra, Tamil Nadu.	Bihar, Karnataka, Kerala, West-Bengal, Tamil Nadu.
Urban 1977-78		
A	a	b
	Assam, Gujarat, Haryana, Punjab, Rajasthan. (5)	Bihar, Jammu & Kashmir, Madhya-Pradesh, Orissa, Uttar Pradesh. (5)
B		
	Andhra Pradesh, Maharashtra, West Bengal. (3)	Karnataka, Kerala, Tamil Nadu. (3)

Source : Cross tabulation based on Table 6.1 and Appendix 6.III.

Appendix 6.1

Per Capita State Domestic Product (SDP) And Sectoral Per Capita SDP Across States (Current price)

Sr. No.	Name of the State	Per Capita SDP (Rs)			Per Capita SDP in Agriculture Sector (Rs.)		
		1960-61	1970-71	1972-73	1960-61	1970-71	1972-73
1	Andhra Pradesh	275	586	657	1002	155	322
2	Assam	315	535	577	933	166	308
3	Bihar	215	402	480	741	111	226
4	Gujarat	362	829	761	1520	147	391
5	Haryana	327	877	1015	1768	203	565
6	Jammu & Kashmir	269	548	610	1113	158	277
7	Karnataka	296	685	712	1132	168	386
8	Kerala	259	594	602	1043	138	263
9	Madhya Pradesh	252	484	575	926	146	270
10	Maharashtra	409	783	838	1663	164	211
11	Orissa	217	478	575	845	127	302
12	Punjab	366	1070	1244	2231	197	622
13	Rajasthan	284	620	597	1020	157	393
14	Tamil Nadu	334	581	669	1018	169	221
15	Uttar Pradesh	252	486	603	929	148	284
16	West Bengal	390	722	781	1266	151	299
All India		306	633	712	1191	156	334
						350	553

Contd..

Appendix 6.1 (contd.)

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Sr. No.	Name of the State	Per Capita SDP in Manufacturing Sector (Rs)			Per Capita SDP in unorganised Manufacturing Sector (Rs)				
		1960-61	1970-71	1972-73	1977-78	1960-61	1970-71	1972-73	1977-78
1	Andhra Pradesh	21	51	64	114	12	27	35	47
2	Assam	53	49	52	118	25	19	21	27
3	Bihar	21	43	43	75	6	14	12	19
4	Gujarat	75	132	161	304	26	32	37	61
5	Haryana	37	86	114	219	2	28	35	61
6	Jammu & Kashmir	16	29	39	81	13	24	31	61
7	Karnataka	26	78	88	135	12	27	27	44
8	Kerala	32	71	82	138	16	39	43	62
9	Madhya Pradesh	17	43	56	99	9	21	24	39
10	Maharashtra	88	208	253	422	21	46	52	97
11	Orissa	16	38	35	80	12	12	15	24
12	Punjab	37	85	116	248	20	43	61	133
13	Rajasthan	29	50	53	91	2	30	32	47
14	Tamil Nadu	50	112	129	227	24	48	55	67
15	Uttar Pradesh	20	43	51	92	12	22	26	48
16	West Bengal	79	127	143	250	18	34	37	64
	All India	39	78	92	168	17	29	34	56

Source: Based on Estimates of State Domestic Product - 1960-61 to 1982-83, Published by Central Statistical Organisation, Dept. of Statistics, Ministry of Planning, Government of India, June 1984.

Appendix 6.II

The Concentration Ratios
of the ownership of Land
Holdings in Rural Households

Sr. No.	Name of the States	Years		Percentage of Landless and Semi-landless Households to total households in Rural Areas
		1971-72	1981-82	
1	Andhra Pradesh	0.732	0.736	84.8
2	Assam	0.622	0.556	38.8
3	Bihar	0.719	0.685	43.9
4	Gujarat	0.683	0.693	34.4
5	Haryana	0.753	0.699	51.4
6	Jammu and Kashmir	0.425	0.519	11.9
7	Karnataka	0.663	0.685	32.4
8	Kerala	0.702	0.681	59.1
9	Madhya Pradesh	0.621	0.647	25.6
10	Maharashtra	0.682	0.697	32.9
11	Orissa	0.645	0.614	36.1
12	Punjab	0.776	0.767	57.7
13	Rajasthan	0.607	0.616	2.9
14	Tamil Nadu	0.751	0.756	52.3
15	Uttar Pradesh	0.631	0.604	32.7
16	West Bengal	0.672	0.633	47.1
	Average	0.710	0.713	37.4
		0.667	0.661	39.9

Source: Table III and Table IV from Haque, T., "Temporal and Regional Variations in the Agrarian Structure in India", Indian Journal of Agriculture Economics, Vol. XLIII, No.3, Conference Number, July-September, 1987, p. 317.

Appendix 6.III

Unemployment Rates According to Daily Status (Age group 15-59) 1972-73 (27th Round of NSS) and 1977-78 (32nd Round of NSS)

Sr. No.	States	1972-73			1977-78		
		Rural	Urban	Total	Rural	Urban	Total
1	Andhra Pradesh	12.09	13.49	12.34	10.77	12.02	10.98
2	Assam	1.79	1.66	1.78	1.55	4.43	1.83
3	Bihar	10.59	9.41	10.47	8.17	8.50	8.20
4	Gujarat	5.84	7.37	6.21	6.14	7.22	6.41
5	Haryana	3.78	8.04	4.47	6.83	7.33	6.92
6	Jammu and Kashmir	8.51	5.36	8.09	5.76	6.75	5.94
7	Karnataka	9.89	10.27	9.98	9.32	11.36	9.76
8	Kerala	26.25	24.36	25.93	26.94	25.61	26.72
9	Madhya Pradesh	3.45	5.75	3.73	2.74	5.86	3.16
10	Maharashtra	9.96	9.74	9.90	7.73	10.45	8.24
11	Orissa	10.69	7.93	10.45	8.19	9.39	8.29
12	Punjab	4.45	5.83	4.77	4.88	5.61	5.07
13	Rajasthan	3.87	6.01	4.16	3.07	5.21	3.37
14	Tamil Nadu	13.17	11.10	12.64	16.60	15.83	16.31
15	Uttar Pradesh	3.64	4.41	3.74	3.97	6.54	4.33
16	West Bengal	11.27	10.12	10.94	9.75	12.45	10.53
	All India	8.49	9.21	8.62	8.11	10.60	8.60

Source: Annexures I-A and I-B in Nagarathinam, 'Incidence of Employment and Unemployment Reflecting Economic Development', Regional Dimensions of India's Economic Development, published by State Planning Commission (Planning Department), Uttar Pradesh, Lucknow, India, 1983, pp. 196-197.

Chapter 7

SUMMARY AND CONCLUSIONS

The growth process of a nation has sectoral as well as spatial dimensions. Usually the disaggregate information for sectoral growth is available over time but there is paucity of facts about the spatial pattern of growth. The information is often discrete and lacks precision. Nonetheless in a large country like India, given its federal structure and considerable autonomy at the state level, an analysis of regional dimension of the growth process is important.

The study has basically aimed at understanding the extent to which different regions (States) share the overall growth and how the inter-regional convergence/divergence of the growth process affects poverty and employment profile across the regions.

It is recognised that differentials in the levels of growth of various regions may be a function of concentration or otherwise of relatively productive or unproductive activity. Similarly the differentials in rates of growth of various regions could also be explained in terms of concentration of rapid-growth activities in different regions in different periods.

It is also possible that regional characteristics such as agglomeration economies, urbanisation etc. for industrial activities and climate, soil, technological progress, use and availability of inputs etc. for agricultural activities may lead to inter-regional variations in the productivity of the same activities. The analysis of regional growth patterns is done in two levels of disaggregation. In the first stage regional growth experience is studied in conventional dimensions - primary, secondary, and tertiary sectors. In the second stage the activity structure of regional economies are delineated to gauge its impact on the regional growth.

Prior to undertaking any rigorous analysis it was deemed fit to outline the broad contours of regional economies in terms of area and land utilisation pattern, population, urbanization, and state domestic product (SDP) and per capita SDP.

In the short span of sixteen years (1960-61 to 1976-77) most of the states had moved towards more efficient use of land. Such a movement was expected to have favourable impact on growth of the state economies, particularly on the farm sector.

States showed considerable variation in population growth. But compared to the national average very few states showed either continuous acceleration (Rajasthan) over the decades of 1961-71 and 1971-81 or continuous deceleration (Tamil Nadu). As a result there was hardly any shift in concentration of population across States over the two decades, nor did the population growth ~~altered~~ the relative density patterns across the states.

Unlike population growth, all states showed similar trend as far as level of urbanization was concerned. The level of urbanization was higher in 1981 as compared to that in 1971. Further, all states except Maharashtra, Tamil Nadu and Gujarat shared an acceleration in the rate of growth of urban population. An interesting feature of the period 1971-81 was that it was the relatively less urbanized states which experienced a rapid rate of urban growth. Pattern of urbanization, in terms of division of total urban population into six categories, showed alternations. Generally percentage of population in Class I (Millions) and Class II (5 lakh to one million) increased, whereas it declined in Class V (25,000 to 50,000) and Class VI (less than 20,000) towns. There was no clear trend in Class III (1 to 5 lakhs) and Class IV (50,000 to 1 lakh) towns. In the subsequent analysis an effort was made to relate the pattern of urbanization as a determinant of inter-regional industrialization.

A preliminary analysis of level and rate of growth of State Domestic Product (SDP) over 1961-81 gave interesting insight. There was considerable variation in the level of SDP across regions and there were also changes into the relative position of various states. Generally the share of states in National Domestic Product (NDP) was in line with their share in population, however, the relationship between SDP and area was not strong. No general pattern was seen in inter-regional compound rates of growth (CRG) over various periods. The coefficient of variation tended to decline over broad sub-periods 1970-71 - 1971-78 as compared to 1960-61 - 1970-71. But CRG over shorter periods showed considerable variation, being highest in 1974-75 - 1977-78. Therefore, it was not possible to draw any definite conclusion about the decline in inequality.

The position of various states in terms of per capita SDP fluctuated considerably during 1960-61 to 1977-78. However, these fluctuations did not alter group position of the States, though there were variations within the group. For instance five states Maharashtra, Punjab, Haryana, West Bengal and Gujarat always belonged to the group of richest states. Further, the inequality between per capita SDP of states was seen to be increasing over time. The differences in the initial levels of development as well as in CRG contributed to this phenomenon.

Given the growing inter-regional income inequalities, it was thought pertinent to examine the relationship between the level of per capita SDP and share of various sectors i.e., primary, secondary and tertiary, particularly to pinpoint the sector that was largely responsible for the observed inequalities. The analysis led to some interesting findings. The poor states (Orissa, Bihar and Uttar Pradesh) had low per capita SDP in all the three sectors. On the other hand amongst the richer states Punjab, Haryana and Gujarat had done well in all the sectors. The other rich states did not perform so well in all the sectors. The decline in rank of per capita SDP of Maharashtra and Tamil Nadu was mainly explained in terms of their weakened position in the primary sector. It was however difficult to pinpoint a single sector as the cause of high/low per capita SDP of a state. It was, however, noticed that initially disparities in the industrial performance were the maximum but had tended to decrease over time whereas disparities in the agricultural sector were not so high but tended to increase over time. Disparities in per capita SDP of different states were perhaps an outcome of all the three sectors, particularly primary and secondary sectors. Therefore, these two sectors were analysed separately to find out the causes of disparities in the performance of various states.

It was noticed that the disparities in secondary sector were relatively higher compared to other sectors. Therefore, the regional industrial activity base was studied in considerable details. Number of methods, such as location quotients, shift and share analysis, role of linkages, and an elaborate behavioural model were used to understand the factors that determine inter-regional industrialisation. It was noticed that the distribution of industries gave quite an uneven spread across states in India. It was found to be concentrated in four major states viz, Gujarat, Maharashtra, Tamil Nadu and West Bengal. But the level of unorganised segment of the manufacturing sector, by and large, did not confirm to the pattern of the organised large scale sector across the states. Possibly, unorganised sector was growing independent of the organised sector and had its own growth impulses across the states. Moreover, the relationship between the small scale (sample) sector and unorganised sector appeared to have strengthened over time. It is, plausibly a cause of scalar complementarity between these two segments of the manufacturing sector across space in India.

It was heartening to note that the inter-regional inequalities in the level of industrialisation showed a clear tendency to decline over time, with^{out} altering the fundamental

industrial structure across the regions. Resource base oriented industrial pattern was the basic characteristic of most of the regional economies in India. Al biet most of the states had tended to diversify their industrial base from traditional consumer goods sector to relatively more modern (capital and intermediate goods) sectors. The levels of industrialisation and level of industrial diversification of the regions were closely related. Thus, higher the level of industrial diversification in the state higher was the level of industrial development.

Though the performance of industrial sector was quite impressive in terms of quality as well as quantity, at the national level, the fruits of this growth were not being shared by the various states equitably. It was clear from the analysis that the industrial structure of the country was heavily concentrated in about 10 industry groups; and these industry groups in turn were concentrated in a few states. However, the tendency of spread and shift could not^{be} denied. But the pace had been far from satisfactory.

While attempting to isolate the factors which affected the level of industrialisation, we found that (a) out of all the demand and supply side factors, the supply side factors had a bearing in the early phase of industrialisation.

With the passage of time, demand side factors were found to assume greater importance; and (b) over all the factors like consumer's purchasing power, inter industry demand, demand of industrial goods emanating from agriculture sector, agglomeration economies and infrastructure were found to be crucial for the industrial development. Out of the sub-components constituting agglomeration economies and infrastructure; urbanisation from among agglomeration components and power from infrastructure appeared to be the most important.

Another feature which deserved mention was the negative association between the level of industrial development and the demand for industrial goods from agriculture sector. This is probably because of the fact that higher level of mechanisation and modernisation leads to a higher use of power. Thus both the sectors might have started vying for scarce power resources, with each other, leading to an adverse impact on the industrial growth. Given the government policies to give a boost to agriculture, this type of a situation warranted a serious thinking at the level of policy formulation. Unless a regionally as well as sectorally balanced planning strategy for growth could be evolved, it may not be possible to come out of such traps.

We have noted above that inter-regional disparities in the primary sector, though not as high as in the secondary

sector, had tended to increase over time, and also farm sector competed with the industrial economy to have a larger share of inelastic infrastructure, particularly power. An effort therefore was made to understand growth dynamics of the agriculture sector to identify the major factors determining the growth profile of the various regions. The analysis, to begin with, tried to map the inter-regional agricultural performance in terms of growth of crop output, productivity, gross cropped area etc. and subsequently a decomposition of growth exercise was undertaken to isolate the contribution of different factors, ^{e.g.,} area yield, cropping pattern etc.

It was noticed that the agriculture sector, though with a declining trend, continued to dominate the economic scene of most of the state economies as well as that of the country as a whole. The major contribution however came from seven large states viz. Uttar Pradesh, Maharashtra, Andhra Pradesh, Tamil Nadu, West Bengal and Madhya Pradesh.

Most of the states improved their levels of productivity over time, though most of the important states (seven dominant states as mentioned earlier) carried a low profile in terms of productivity, compared to the other states like Punjab, Haryana, Assam, Jammu & Kashmir and Kerala.

of
Decomposition/growth suggested that, by and large, contribution of yield to the growth of output was the highest followed by cropping pattern and area. The interaction effect of these variables in most of the cases was quite low. Major factors effecting yield per hectare or productivity appeared to be extension of irrigation, use of fertilizer and level of mechanisation. However, on the strength of the association it was difficult to say any thing conclusively. Interestingly enough, the association between agriculture and industry was observed to be insignificant. Positive in the initial stages, though, it turned out to be negative in the latter years. Thus it appeared that these two sectors had not grown correspondingly across the states. Therefore, it could be argued that a sectorally balanced strategy has to be evolved in the planning process which could take care of this anomaly.

Given the sectoral growth patterns into a regional matrix, an attempt was made to analyse inter-regional structure of the incidence of poverty, and shifts therein, over a period of 18 years, i.e. between 1960-61 and 1977-78. The analysis was carried out separately for rural and urban areas across the states. An attempt was also made to identify some of the important factors which affect the regional profile of the incidence of poverty over time.

It was observed that, at the national level, the incidence of overall poverty increased in the first sub-period (1960-61 to 1970-72) and declined during the second (1972-73 to 1977-78). It is interesting to note that the increase in the earlier period was solely due to the increase in the incidence of rural poverty. For, there was not change in the incidence of poverty in the urban areas during the corresponding period. An other interesting result which emerged out of the analysis was that inter-regional inequalities in the incidence of poverty were observed to be increasing over time despite a declining trend in the incidence of poverty—rural, urban and overall.

It was also observed that urban poverty, as often argued, is not an outflow of the rural poverty. It is a phenomenon in itself and behaves independent of the magnitude of the rural poverty, at least in the inter-regional context.

While seeking some explanations for the behaviour of inter-regional poverty structure, it was observed that per capita income, performance in the farm sector, the level of industrial development and per capita SDP generated in the unorganised manufacturing sector are inversely related with the incidence of poverty in rural as well as urban areas. The unemployment rates are directly related to the incidence

of poverty in rural areas, where as no trend was observed in the urban areas.

Another important observation was that there does not seem to be any direct association between the concentration of land ownership in the rural areas and the incidence of rural poverty. Similarly, no significant relationship was observed between incidence of rural poverty and the proportion of landless and semi-landless rural households. This type of relationship, though difficult to explain, deserves further exploration.

The spatial pattern of growth of the Indian economy gives some unusual features. Despite the fact that inter-regional convergence has emerged in some of the components of the economy, the over all income inequalities have tended to widen. Convergence is noticed in inter-regional industrial inequalities. Rates of inter state urbanisation are behaving in a manner that over time predominance of few states, as the most urbanised ones, would tend to diminish. Overall income inequalities seem to have risen mainly because of the behaviour of the agricultural sector.

The Indian economy also does not give the picture of an organic whole. Different components of the industrial economy—organised and the unorganised sectors—have tended to

grow independently of each other. Similarly farm sector growth and industrial sector growth seem to be negatively related, presumably both the sectors compete for the inelastic infrastructure, mainly power.

The growth of the farm sector is mainly explained by the technological upgradation which is reflected in the productivity growth. The same perhaps could not be said for the industrial economy where the role of agglomeration economies has tended to decline. It is possible that inter-regional industrial convergence is achieved at a high cost through the provision of subsidies and steering the industry to peripheral but unsuitable locations.

This sort of growth experience has led to widening of inter-regional inequalities in the incidence of poverty, despite the overall declining trend in the incidence of rural, urban and overall poverty. Rural and urban poverty emerge as independent phenomena. The former largely governed by the agricultural performance and the latter by the performance of the industrial sector.

It appears that to set the house in order various components of the Indian economy will have to be integrated in a manner that economy is able to have sustained and spatially balanced growth. Sectoral planning, particularly

in regional context, would require a lot more attention than what has been possible in the past. Industrial growth, given its effectiveness in reducing urban and to some extent rural poverty, will have to play major role in ~~the~~ manner that its productivity growth is not curbed.

It appears that a slow growing economy will not be able to solve the fundamental problems of the Indian economy, such as, poverty alleviation and removal of unemployment, through institutional reforms like reducing concentration of land in few hands and programmes directly aimed at target groups, such as agricultural labourers. Also given the fact that rural poverty and rural unemployment are highly associated phenomena, it may call for public work programmes where wage employment is generated. This would not only help in removing poverty and unemployment but if planned properly would add to social and economic infrastructure.

