CHAPTER V

ECONOMIC DEVELOPMENT IN ASSAM, 1951-71

5.1 Introduction

Economic development, in a sense of sustained increase in state domestic product or increase in aggregate or per head, may be considered to depend primarily upon the state's or region's resources, the efficiency with which they are used and the institutional framework within which the economy operates. ¹ More specifically the output or product of an economy, given its institutional framework can be seen as a function of its volume of human, natural and capital resources and their levels of productivity. ² The colonial institutional set up of the economy of Assam since the British period that we explained in Chapter III has not changed much even after the successive five year plans during the post-independence era. Though Assam possesses enormous potentialities for economic development with her vast natural

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² Ibid., p. 504.
and human resources, its lack of adequate capital resources has thwarted significant economic development of the State.

Assam is overwhelmingly an agricultural State and agriculture is the basis of the State's economy as still nearly 50 per cent of the total State Income is contributed by agricultural sector. Even now more than 90 per cent of the total population lives in rural areas. About 66 per cent of the total working force is engaged in agriculture. Although the process of industrial development of the country started with the inception of the Second Five Year Plan (1955-60), Assam lagged behind and only during the Third Plan period some industries both in public and private sector came up. Despite such efforts, Assam's relative share in the country's net product from manufacturing industries accounted for 3.1 per cent only during 1960-61 which came down to 2.4 per cent during 1965-66 and further to 2.2 per cent in 1969-70. These data only reflect the slow process of industrialization of the State in comparison to the industrialization of the nation as a whole.


4 Ibid.
The tertiary and secondary sector of the economy are very limited with hardly 18 and 5.47 per cent respectively of the total working force. The growing working force of the State could not be absorbed by these sectors, resulting in unemployment problem. The agricultural sector also faced the problem of underemployment and disguised unemployment due to heavy pressure of population on land. All these resulted in mass poverty in the State.

With the above background, Assam's state income, per capita income and distribution of income in details will be analysed during 1951-71 period which will reflect the aggregate performance of the State economy during the period under study. However, a further micro level study at district level to measure the levels of development and disparity will be undertaken to get a better idea about the actual performance of the economy. As the development process started in Assam only during the Third Plan period (1961-66), therefore, an inter-temporal analysis during 1961-71 will be undertaken. Subsequently, we would like to relate the levels of development at district level with the migration situations of different district that we have already discussed in the previous chapter. Prior to analyse all the aspects outlined above, it will be appropriate to highlight the relative economic backwardness of Assam when compared with other
states of India as well as the relation of the State economy with the national economy which are discussed in the next two sub-sections.

5.2 Economic Backwardness of Assam in Relation to Inter-state Disparities in Economic Development

During the last quarter century a lot has been written on the subject of regional disparities, particularly based on per capita income, in the process of national economic development. Some are of the opinion that regional disparities increase during early stages of development, but that they will decline after some unspecified higher level of development because of greater integration of the national economy. Others think that regional inequality becomes a vicious circle of cumulative causations with centre gaining strength and the periphery losing ground in infinite regress. The proponents of this hypothesis are of the view that regional disparities diverge in the process of national economic development. Certain others are of the opinion that

5 (a) G. Myrdal, Economic Theory and Underdeveloped Regions (Bombay: Vora Publisher, 1958).

regional disparities bear no fixed relation to the process of development as such, but rather that they are the artifact of the national political economy, which in turn reflects the world economic order. Despite abundance of these opinions on an important matter of policy concern, it is interesting to note that in recent years there has been a growing awareness amongst different countries that regional development policy has become indispensable for supporting general policy of economic development even in industrially advanced countries.

Thus the concept of 'balanced regional development' has gained increasing popularity with the awakening of social equity in the field of economic development. It advocates achievement of social goal of economic development of the whole region, without losing insight of economic needs and potentiality of area forming homogeneous groups within the region. The concept implicitly argues a case for economic equality in resource allocation to develop various economic activities so as to reduce economic distance within the areas of the region and between different regions.


It is to be noted that no single variable is sufficient enough to portray some of the complex characteristics of development which are not directly observable. As such, characteristics of development are only partially reflected by a single indicator like per capita income with an implicit assumption that it is an index of average level of living of the people in the region, which is not true in practice. Therefore, a set of proper variables is necessary to get the overall levels of regional development by working out a composite index from them. However, the models and techniques for regionalisation should emerge from the objectives of study and the theoretical framework within which the problem is posed. There exists no foolproof method of obtaining an 'operational index' for regionalisation from its theoretical concept. There are four stages involved in this task and at each stage one cannot help making a series of value judgements. These stages are: (a) selection of variables, (b) the decision about the unit area for which data are to be obtained, (c) compositing the variables, and (d) classification on the basis of homogeneity. Based on different value judgements, a number of studies have already been done in India to

measure levels of development of different states and the relative position of Assam found to be one of the lowest in almost all studies.\textsuperscript{10}

In spite of all these studies a fresh attempt is made here to measure the levels of development in India during the mid seventies with the help of ten properly chosen variables for sixteen major states of India to assess the performance of Assam economy in comparison to other states. These variables will cover both agricultural and industrial sector in addition to the availability of basic infrastructural facilities in each state. The per capita development and non-development expenditure from Revenue and Capital Account have also been incorporated for the year 1976-77 as they will reflect the relative share of different states under these two headings. Thus the following variables have been chosen for the purpose and details are given in Appendix V.


(c) Asok Mitra, "Levels of Regional Development in India, Census of India, 1961.

1. Percentage of total workers to total population ($v_1$)
2. Percentage of net area sown to total cropped area ($v_2$)
3. Yield rate of rice in quintals ($v_3$)
4. Per capita consumption of electricity in KWH ($v_4$)
5. Percentage of village electrified ($v_5$)
6. Length of roadways (in km) per 100 sq km ($v_6$)
7. Length of railways (in km) per 1000 sq km ($v_7$)
8. Per capita bank credit-deposit ratio in ₹ ($v_8$)
9. Per capita non-development expenditure in ₹ ($v_9$)
10. Per capita development expenditure in ₹ ($v_{10}$)

As mentioned above, there are many methods of constructing composite index of these variables to measure the levels of development. However, we are using here 'Ranking Method' which can present the overall picture as an adequate number of variables has been included. This method of drawing a composite index involves a straightforward summing up of the rank-order of states in respect of different variables. In some cases where rank of two or more than two states are found to be the same for a single variable, we have overcome the problem of such ties by giving a rank value equal to the average of the successive ranks given to them and then adjusted the rank for the next
INDIA (MID 70's)
LEVELS OF DEVELOPMENT
OF SELECTED STATES

Fig. 6
state accordingly. 11

The Appendix V shows that in case of most of the variables Assam’s rank is on the lower side in comparison to that of the other states of India. But it is surprising to note that Assam ranked lowest when a composite index is prepared, clearly depicting its economic backwardness. The other six comparatively backward states that can be grouped together are the states of Madhya Pradesh, Bihar, Uttar Pradesh, Orissa and Jammu & Kashmir. The levels of development of other states are shown in Fig 6 and on the basis of it we may conclude that levels of regional development in India are uneven and a state like Assam is lagging far behind other states in India some of which have progressed considerably.

5. Relation of the State Economy with the National Economy

A modest attempt is made here to review the economic relations of Assam with the country as a whole. The major items which are imported into Assam from different

11 For example, in case of yield rate of rice Gujarat and West Bengal’s performance were equal and therefore, both the states are given rank of 10.5 by taking the average of 10th and 11th rank. Naturally, the next rank holder, viz. Assam, got the 12th rank. This ranking method was adopted by Asok Mitra in the volume of ‘Levels of Regional Development in India’ of the Census of India, 1961.
parts of the country are cement, sugar, iron and steel, textiles, heavy machinery and tea garden machinery and materials for oil industry. A huge amount of other food items are also imported. On the other side, Assam exports tea, jute, plywood and crude oil to many other parts of the country and also outside the country (except crude oil). However, the value of commodity outflows and inflows was found to be balanced in 1968-69 at Rs 200 crores. It is difficult to comment upon present value of commodity flows into Assam and out of it. This is mainly due to the reason that the price of petroleum products has increased manifold on one hand and on the other hand most of the commodities which are imported into Assam from other parts of the country are sold out at significantly higher prices in Assam, as compared to other states of India.

The production of tea, jute, plywood and crude oil helps both the State and national economy in many ways by creating employment opportunities, augmenting substantially the availability of foreign exchange etc. However, the share of benefit derived from these products is unevenly distributed between the State and Centre or other states.

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For example, in case of tea and plywood, since a large portion is sold outside the State, the revenue that should accrue to the State gets diverted elsewhere. In case of plywood products the value of production was about Rs. 27.80 crores in 1978-79 and the amount of excise duty paid to the Central Government amounted is 6.17 crores. But a meagre sum of Rs. 0.35 crore was paid to the State Government as sales tax, Assam finance tax, and central sales tax. It is also interesting to observe that 80 per cent of the plywood products are transferred to different depots located at Ahmedabad, Bangalore, Bombay, Dhanbad, Hyderabad, Madras, Jallandhar, Nagpur, Jaipur, Goregaon, Chandigarh, Calcutta etc. Even some of the plywood mills sell their tea-chest ply which is locally required through their agents outside the State of Assam. As a result of such depot transfers, Government of Assam is deprived of earning a huge amount of revenue to the tune of Rs 1.5 crores annually.

In case of tea also more than 50 per cent of the total tea is auctioned outside the State and as a result the State Government is deprived of a handsome amount of revenue.

14 Ibid.
15 Ibid.
Similarly, in case of crude oil also Assam gets a nominal royalty from the Centre. Thus, it can be argued here that the benefits derived by the State economy from these major products seem to be relatively insignificant.

In corporate business, a majority of investors are migrants from different parts of India and the profits accrued in their business are remitted to their places of origin. Similarly, a good number of daily wage earners are from outside the State and they send regular money orders to their home places. A study done by an expert team sponsored by IDBI estimated that their outflow amounts to about ₹130 crores annually\(^\text{16}\) which is about 17.16 per cent of the State Income of 1970-71. Besides, there has been net outflow of resources through savings mobilization by the banks. The excess of bank deposit over the bank credit in Assam was ₹20.35 crores in 1969 and the same has increased to ₹220 crores in 1982. Thus the outflow of funds has meant another major setback for the economy of Assam as the actual total circulation of money within the economy of the State is far less than the amount stipulated to be circulated due to these outflows. Thus the regional multiplier effect was considerably low within the State economy.

\[^{16}\text{Draft Fifth Five Year Plan, Assam, op. cit., p. 9.}\]
5.4 Central Transfer of Resources and Plan Expenditures during the Plan Periods

As mentioned earlier, although there has been a substantial outflow of financial resources through the public and private sectors, monetary institutions and private individuals, it is to be noted that the central transfers to the state have been relatively more than other states of the country. The following Table 5.1 shows the plan-wise per capita transfers effected under the awards of successive Finance Commissions, and the per capita Central assistance given by Planning Commission to finance the State plans.

**TABLE 5.1 TRANSFER OF CENTRAL RESOURCES DURING VARIOUS PLAN PERIODS**

<table>
<thead>
<tr>
<th>Plans</th>
<th>Per capita transfers under the awards of successive Finance Commission (Rs)</th>
<th>Per capita Central Assistance to the State plan outlays by the Planning Commission (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assem All states Avg</td>
<td>Assem All States Avg</td>
</tr>
<tr>
<td>First Plan</td>
<td>- 23 24</td>
<td></td>
</tr>
<tr>
<td>Second Plan</td>
<td>35 22 26</td>
<td></td>
</tr>
<tr>
<td>Third Plan</td>
<td>53 31 49</td>
<td></td>
</tr>
<tr>
<td>3 Annual Plans</td>
<td>61 32 35</td>
<td></td>
</tr>
<tr>
<td>Fourth Plan</td>
<td>135 93 60</td>
<td></td>
</tr>
<tr>
<td>Fifth Plan</td>
<td>321 186 130</td>
<td></td>
</tr>
<tr>
<td>Sixth Plan*</td>
<td>355+ 365+ 566+</td>
<td>218+</td>
</tr>
</tbody>
</table>

* Sixth Plan (1980-85) allocations
  + Estimated awards under the Seventh Finance Commission

It is clear from the Table 5.1 that per capita transfers to the State have been generally above the average for all states except for a marginal lower transfer by the last Finance Commission. However, no definite conclusion can be drawn about the adequacy of the marginally higher level of Central transfers to Assam since the State is characterized by a very low level of development as indicated earlier. It is, therefore, also necessary to examine the per capita plan expenditure in the State during the plan periods and compare the same with all India average. Table 5.2 gives us the per capita plan expenditures during various plan periods for Assam and average of all states of India.

**TABLE 5.2** PER CAPITA PLAN EXPENDITURES DURING THE VARIOUS PLAN PERIODS (in Rs.)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>State/Country</th>
<th>First Plan</th>
<th>Second Plan</th>
<th>Third Plan</th>
<th>Annual Plan</th>
<th>Fourth Plan</th>
<th>Fifth Plan</th>
<th>Sixth Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assam</td>
<td>29</td>
<td>57</td>
<td>103</td>
<td>61</td>
<td>136</td>
<td>324</td>
<td>762</td>
</tr>
<tr>
<td>2</td>
<td>All India Average</td>
<td>38</td>
<td>51</td>
<td>91</td>
<td>61</td>
<td>142</td>
<td>358</td>
<td>872</td>
</tr>
<tr>
<td>3</td>
<td>Difference (1-2)</td>
<td>-9</td>
<td>6</td>
<td>12</td>
<td>0</td>
<td>-6</td>
<td>-14</td>
<td>-100</td>
</tr>
</tbody>
</table>

* Sixth Plan (1980-85) allocation.

It may be observed from the above table that except for the second and third plan periods, the per capita plan expenditures during rest of the planning era was comparatively lower in Assam than the all India average and the difference is increasing since the Fourth Plan from Rs. 6 to Rs. 100 in the Sixth Plan. In an economically backward state like Assam where unit cost of development is much higher than the other states of the country, the relatively decreasing trend of lower per capita plan expenditure at an increasing rate over the plan periods will definitely lead to further widening of relative gap between the state economy and the rest of India.

5.5 **State Income, Per Capita Income and Distribution of Income**

To measure the levels of economic development of a state and to compare it with other states or national economy, state income provides the most comprehensive single indicator in India. Although the estimates of state income of different states and national income are not comparable in the strict sense, nevertheless, the rates of growth of national income and state income provide a fair basis for comparing the relative growth of their economies. Similarly, the comparison of per capita income can also present the same in a better way. But, it is to
be noted that the state income, national income and per capita income do not spell out anything about the distribution of income aspects. Therefore, it is essential to undertake additional analysis on distribution of income together with state income, national income and per capita income to understand the actual state of affair of different economies. An attempt has been made here in this direction.

5.5.1 State Income

The Department of Economics and Statistics (now known as Directorate of Economics and Statistics) of the Government of Assam publishes regularly the official estimates of net domestic product of the State at current as well as constant prices with 1948-49 as the base year. These estimates of state income are income 'originating' within Assam, and not incomes 'received' or accruing to the residents of the State. In any case they serve as a reliable indicator of value added by or production growth of the various economic sectors. The estimates are worked out and published by sectors of industrial origin.
The estimates of state income of Assam at current and constant in Table 5.3 show that during 1951-71 decades the total income at constant prices (1948-49) increased by 90.75 per cent. The decadal break-up of the growth of state income during fifties and sixties shows that it was 31.02 per cent in fifties and 45.59 per cent in sixties. Thus the above figures reveal that state income increased substantially only during sixties. This is because of the fact that development of industrial sector was started only during the Third Plan period. This is corroborated by Table 5.4 which gives compound growth rates of state
income at constant prices based on end point values over the various plan periods.

**TABLE 5.4 COMPOUND GROWTH RATES OF STATE INCOME AT CONSTANT (1948-49) PRICES**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Plan Period</th>
<th>Compound Annual Growth Rate (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>First Five Year Plan (1951-56)</td>
<td>3.3</td>
</tr>
<tr>
<td>2</td>
<td>Second Five Year Plan (1956-61)</td>
<td>2.2</td>
</tr>
<tr>
<td>3</td>
<td>Third Five Year Plan (1961-66)</td>
<td>4.1</td>
</tr>
<tr>
<td>4</td>
<td>Ad hoc Annual Plans (1966-69)</td>
<td>3.8</td>
</tr>
<tr>
<td>5</td>
<td>First Three Years of Fourth Five Year Plan (1969-72)</td>
<td>3.4</td>
</tr>
</tbody>
</table>


Table 5.4 clearly indicates that the compound annual growth rate was highest (4.1 per cent) during the Third Five Year Plan and gradually declined to 3.8 per cent during Ad hoc Annual Plans (1966-69) and it further declined to 3.4 per cent during the first three years of Fourth Five Year Plan (1969-72). However, as a whole, the performance of the economy was better in the decade 1961-71 than in the previous decade 1951-61.

If we look at the break-up of the state income, then also it is clear that such increasing growth rates
in the sixties was due to the increasing share of income from the secondary and tertiary sectors. The combined percentage contribution of these two sectors was found to be 33.4 per cent in 1950-51, 43.4 per cent in 1960-61 and 54.1 per cent in 1970-71 at constant prices. Thus the trend shows a faster shift towards non-agricultural sector.

On the other hand, it may be mentioned that the share of income from agriculture to net domestic product at constant prices fell from 66.6 per cent in 1950-51 to 45.9 per cent in 1970-71. However, during the same period, there was a much smaller fall in the percentage of agricultural workers to total workers from 73.3 per cent to 65.7 per cent, indicating the heavy pressure of population on land in Assam. In other words, the gradual increase in the role of non-agricultural sector as seen from the earlier analysis failed to absorb a proportionate number of workers into the sector and thus the pressure of population in agricultural sector could not be reduced much during 1951-71 period.

17 The change in the definition of 'worker' in 1971 census is partially responsible for such decline.
5.5.2 Per Capita Income

Table 5.5 gives the trend of per capita income in Assam and India during 1951-71 period.

<table>
<thead>
<tr>
<th>Year</th>
<th>Assam At Current Prices</th>
<th>Assam At Constant Prices (1949-49 prices)</th>
<th>India At Current Prices</th>
<th>India At Constant Prices (1970-71 prices)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950-51</td>
<td>299.2</td>
<td>258.6</td>
<td>242.9</td>
<td>466.0</td>
</tr>
<tr>
<td>1955-56</td>
<td>277.6</td>
<td>315.3</td>
<td>232.4</td>
<td>507.7</td>
</tr>
<tr>
<td>1960-61</td>
<td>315.3</td>
<td>251.3</td>
<td>305.6</td>
<td>558.8</td>
</tr>
<tr>
<td>1965-66</td>
<td>393.7</td>
<td>264.9</td>
<td>425.5</td>
<td>558.8</td>
</tr>
<tr>
<td>1970-71</td>
<td>527.6</td>
<td>271.5</td>
<td>632.8</td>
<td>632.8</td>
</tr>
</tbody>
</table>


It is clear from Table 5.5 that per capita income in Assam was higher than the national per capita income till 1960-61, but gradually national per capita income became higher than the state per capita income despite the
fact that development process started during the Third Plan in Assam.

One of the basic reasons that can be put forward for such relatively lower per capita income in Assam is the faster rate of growth of population than the all India average. But it is to be noted that faster growth of population was not only during the decade 1961-71, but also for the decade 1951-61. Therefore, rapid growth of population alone cannot explain the lower per capita income for Assam. If we analyse the growth rates of state income and national income during the period 1951-61 and 1961-71 respectively, it was found to be 42.07 and 125.50 per cent for the state income as against 52.10 and 158.12 per cent for the national income during the same period. This clearly indicates the fact that the national economy as a whole is growing at a faster rate than the state economy of Assam and thus Assam could not step together with the national economy in the development process during 1951-71 period.

5.5.3 Distribution of Income

Unfortunately, data on income distribution according to groups are not available either for state or the country as a whole and therefore, we cannot present the
picture on distribution of income directly. As a result, an indirect approach to gauge the income distribution is essential and the per capita monthly expenditure may be considered as an alternative since expenditure of an individual is directly related to his income in a poor country like India with a high marginal propensity to consume. The different rounds of National Sample Survey provide the necessary data on per capita monthly expenditure for the State as well as the country by expenditure classes and the Appendix VI based on 24th Round of the National Sample Survey shows the distribution of population by monthly per capita expenditure class in rural and urban areas of Assam and India in 1969-70. This will indicate the impact of economic development on different classes of population during the two decades of planning and throw light on the classes of population have benefited and those which have not by the process of economic development so far.

Appendix VI shows that monthly per capita expenditure up to Rs.43 constitute 73.12 per cent in rural areas and 33.59 per cent in urban areas in Assam as against 78.03 and 58.42 per cent respectively for all India average. These figures are pointer to the fact that there exists significant disparity in the distribution of income between rural and urban population of Assam as compared to all India average.
Urban population in Assam have benefited more by the process of economic development. It is found in the Fourth Plan document that private consumption of ₹20 per capita per month at 1960-61 prices were deemed as minimum desirable consumption standard which afterwards changed to ₹40.00 per capita per month at current prices in the Approach to the Fifth Plan document. Applying this criterion in the above mentioned distribution of expenditure classes it may be concluded that Assam's percentage of population below the poverty line will be smaller than the all India average.

However, several studies have revealed that the price level in Assam had been substantially higher than the all India level and therefore Planning Board of Assam has accepted a price variation of 20 per cent above the all India price level. Hence, to determine poverty line in Assam, the amount of per capita monthly consumption should be raised to ₹43 instead of ₹40 for all India. This criteria yields the number of persons below the poverty line in Assam to be 5.16 lakhs or 40 per cent and 102.69 lakhs or 77 per cent in urban and rural areas respectively making a total of 107.85 lakhs, that is, 73.74 per cent for the State as a whole in 1970-71.

This shows that whatever growth or development in Assam has taken place during 1951-71, nearly three-fourth
of the total population of the State even could not afford the minimum consumption need prescribed by Planning Commission and therefore it is quite natural that their contribution to the State economy was also very insignificant. Thus the greatest mistake made by the policy makers during the period was the neglect of such vast valuable human resources which otherwise could have been better utilized and the process of development in Assam could have been accelerated. Although there was little scope for investment in the 'Directly Productive Activities' (DPA) due to lack of proper infrastructure during the period, it may be mentioned here that a huge amount of investment on 'Social Overhead Cost (SOC) to build-up the necessary infrastructure was very essential. This would have increased the effective demand, employment and output of the State economy to a considerable extent and thus would have reduced the percentage of population below the poverty line in Assam. Thus, the neglect of distribution of income aspect resulted in non-utilisation of vast and valuable human resources which has hampered the process of economic development in Assam during 1951-71 period.

5.6 Levels of Economic Development and Disparity at District Level

5.6.1 Introduction

In this section an attempt has been made to study the economic structure of various districts at two points
of time, viz., 1960-61 and 1970-71 to test the hypothesis whether regional disparities have decreased through the development process during the period under study. The selection of the decade is based on the fact that the compound growth rates of state income during the decade was higher than in fifties (Table 5.4) due to substantial investment and therefore, it will enable us to gauge the levels of economic development and disparity in a better way. The main purposes of the present section may be put as:

(i) To measure the levels of development of various districts and to identify the relatively backward districts or more advanced districts within the State during the two time periods, viz. 1960-61 and 1970-71.

(ii) To test the hypothesis whether the regional disparities have decreased during the decade or not.

(iii) Also to examine whether migration stream gets attracted to more advanced districts.

As development is a multi-dimensional phenomenon, so we do not accept a single indicator of development like per capita income only. The present study covers a number of indicators under four sectors, viz. agricultural sector; industrial sector; transport, communication and financial
institution sector; and lastly the social welfare sector. All possible care has been taken in selecting the variables that are considered to be reflective of development. The variables in a specific group are different in content but they are almost parallel. The following are the variables chosen under different sectors:

(A) Agricultural Sector

1. Net cropped area per agricultural worker ($a_1$)
2. Percentage of net cropped area to total geographical area ($a_2$)
3. Percentage of cultivators to total agricultural workers ($a_3$)
4. Percentage of area under non-food crop to net cropped area ($a_4$)

(B) Industrial Sector

1. Number of workers in registered factories per 10,000 workers ($b_1$)
2. Number of urban population per 10,000 population ($b_2$)
3. Number of workers in trade and commerce per 10,000 total workers ($b_3$)

(C) Transport, Communication and Financial Institution Sector

1. Number of registered motor vehicles per 1,000,000 population ($c_1$)
2. Length of roadways per 10,000 square km ($c_2$)
3. Number of Banks per 1,000,000 population ($c_3$)
4. Number of Post Offices per 1,000,000 population ($c_4$)
190

(d) **Social Welfare Sector**

1. Number of beds in hospitals per 1,000,000 population ($d_1$)

2. Number of doctors in hospitals per 1,000,000 population ($d_2$)

3. Percentage of literacy to total population ($d_3$)

4. Per capita electricity consumption ($d_4$)

Two indicators in the above list, viz. the number of post offices ($c_4$) and the per capita electricity consumption ($d_4$) could not be taken into account for 1960-61 due to non-availability of data at district level, but they are included for 1970-71.

5.6.2 **Selection of Study Unit and Data Base**

The present study is based on the district as unit of measurement. Although efforts were made to study the spatial disparities in the levels of development at a lower unit, viz. block or sub-divisional level, to have a better assessment, but we could not make much headway due to the non-availability of data at lower than the district level. Due to the heterogeneous size and composition of the districts of the State, the transformation of the indicators had to be done to make them comparable. There were two changes in the district boundaries, viz., Lakhimpur and North Cachar &
Mikir Hills, during the period of analysis of which only case of latter is taken into account. The Lakhimpur district was divided into two districts, viz. Lakhimpur and Dibrugarh, which could not be taken into consideration due to the non-availability of data for their new district boundaries. The data used here are of secondary in nature and collected from different sources. 18

3.6.3 Construction of Composite Index

At the first step in our study, the composite index for each sector has been calculated with the help of the selected indicators under each sector. This sector-wise

18 Data regarding net cropped area, geographical area, area under non-food crop, number of registered vehicles, length of roadways and per capita consumption of electricity are taken from the 'Statistical Hand Books' of the Department of Economics and Statistics, Government of Assam. The number of beds and the number of doctors are taken from the Director of Health and Family Planning, Assam. Data related to the number of workers in registered factories have been taken from the Chief Inspector of Factories and Boilers, Assam and data relating to population, workers in trade and commerce, cultivators, agricultural workers, literacy and urbanization are taken from 1961 and 1971 Census Reports. Data regarding the number of post-offices have been collected from the office file of the Headquarter of the Post and Telegraph Office (Shillong) for the North-Eastern Zone. Lastly, the 'Statistical Profile, Districts of India, Multilevel Planning Section, Planning Commission, Government of India, September 1974' has provided the data related to banking.
composite index will help us to know the position of different districts in respect of different sectors. As our study is based on two time periods analysis the sector-wise composite index can give us more information about the relative changes that took place in different sectors during the decade under study. Next, we have calculated the composite index for the overall economy by taking all the sectors into account for both the time periods.

It may be mentioned here that there are many methods of constructing composite index of the levels of development of a region and we have already used Ranking Method to present the inter-state disparity in India. However, no weight was assigned to the variables in this method. The lacuna of absence of weights for the variable, or the use of equal weights is sought to be corrected by the more rigorous principal component analysis, which together with discriminant function, yields a more rigorous system of composite classificatory indices.

Although the principal component analysis is a powerful tool with immense utility in the regionalization, it has however been pointed out that this method is not as objective as it appears to be. Subjectivity enters at

various stages right from the process of selecting variables and unit areas to the cartographic portrayal of final results.

The mathematical steps that have generally been followed in the principal component analysis are as follows:

At first, we standardize the given data matrix to get the correlation matrix $R = \frac{\hat{x}' \hat{x}}{n}$. Standardization means that we subtract the column mean from the individual values for all the observations given in the column and then provide them by the respective column standard deviations. The standardization of raw data eliminates the biasness of scale and the data becomes comparable. Then, with the help of the characteristic equation $(R - \lambda I) K = 0$, we get the eigen values ($\lambda$ values). Taking the highest eigen value which explains the highest variation, we get the corresponding eigen vector ($K$). This eigen vector represents the weights. These weights are finally multiplied with the standardised matrix to get the final composite index.

The logic behind this method is that it enables us to determine the vector known as the first principal component (linearly dependent on the variables) having the maximum sum of squared correlations with the constituent variables. However, this principal component analysis is not very suitable in underdeveloped countries to measure the levels of development as we are to face the problem of
'negative weights' and 'weights' are determined strictly on the basis of correlation, i.e. the higher the inter-relation, the higher shall be the weight. But it is to be noted that negative weights are found mainly due to the negative elements in the correlation matrix which are quite natural in a developing country like India, but very difficult to explain to suit the purpose. Similarly, there cannot be any a priori justification of assigning higher 'undue weights' to highly correlated variables that undermines the other variables.

Thus, we are interested in relying upon the technique which can present a picture nearer to reality on the problem in hand. The problem of 'negative weight' and 'undue importance' to a particular indicator can be solved by replacing the standardised matrix (\( \mathbf{X} \)) by the normalised matrix (\( \hat{\mathbf{X}} \)) and the correlation matrix \( \mathbf{R} = \frac{\hat{\mathbf{X}}' \hat{\mathbf{X}}}{n} \) by the matrix \( \mathbf{A} = \frac{\hat{\mathbf{X}}' \hat{\mathbf{X}}}{n} \). Normalised matrix can be obtained by simply dividing the column data by their respective means. We, then, follow the same steps as explained above to get the final weights and the final weights are ultimately multiplied with the normalized data to get the final composite index. This method is often known as maximising the sum of squared projections.  

In this section, the sectoral development indices have been obtained by applying Kendall’s\(^{21}\) method of maximising the sum of squared projections which is identical statistically to the first principal component of variables considered in each economic sector.

The first principal component in each sector is computed in such a way that it explains the maximum of total variation depicted by the constituent variables. In 1960-61, the variation explained by the first principal component in agricultural sector has been found highest (92.43 per cent) followed by Social Welfare Sector (89.59 per cent), transport, communication and financial institution sector (88.78 per cent) and industrial sector (78.51 per cent). In 1970-71 also, the variation explained by the first-principal component in transport, communication and financial institution sector has been found to be the highest (88.71 per cent) followed by agricultural sector (87.72 per cent), industrial sector (82.58 per cent) and social welfare sector (72.31 per cent).

The equation for these four sectoral indices have been found as follows:

\[
\begin{align*}
A_1 &= 1.02 a_{11} + 1.14 a_{21} + 0.94 a_{31} + 1.06 a_{41} \\
B_1 &= 1.32 b_{11} + 1.06 b_{21} + 1.02 b_{31} \\
C_1 &= 1.18 c_{11} + 0.88 c_{21} + 1.02 c_{31} \\
D_1 &= 1.16 d_{11} + 1.02 d_{21} + 0.97 d_{31}
\end{align*}
\]

For the year 1970-71

\[
\begin{align*}
A_1 &= 1.04 a_{11} + 1.14 a_{21} + 0.94 a_{31} + 1.02 a_{41} \\
B_1 &= 1.38 b_{11} + 0.97 b_{21} + 1.02 b_{31} \\
C_1 &= 1.17 c_{11} + 0.97 c_{21} + 0.99 c_{31} + 1.12 c_{41} \\
D_1 &= 1.06 d_{11} + 0.93 d_{21} + 1.23 d_{31} + 1.05 d_{41}
\end{align*}
\]

Where \( A_1, B_1, C_1 \) and \( D_1 \) stand for sectoral development index number of \( i \)th district; \( a_{ji}, b_{ji}, c_{ji} \) and \( d_{ji} \) stand for the normalised data matrix of agriculture, industry, transport, communication and financial institution, and social welfare sector respectively.

In the second stage of composition an attempt is made to aggregate the four sectoral development indices into one. Here also, the same process is followed and the equations for the overall economy were found to be as follows:
\[ E_1(1960-61) = 0.97 A_1 + 1.09 B_1 + 1.05 C_1 + 0.93 D_1 \]  
(9)

\[ E_1(1970-71) = 0.99 A_1 + 1.11 B_1 + 1.02 C_1 + 1.02 D_1 \]  
(10)

Where \( E_1 \) (1960-61) and \( E_1 \) (1970-71) stand for the composite index of the overall economy of the \( i \)th district for the year 1960-61 and 1970-71 respectively; \( A_1 \), \( B_1 \), \( C_1 \) and \( D_1 \) represent the sectoral indices as separately calculated above for the two time periods under study.

5.6.4 The Classification of Districts

As the number of observations is small, so it is easier to classify by taking into consideration the closely related indexes (known as cluster method) under specific group. Special care has been taken to include the homogeneous districts with close composite index under the same group and exclude the others with exceptionally high or low composite indexes in separate group.

5.6.5 Measures of Regional Disparities

Regional disparity can be measured with the help of simple coefficient of variation. But to get an accurate picture of the degree of disparity, it is perhaps better
to include the normalised distribution of population into account. So, in order to estimate and compare the prevailing regional disparities in different sectors of the economy under study at two points of time the weighted coefficient of variation has been calculated with the help of the following formula:

\[
V_w = \sqrt{\frac{\sum_{i=1}^{n} (Y_i - \bar{Y})^2 \frac{P_i}{P}}{\bar{Y}}} \times 100
\]

where

- \( V_w \) = Weighted coefficient of variation
- \( Y_i \) = Index of the \( i \)th district
- \( \bar{Y} \) = Average index of the districts
- \( P_i \) = Population of the \( i \)th district
- \( P \) = Total population of all the districts

---


5.6.6 Levels of Development at District Level During Sixties

On the basis of development indices for different sectors and the economy as a whole, the districts are in general classified into three homogeneous categories, viz. High (H), Medium (M) and Low (L). But an additional category has also been introduced viz. Very High (VH) due to the high composite index of a particular district (Lakhimpur) in both the time periods. The districts under 'Low' category may be considered as backward districts, that of 'Medium' category as less developed districts and that of 'High' category as comparatively developed districts of the State. The 'Very High' category may be considered as comparatively advanced district in the State. The details of composite indices, ranks and classifications are given in Appendices VII and VIII for 1960-61 and 1970-71 respectively.

While analysing the levels of development under agricultural sector, the districts of Nowgong, Kamrup, Darrang and Sibsagar are found in 'High' category as against Cachar, Coalpara and Lakhimpur in 'Medium' category during both the time periods under study. Similarly, North Cachar and Mikis Hills (Karbi Anglong) were found to be in the 'Low' category in 1960-61 and 1970-71 as well. Thus levels of development under agricultural sector
remained more or less stagnant in all the districts except changing their relative ranks during the period under study.

Under industrial sector, however, it is interesting to observe that Lakhimpur district occupied a separate position with high sectoral composite indices in both the time periods and was therefore placed in the 'Very High' category at two points of time. It is also to be noted that the predominance of Lakhimpur district in industrial sector is mainly due to the existence of a large number of tea gardens and the tea processing factories together with oil refinery at Digboi, Hindustan Fertilizer Corporation at Numrup, Oil India Ltd at Duliajan and a good number of fabricating units located near Tinsukia. All these units are located in Dibrugarh subdivision of Lakhimpur district. It is interesting to note that after the declaration of Dibrugarh as a separate district from unified Lakhimpur, the present Lakhimpur district is declared as 'zero industry district' by the government. Thus, within the district (old) also we find vast disparity in the levels of industrial development.

In case of other districts under industrial levels of development, Sibsagar and Cachar can be grouped under 'High'; Kamrup, Darrang, Coalpara and Nagaon under
'Medium'; and North Cachar and Mikir Hills under 'Low' in 1960-61. However, it is found that Kamrup and Darrang districts have done well during the decade and therefore can be grouped under 'High' category in 1970-71. Due to the relative deteriorating performance of Cachar, it may be grouped under 'Medium' category in 1970-71. The other two districts, viz. Nowgong and Goalpara remained in the same 'Medium' category as were in 1960-61. Thus we find some movement of districts from one category to another under industrial sector showing the variation in the levels of development at district level.

Under transport, communication and financial institution, the districts of Kamrup, Sibsagar and Lakhimpur are found to be under 'High' category and Darrang, Cachar, Nowgong and Goalpara found to be under 'Medium' in 1960-61. North Cachar and Mikir Hills district found to be in the 'Low' category during the same period. However, in 1970-71, after the bifurcation of this district, it is found that North Cachar came under the 'High' category together with Kamrup and Sibsagar while Mikir Hills (Karbi Anglong) remained in the 'Low' category together with Cachar, Darrang and Goalpara districts. The other two districts, viz. Lakhimpur and Nowgong can be grouped together under 'Medium' category.
ASSAM (1961)
LEVELS OF DEVELOPMENT

Fig. 7
Similarly, under social welfare sector, the districts of Lakhimpur, Darrang, North Cachar & Mikir Hills can be grouped together under 'High' category; Kamrup and Sibsagar under 'Medium' category; and Nowgong, Cachar and Goalpara under 'Low' category in 1960-61. However, in 1970-71 Lakhimpur distinguished itself by high composite index and therefore under 'Very High' category while North Cachar and Mikir Hills (Karbi Anglong) can be grouped together under 'High' category. The districts of Kamrup and Sibsagar once again can be grouped under 'Medium' category together with Darrang. The districts of Goalpara, Nowgong and Cachar remained under 'Low' category in both the time periods except in changing their relative ranks.

Now, if we combine all the sectors together and try to get the overall levels of development at district level for 1960-61 (Fig 7) and 1970-71 (Fig 8), it is found that the district of Goalpara and Karbi Anglong remained under 'Low' category throughout the period under study showing their economic backwardness while North Cachar district after bifurcation could achieve 'Medium' category in 1970-71 as against its 'Low' category in 1960-61. Similarly, the districts of Darrang, Cachar and Nowgong remained under 'Medium' category in 1960-61 and 1970-71 as well. Lakhimpur district found to be in 'High' category
ASSAM (1971)
LEVELS OF DEVELOPMENT

Fig. 8
in 1960-61 but achieved 'Very High' category in 1970-71. The other two districts which could improve their relative overall performance are Sibsagar and Kamrup which are grouped under 'High' category in 1970-71 as against their 'Medium' category in the previous decade. Thus we find that except a few districts majority of the districts were within the same overall development category indicating the relative stagnation of the economy during our period under study.

5.6.7 Inter-sectoral Disparities during Sixties

In order to see the extent of inter-sectoral disparities of each district in the levels of development, the coefficients of variation of the sectoral indices have been calculated for all the districts under study for both the time periods, viz., 1960-61 and 1970-71. The results are presented in the following Table 5.6:

**TABLE 5.6 INTER-SECTORAL DISPARITIES IN 1960-61 AND 1970-71**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>District</th>
<th>Coefficient of Variation</th>
<th>1960-61</th>
<th>1970-71</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Goalpara</td>
<td></td>
<td>36.30</td>
<td>30.15</td>
</tr>
<tr>
<td>2</td>
<td>Kamrup</td>
<td></td>
<td>24.69</td>
<td>16.33</td>
</tr>
<tr>
<td>3</td>
<td>Darrang</td>
<td></td>
<td>19.13</td>
<td>19.24</td>
</tr>
<tr>
<td>4</td>
<td>Nongpoh</td>
<td></td>
<td>50.70</td>
<td>37.36</td>
</tr>
<tr>
<td>5</td>
<td>Sibsagar</td>
<td></td>
<td>29.58</td>
<td>18.50</td>
</tr>
<tr>
<td>6</td>
<td>Lakhimpur</td>
<td></td>
<td>31.72</td>
<td>23.75</td>
</tr>
<tr>
<td>7</td>
<td>Cachar</td>
<td></td>
<td>36.14</td>
<td>10.41</td>
</tr>
<tr>
<td>8</td>
<td>Mikir Hills (Karbi Anglong)</td>
<td></td>
<td>44.90</td>
<td>51.51</td>
</tr>
<tr>
<td>9</td>
<td>North Cachar</td>
<td></td>
<td></td>
<td>50.94</td>
</tr>
</tbody>
</table>
From Table 5.6 it is clear that sectoral disparities were comparatively high in the districts of Nowgong, North Cachar and Mikir Hills in 1960-61. In 1970-71 also it was found that inter-sectoral disparities were again comparatively high in the same districts except in Nowgong district where the coefficient of variation of the sectoral indices had decreased considerably from 50.76 in 1960-61 to 37.36 in 1970-71. Similarly, it is heartening to note that inter-sectoral disparities in most of the districts have decreased during sixties. The only exception are the districts of North Cachar and Mikir Hills (Karbi Anglong). This reveals the fact that powerful tendencies of correcting the sectoral disparities within the districts are in operation.

5.6.3 **Regional Disparities during Sixties**

The following Table 5.7 shows the disparity index ($V_w$) in both the time periods and also the percentage rate of change over the decade.
### TABLE 5.7 EXTENT OF REGIONAL DISPARITIES IN DIFFERENT SECTORS AND THE OVERALL ECONOMY DURING SIXTIES

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Sector/Economy</th>
<th>Disparity Index 1960-61</th>
<th>Disparity Index 1970-71</th>
<th>Percentage rate of change over 1960-61</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agriculture (A)</td>
<td>29.64</td>
<td>38.70</td>
<td>30.57</td>
</tr>
<tr>
<td>2</td>
<td>Industry (B)</td>
<td>85.58</td>
<td>36.67</td>
<td>12.96</td>
</tr>
<tr>
<td>3</td>
<td>Transport, Communication etc. (C)</td>
<td>54.12</td>
<td>64.45</td>
<td>19.09</td>
</tr>
<tr>
<td>4</td>
<td>Social Welfare (D)</td>
<td>51.62</td>
<td>97.76</td>
<td>89.38</td>
</tr>
<tr>
<td>5</td>
<td>Overall Economy (E)</td>
<td>42.93</td>
<td>54.49</td>
<td>26.78</td>
</tr>
</tbody>
</table>

From the above table it is regrettable to note that the regional disparities have increased in the overall economy as the disparity index had increased from 42.93 in 1960-61 to 54.49 in 1970-71. In other words, the percentage rate of change in disparity over 1960-61 in the overall economy was 26.78 which is quite high and a matter of concern. Thus, it may conclude that regional disparities in all the sectors have gone up during 1960-61 and 1970-71 in the process of development. This goes against the hypothesis that with the passage of time, the regional disparity has decreased.
Thus from the above analysis it is clear that the levels of development at district level remained more or less stagnant throughout the period with the exception of Kamrup and Sibsagar districts which could develop in comparison to other districts of the State. Although sectoral disparities within the districts have decreased over the period of time, regional disparities between the districts could not be reduced. It is, however, difficult to draw conclusions for formulating policy decisions on the basis of the above study in view of its various limitations.

It is worth mentioning here that the formation of new states within Assam to overcome the problem of economic backwardness is not at all justified not only from political point of view but also from economic angle. The reasons behind the formation of the new states within then undivided Assam were many, but it is to be admitted that economic backwardness was also responsible for the formation of these new states. However, heterogeneous socio-economic composition of the State cannot solve the problem of economic backwardness by the creation of some more new small states within the existing Assam. Here, one can perhaps argue that the creation of more and more new states within Assam might lead to increase in the unproductive expenditures for the maintenance of new administrative machineries of the new governments.
which can be better utilized for some productive purposes to reduce disparities in the levels of development within the State. Therefore, it is high time both for the State as well as Central Government to take necessary steps in the backward districts to accelerate the levels of development which will enable them to keep pace with other districts of the State. Government should bring back the confidence of the people of the backward districts by proper policy measures and their implementation to reduce disparity in the levels of development in Assam.

5.6.9 Relationship between migration stream and Overall economic development at district level

An attempt has been made here to see whether migration stream gets attracted to more developed districts or not. For this purpose we have taken the overall indices of development for all the districts in 1971 as one set of variables and the percentage distribution of migrants \((M = M_1 + M_2 + M_3)\) in different districts in 1971 as the other set of variables. Then, we have calculated the Pearson's correlation of coefficient for these two sets of variables and the value of 'r' found to be 0.55 which is insignificant at 90 per cent level of confidence. Thus, statistically there exists no significant relationship
in the two variables and therefore we cannot conclude advanced districts attract more migrants. However, high value of 'r' for only nine observations also be ignored altogether.

••••