

Development of Mizoram: A District Level Analysis

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Abstract : Mizoram, in spite of being a small state, has certain key features that make it distinct from other states of the country and highlights its potential for development. However, development has taken place in the state but some of the districts have been left behind. Most of the districts have subsistence farming as their main economic activity. They are land-locked with lack of transportation network and large distances between the markets and resources. Because of these constraints, traditional agriculture cannot be the lead sector for development. This can be achieved by working towards common goal through infrastructure development, tourism promotion, agriculture diversification, and agro-based industry.

Introduction

In recent years development has emerged as a major area of economic analysis both in terms of theoretical and empirical research. The term development may be regarded as a process whereby an economy's real national income increases over a long period of time. The nature of development in the early 1990's differing from that seen early in the 1950's or from that in the 19th century. Development means growth with change and increase in welfare. Development is something more than economy growth. Development includes in its ambit economic growth. But growth may be attained without development (Clower *et al.*, 1966). In other words, growth may be affected by inducing selected and sectoral investments in scarce resources and its resultant growing disparities on personal as well as regional levels. Developmental efforts, on the contrary, strive to

offer increasing option to the people through which accessibility and exploitability of resources is assured 'unto the last'. Development therefore may be defined as a process that creates conditions leading to reduction if not elimination, of inter personal disparities. It may, however, be affected only if inter regional disparities are minimized (Dutta,1970).

Thus economic development implies economic growth along with change- a change for the betterment. This change can come through structural transformation- which is an ingredient of economic development. As the economy grows, changes take place regarding shares of different sectors in employment and GDP, structure of trade, structure of demand, energy consumption and distribution of income etc. According to Todaro (1993), development must be conceived as a multi-dimensional

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process involving major changes in the social structures, popular attitudes, and national institution, as well as acceleration of economic growth, reduction in inequality, and the eradication of absolute poverty. Development is in essence, must represent the entire gamut of change by which an entire social system, tuned to diverse basic needs and desire of individuals and social groups within that system, moves away from a condition of life widely perceived as unsatisfactory and towards a situation or conditions of life regarded as materially and spiritually better. Thus development means structural transformation of an economy that penetrates widely and deeply. It affects social structural and cultural facets of a society. It is taken to a much wider range of variables. It includes especially the whole range of social, economic and political processes expected to lead to a perceptible and cumulative rise in the standard of living and equality of opportunity. Generally, however the word is believed to denote to a set of complex changes induced by human endeavour to seek 'peoples' welfare and about expansion of their capabilities and functioning. Development is both a physical reality and a state of mind in which society has, through some combination of social, economic and institutional processes, secured the means for obtaining a better life. Whatever the specific components

of this better life, development thus, involves, attempt to i). increase the availability and distribution of basic life sustaining goods. ii). Raise levels of caring and education to increase both material welfare and self-esteem, and iii). Expand the range of social and economic choice to both individual and nations, freeing them from servitude and dependence. Such efforts necessarily bring about structural and behavioural changes. Development, therefore, may be defined as value positive process aiming at enhancing the level of the living conditions of mankind in spatio- temporal dimension. It means not only change but also a change for betterment. It is supposed to address to sustainable intra-generational as well as intergenerational equity enabling the people to make best use of their capabilities.

It is, therefore, considered essential to make analysis of developmental processes vis-à-vis spatio temporal organization of the physical environment, the economy and the people and their participation to obtain developmental goals on regional, national and international levels.

Objectives

1. To identify relatively backward and developed District of the state with the help of a number of socio-economic indicators and also to measure the level of

regional disparities in the state

2. To identify reasons those contributed to such regional disparities and thus, provide some policy instruments in reducing regional disparities in the state.

Methodology

Sixteen indicators of development was chosen that reflect four dimension of development, Industry and power, Health, Transport and communication and, Agriculture. The study has been designed to prepare composite indices at the district level that maximises the squared sum of correlation using principal component analysis. This is done in two stages: first compositing the variables group-wise (the four groups of indicators) and then to prepare the final index by taking principal components (of the four groups) as the factor loadings on the variables to arrive at the final development indices for eight districts. Before using principal component analysis, all the data were normalised by using formula as:

$$NV_y = 1 \left[\frac{(BestX_i - ObservedX_y)}{(BestX_i - WorstX_i)} \right]$$

The analysis has been carried out in the following manner:

1. Group wise correlation matrices have been worked out
2. Group wise Eigen values were calculated, which were used as factor loading (weights) on the respective variables

3. Multiply each value in different column by respective weights presented on the top of the column and obtains the sum of each multiplication which is then divided by total weights presented above in the column to obtain index.

The following formula is used to determine the index -

$$I = \frac{\sum_{i=1}^n X_i \left[\sum_{j=1}^n |L_{ij} | E_j \right]}{\sum_{i=1}^n X_i \left[\sum_{j=1}^n |L_{ij} | E_j \right]}$$

Where I is the Index, X_i is the i^{th} indicator; L_{ij} is the factor grading value of the i^{th} variable on the j^{th} factor; E_j is the eigen value of the j^{th} factor.

Industry and Power Sector

Mizoram is perhaps one of the few states of India that has conspicuous absence of any industries. There are various reason for it-lack of geological surveys and known economic minerals. In a developing economy mineral exploitation and power resources is a starting point of industrial development. However, the state has rich tradition in household and cottage industries.

At both the stages principal component analysis has been used to obtain factor loadings (weights) on the variables, and then the indicators have been composited into indices. The correlation matrix of Industry and power sector is given in Table 1.

Table 1. Industry and Power Sector

| | No. of SSI units per 100 sq.km to total geographical area | No. of SSI unit per 10000 population | Percentage of employees to total population | Percentage of village electrified |
|-----------------------------------------------------------|-----------------------------------------------------------|--------------------------------------|---------------------------------------------|-----------------------------------|
| No. of SSI units per 100 sq.km to total geographical area | 1.000 | .845 | .814 | -.172 |
| No. of SSI unit per 10000 population | .845 | 1.000 | .889 | -.361 |
| Percentage of employees to total population | .814 | .889 | 1.000 | -.151 |
| Percentage of village electrified | -.172 | -.361 | -.151 | 1.000 |

It may be noted that except percentage of village electrified all the correlation coefficients are positive. The principal component (Eigen Value) is quite satisfactory, i.e. 2.787 thus explaining 69.68 % of variation in the data matrix. The composite index derived after the normalised factor loadings have been multiplied with the indicators. The composite index of Industry and power is given in Table 2.

The composite index shows that Aizawl district performed far better than other district. It is followed by

Lunglei and Champhai district. The worst performance is found in Mamit and Kolasib district located in the northern part of the state.

The second group of indicators deals with the Health sector: Hospital CHC PHC per 10000 population, Sub-center per 10000 population, Hospital beds per 10000 population and Doctors and nurses per 10000 population. The inter-correlation of the indicators is summarised in Table 3.

Table 2. Industry and Power Sector

| Weights | 2.558 | 2.706 | 2.597 | 1.014 | 8.876 | Rank |
|-----------|-----------------------------------------------------------|---------------------------------------|---------------------------------------------|-----------------------------------|-------|------|
| District | No. of SSI Units per 100 sq.km of total Geographical area | No. of SSI Units per 10000 population | Percentage of Employees to Total Population | Percentage of village Electrified | INDEX | |
| Mamit | 0.000 | 0.042 | 0.052 | 0.75 | 0.113 | 7 |
| Kolasib | 0.012 | 0 | 0 | 0.833 | 0.098 | 8 |
| Aizawl | 1 | 1 | 1 | 0.75 | 0.971 | 1 |
| Champhai | 0.150 | 0.459 | 0.578 | 1 | 0.467 | 3 |
| Serchhip | 0.012 | 0.026 | 0.052 | 1 | 0.141 | 6 |
| Lunglei | 0.195 | 0.705 | 0.473 | 0.75 | 0.495 | 2 |
| Lawngtlai | 0.355 | 0.689 | 0.368 | 0 | 0.420 | 4 |
| Saiha | 0.083 | 0.383 | 0.578 | 0.388 | 0.354 | 5 |

It may be noted that the correlation coefficient of the two variables are positive and two variables are negative. The highest eigen value is 2.119 and explain 52.97 % in the data matrix. The composite index obtained and their ranks are summarises in Table 4.

The composite index shows that the highest value is found in Saiha district followed by Aizawl and Champhai districts. The lowest value is found in Lawngtlai district that is located in a close proximity with Saiha district.

The third group of indicators broadly deals with transport and communication. The variables are Road length per 100 sq.km to total geographical area, No. of post office per 100 sq.km to total geographical area, No. of post office per 10000 population, No. of land line telephone and mobile connection per 10000 population. The inter-correlation is summarised in Table 5.

The correlation matrix shows that there are other negative elements in the variables. The highest Eigen value is 2.518

Table 3. Health Sector Correlation Matrix

| | | Hospital, CHC, PHC per 10000 population | Sub-center per 10000 population | Hospital bed per 10000 population | Doctors and Nurses per 10000 population |
|-------------|-----------------------------------------|-----------------------------------------|---------------------------------|-----------------------------------|-----------------------------------------|
| Correlation | Hospital,CHC,PHC per 10000 population | 1.000 | .624 | -.250 | -.086 |
| | Sub center per 10000 population | .624 | 1.000 | .246 | .391 |
| | Hospital bed per 10000 population | -.250 | .246 | 1.000 | .937 |
| | Doctors and Nurses per 10000 population | -.086 | .391 | .937 | 1.000 |

Table 4. Health Sector

| WEIGHTS | 0.983047 | 2.110066 | 1.9849 | 2.253903 | 7.331916 | Rank |
|-----------|----------------------------------------|----------------------------------|------------------------------------|-----------------------------------------|----------|------|
| District | Hospital, CHC.PHC per 10000 population | Sub-Centres per 10000 population | Hospital beds per 10000 population | Doctors and Nurses per 10000 population | INDEX | |
| Mamit | 0.571 | 0.713 | 0 | 0.142 | 0.325 | 7 |
| Kolasib | 0.428 | 0.684 | 0.134 | 0.461 | 0.432 | 6 |
| Aizawl | 0 | 0.453 | 1 | 1 | 0.708 | 2 |
| Champhai | 1 | 0.964 | 0.316 | 0.444 | 0.633 | 3 |
| Serchhip | 0.642 | 0.86 | 0.355 | 0.572 | 0.605 | 4 |
| Lunglei | 0.125 | 0.96 | 0.475 | 0.493 | 0.573 | 5 |
| Lawngtlai | 0.089 | 0 | 0.022 | 0 | 0.018 | 8 |
| Saiha | 0.607 | 1 | 0.724 | 0.747 | 0.794 | 1 |

explaining 60.91% in the data matrix. The composite index thus obtained along with their ranks is summarised in Table 6.

The composite index shows that the highest value is found in

Aizawl district. The worse performance is found in the southern part of the state in Lawngtlai district, Saiha and Mamit located in the northern part of the state.

Table 5. Transport and Communication Correlation Matrix

| | | Road length per 100 sq.km to total geographical area | No.of post office per 100 sq.km to total geographical area | No.of post office per 10000 population | No. of landline telephone and mobile connection per 10000 population |
|-------------|----------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------------|
| Correlation | Road length per 100 sq.km to total geographical area | 1.000 | .651 | -.408 | .697 |
| | No.of post office per 100 sq.km to total geographical area | .651 | 1.000 | .023 | .875 |
| | No.of post office per 10000 population | -.408 | .023 | 1.000 | -.016 |
| | No.of land line telephone and mobile connection per 10000 population | .697 | .875 | -.016 | 1.000 |

Table 6. Transport and Communication

| Weight | 1.404 | 2.459 | 1.121 | 2.418 | 7.404 | Rank |
|-----------|-------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------|--------|------|
| District | Road length per 100 sq.kms of total Geographical Area | No. of Post Offices per 100sq.kms of total Geographical Area | No. of Post Offices per 10,000 population | No. of landline telephone and mobile connection per 10,000 population | INDEX | |
| Mamit | 0.171 | 0.127 | 0.759 | 0.111 | 0.226 | 7 |
| Kolasib | 0.944 | 0.263 | 0.278 | 0.639 | 0.517 | 4 |
| Aizawl | 1 | 1 | 0.370 | 1 | 0.904 | 1 |
| Champhai | 0.499 | 0.423 | 0.878 | 0.464 | 0.520 | 3 |
| Serchhip | 0.590 | 0.362 | 0.645 | 0.615 | 0.531 | 2 |
| Lunglei | 0 | 0.308 | 0.913 | 0.574 | 0.428 | 5 |
| Lawngtlai | 0.241 | 0 | 0 | 0 | 0.0458 | 8 |
| Saiha | 0.363 | 0.238 | 1 | 0.2207 | 0.371 | 6 |

The fourth group deal with agriculture sectors. The variables are: Total agricultural production, Intensity of cropping, Net irrigated area and Live stock. The correlation matrix has been summarised in Table 7.

The correlation matrix has other negative elements, therefore, the highest eigen value though is high 2.469, explaining 61.56 % of explained variations generated the weight which has also negative elements. The composite index of agriculture indicators and their

ranks are given in Table 8.

The composite index reveals that the highest value is found in Champhai district followed by Kolasib district. The lowest value is found in Saiha district located in the south eastern corner of the state and Mamit district in the north western part of the state.

The correlation matrix shows that all the sectors are positive. A very low correlation is found in agriculture sector. Eigen value in

Table 7. Agriculture Sector Correlation Matrix

| | | Total agricultural production | Intensity of cropping | Net irrigated area | Livestock conversion into units |
|-------------|---------------------------------|-------------------------------|-----------------------|--------------------|---------------------------------|
| Correlation | Total agricultural production | 1.000 | .131 | .953 | .677 |
| | Intensity of cropping | .131 | 1.000 | .243 | -.209 |
| | Net irrigated area | .953 | .243 | 1.000 | .536 |
| | Livestock conversion into units | .677 | -.209 | .536 | 1.000 |

Table 8. Agriculture Sector

| Weight | 2.531 | 1.276 | 2.583 | 1.533 | 7.924 | Rank |
|-----------|-------------------------------|-----------------------|--------------------|-----------------------------------|-------|------|
| District | Total Agricultural Production | Intensity of cropping | Net irrigated area | Conversion of Livestock into Unit | INDEX | |
| Mamit | 0.295 | 0.174 | 0.274 | 0 | 0.211 | 7 |
| Kolasib | 0.662 | 1 | 0.901 | 0.302 | 0.725 | 2 |
| Aizawl | 0.486 | 0.095 | 0.511 | 0.987 | 0.528 | 3 |
| Champhai | 1 | 0.063 | 1 | 1 | 0.849 | 1 |
| Serchhip | 0.362 | 0 | 0.570 | 0.022 | 0.305 | 5 |
| Lunglei | 0.412 | 0.507 | 0.380 | 0.287 | 0.393 | 4 |
| Lawngtlai | 0.162 | 0.460 | 0.199 | 0.111 | 0.212 | 6 |
| Saiha | 0 | 0.095 | 0 | 0.218 | 0.057 | 8 |

the final correlation is quite high which is 2.291 explaining 57.26 in the data matrix. The final composite index has been given in Table 10.

Final composite or overall development score refers to aggregate development of districts in respect of industry and power, health, transport and communication, and agriculture. Aizawl district scores the highest value with 0.79 on index. It ranks 1st on the overall development composite index. Development of small scale industry, health facilities due to available transportation network has enabled the district to score high value in the final index. Champhai district

located in the eastern part of the state score the second highest in the overall development index. The district scores 0.60 on the overall composite index. Despite its location in the eastern part of the state, the district has large area of land on cultivable slope. With sufficient amount of moisture supply and permanent cultivation in the vicinity of Khawzawl and Champhai has enabled the district to have rich natural resources. Its location in the eastern part bordering Myanmar, on the other hand, has facilitated the district to have good infrastructure than other districts. Lunglei district due to its unfavourable physical factor have hampered the development of

Table 9. Correlation matrix for final index

| | | | | | |
|-------------|------------------------------------|---------------------------|---------------|------------------------------------|--------------------|
| | | Industry and Power Sector | Health Sector | Transport and communication Sector | Agriculture Sector |
| Correlation | Industry and Power Sector | 1.000 | .313 | .552 | .175 |
| | Health Sector | .313 | 1.000 | .728 | .160 |
| | Transport and communication Sector | .552 | .728 | 1.000 | .521 |
| | Agriculture Sector | .175 | .160 | .521 | 1.000 |

Table 10. Final Index

| District | Industry and power | Health | Transport and communication | Agriculture | Final Index | Rank |
|-----------|--------------------|--------|-----------------------------|-------------|-------------|------|
| Mamit | 0.113 | 0.325 | 0.226 | 0.211 | 0.223 | 7 |
| Kolasib | 0.098 | 0.432 | 0.517 | 0.725 | 0.440 | 4 |
| Aizawl | 0.971 | 0.708 | 0.904 | 0.528 | 0.796 | 1 |
| Champhai | 0.467 | 0.633 | 0.520 | 0.849 | 0.601 | 2 |
| Serchhip | 0.141 | 0.605 | 0.531 | 0.305 | 0.419 | 5 |
| Lunglei | 0.495 | 0.573 | 0.428 | 0.393 | 0.474 | 3 |
| Lawngtlai | 0.420 | 0.018 | 0.045 | 0.212 | 0.155 | 8 |
| Saiha | 0.354 | 0.794 | 0.371 | 0.057 | 0.417 | 6 |

agricultural resources. Its location on the crossroad between Aizawl and the southern part of the state on the other hand, has facilitated the district to have good transportational network, health facilities and industry.

Kolasib district ranked 4th in the final composite index. Kolasib district by virtue of its location near the Assam plain has favourable physical conditions. Large area of land under cultivable slope, adequate moisture supply through rainfall and availability of irrigational facilities in the district has favoured development of agricultural resources. Besides this, another patch of flat valley such as Chemphai and Buhchangphai along the river Teirei and Serlui, Phaisen and Chhimluang to the west of Bilkhawthlir, Hortoki and Bairabi along the river Tlawng mostly have been brought under permanent cultivation with increase in irrigation facilities.

Two districts namely Lawngtlai and Saiha located in the southern part of the state score very low in the final composite index. These districts are characterized by ridges and wide valleys with hot and humid climate throughout the year. It is dissected by rivers such as Chhimtuipui River, Kawrpui River and Tuichawng River. In spite of their topography with lack of transportational network, its peripheral location and harsh environment on the other hand, has

hindered the development of industry and agriculture in these districts.

Conclusion

The present analysis however, stresses one point that in Mizoram physical environment still plays a dominant role in its socio-economic development. Even the other resources in their regional context depend to large extent on the physical environment. This dependency on one aspect of resource appears to dominate whole of the state as long as the economy depends only on agriculture. Though the areas well within the sphere of towns so far have failed to provide any sound alternative economic base other than services which, in most cases, have outgrown their requirement. Moreover, they cannot be considered a reproductive economy whereas in a state like Mizoram having certain sociological problems some productive economic activities are needed to be expanded. As a matter of fact, the state requires some supplementary economy besides agriculture. Of course, steps have been initiated in this direction and the bamboo industries at Sairang and Bairabi, Mizoram Industrial Food Corporation at Chhingchhip are efforts in this direction. Though they are expected to bring substantial change but they are just not enough for the entire state. As such the state has little option. Development

of agriculture should be given top priority. Though agriculture may not initiate industrial development, but its progress will strengthen the rate of agro based industries in the state. The lack of power generation capacity is the acute problem in the state. The major rivers in the state must be surveyed in order to developed and generate hydel power. Availability of assured power is expected to diversify economic activities in the state. Poor communication and transport facilities also hinder exploitation of natural resources in the state. Attempts should be made to make the state and its different parts more accessible. The increased accessibility with developed transport network will also encourage development of other sectors in the state.

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