



ORIGINAL RESEARCH PAPER

Economics

DISPARITIES IN INFRASTRUCTURAL DEVELOPMENT IN DISTRICTS OF MANIPUR OF NORTH EAST INDIA

KEY WORDS: eComposite index, disparities, infrastructure, percapita income, ranking.

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ABSTRACT

Development of infrastructure has got much attention in most of the developing countries in the hands of planners, policy makers and the government as well. Being a social overhead capital according to Hirschman's language and as a catalyst of economic development, infrastructure is always well recognized everywhere. However, the neo liberal policies and inclusive growth agenda of the government of India are still unable to harvest the seeds of infrastructure in most of the hilly states of North Eastern Region (NER). Manipur being one of the eight states of NER is not an exception to it. All indicators of economic development have shown that Manipur, though rich in natural resources is still lagging behind almost all other states in India in infrastructural development. The state is covered with 90 percent of difficult hilly terrain where five districts are situated and the rest 10 percent is plain area with four districts. The study is entirely based on secondary data. Being an analytical research, available secondary information published by various government and non-government agencies are used. Various components of infrastructure have been studied with the help of a number of indicators. A composite index of infrastructure and economic development has been constructed. The methods followed in the present study on regional disparities include simple ranking method and indices method. The study has used composite indices method (Z scores) to construct indices of infrastructure development. The paper, with mentioned methodologies thus tries to examine the disparities exist between hill and plain districts in the state of Manipur in particular and between NER in general.

1.1 Introduction

The importance of infrastructure in forging economic growth and enhancing public welfare has been widely acknowledged by economists and planners. The market for infrastructure services is often monopolistic in nature. They usually involve high upfront costs and long payback periods and investments are typically bulky and lumpy. The existence of externalities makes it difficult for investors to recover investments costs and operational cost. All these factors alongwith the relatively weak private sector have created a consensus on the necessity of heavy public investment in infrastructure as a necessary ingredient of planned economic development. The North Eastern Region (NER) consists of eight sister states namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and a recent entrant Sikkim. Arunachal Pradesh, Mizoram, Nagaland, Meghalaya, Sikkim and about half of Tripura, one fourth of Assam and nine tenth of Manipur are covered by mountains and hills. The region is industrially backward with contribution of this sector less than 3percent in all the states except for Assam and Manipur where it is 12 percent and 8 percent respectively. Development of infrastructure is the fundamental pre requisite for realizing the vision of progress towards peace and prosperity and for creating an investment climate and market development in NER of India. The expansion of basic infrastructure like transportation, communication, power and broadband connectivity is considered to be extremely vital for the region as a whole.

1.2 About the study area

The tiny state of Manipur with an area of only 22327 square kilometer is situated in the easternmost fringe of India and is one of the eight sister states of North Eastern Region. Manipur has a pleasant sub tropical climate but there are micro level variations in the temperature and rainfall regions. Geographically the state can be divided into two broad divisions namely hill and flat fertile valley. The state is covered with 90 percent hills. Out of the total area, 20089 square kilometer is in the hill region and remaining 2238 square kilometer is in valley which contributes 10percent of the total area. The valley is located at the center of the state and is surrounded by rows and rows of hills forming a preventive barrier that isolates Manipur from the rest of the country. There are nine districts of which five are in the hills and four are in the valley. The districts are divided as follows:

| HILL DISTRICTS | VALLEY DISTRICTS |
|----------------|------------------|
| Senapati | Imphal East |
| Tamenglong | Imphal West |
| Churachandpur | Thoubal |
| Chandel | Bishnupur |
| Ukhrul | |

Development of infrastructure by and large has been a state subject in India. Therefore the state while processing good infrastructure could achieve better results in their efforts for development. In state like Manipur the performance for development of infrastructure sector is dismal. In fact, it is limited as existence of poor investment from outside Manipur is very poor. Again in India, the importance and need for infrastructure has come into limelight in the context of liberalization of Indian economy since 1991. All indicators of economic development have shown that Manipur, though rich in natural resources is still lagging behind almost all other states in India.

1.3 Data Source and Methodology

The study is mainly based on secondary data. Apart from data published by various government and non government agencies on various aspects of economic development and infrastructure, unpublished data from various departments has been used particularly to study the inter district disparities. The various components of infrastructure have been studied with the help of a number of indicators. A composite index of infrastructure and economic development has been constructed. The various method followed in studies on regional disparities include simple ranking method and indices method. The study has used composite indices method (Z scores) to construct indices of infrastructure development. The variables included in the construction of composite indices are made standardized and arithmetic mean of resultant Z scores is taken as value of the index. The magnitude of regional disparities in the level of infrastructure and development has been measured by standard deviations.

1.4 Objectives

The objectives of the study are:

1. To study the pattern and relationship between the growth and expansion of different types of infrastructural facilities in the state.
2. To examine the inter district disparities in the level of infrastructure development.
3. To study the inter relationship between infrastructure and economic development in general.
4. To critically evaluate the government policies on infrastructure development.

1.5 Inter District Disparities in Infrastructure in Manipu

As development is a multidimensional process, a single indicator fails to capture all the different dimensions satisfactorily. On the other hand, a number of individual indicators fail to give an integrated picture of the reality. Hence a composite index of

infrastructure and economic development has been constructed. The various indicators that have been taken to construct the composite infrastructure index are given below:

1.5.1 Lists of Indicators:

Agricultural Indicators

1. Gross Irrigated Area as percentage of Gross Cropped Area
2. Fertilizers Consumption kg/hect.

Transport, Communication and Power

1. Road Length per 1000 sq. km
2. Percentage of Pucca Road in Districts
3. Percentage of village having Post and Telegraph facilities.
4. Percentage of Village Electrified

Financial Indicators

1. Bank Branches per 1000 sq. km
2. Bank Branches per 10000 population

Educational Indicators

1. Percentage of Educational Institution per 1000 sq. km
2. Primary School per 1000 sq. km
3. Primary School per 10000 population

Health Indicators

1. Percentage of Village having health facilities
2. Numbers of Beds per 1000 population

3. Hospitals and Dispensaries per 1000 sq. km
4. Hospital and Dispensaries per 10000 population
5. Medical Personal per 10000 population

1.6 Composite indices of infrastructure development (1981-1991-2001-2005)

As far as the ranking of the districts in Manipur in terms of infrastructure index, in agriculture infrastructure, the districts of Bishnupur and Thoubal are at the top while the districts like Ukhrul and Chandel are at the bottom. In case of transport, communication and power infrastructure, the districts of Thoubal and Bishnupur are ahead, while the districts of Churachandpur and Chandel are at the bottom. In case of Transport, communication and power infrastructure, the district of Thoubal and Bishnupur are ahead, while the districts of Churachandpur and Chandel are at the bottom. But in case of financial infrastructure, it is the unified district of Imphal, where the capital complex of the State is situated, which is at the top followed by the district of Bishnupur, while, the districts of Ukhrul and Churachandpur are at the bottom. As far as the educational infrastructure is concerned the unified district of Imphal is on top, followed by Bishnupur and Thoubal. The hill districts of Ukhrul and Senapati are at the bottom of educational infrastructure. Again in the field of health infrastructure the district of Imphal is at the top, while the district of Senapati is at the bottom followed by Chandel district (table 1.1 and 1.2).

Table: 1.1 Rank of Districts in Agricultural, Transport, Communication and Power and Financial Infrastructure

| District | Agriculture | | | | Transport, Communication & Power | | | | Finance | | | |
|---------------------|-------------|------|------|------|----------------------------------|------|------|------|---------|------|------|------|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1 | 1981 | 1991 | 2001 | 2005 | 1981 | 1991 | 2001 | 2005 | 1981 | 1991 | 2001 | 2005 |
| Senapati | 4 | 6 | 4 | 6 | 4 | 4 | 6 | 7 | 4 | 6 | 3 | 4 |
| Tamenglong | 7 | 8 | 7 | 4 | 5 | 6 | 4 | 5 | 6 | 3 | 5 | 6 |
| Churachandpur | 6 | 5 | 5 | 5 | 8 | 8 | 8 | 8 | 8 | 7 | 6 | 8 |
| Chandel | 2 | 7 | 6 | 7 | 7 | 7 | 7 | 6 | 5 | 5 | 2 | 5 |
| Ukhrul | 3 | 4 | 8 | 8 | 6 | 5 | 5 | 4 | 7 | 8 | 8 | 7 |
| Imphal (East& West) | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 1 | 1 |
| Bishnupur | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 2 | 4 | 4 | 2 |
| Thoubal | 5 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 2 | 7 | 3 |

Source: Based on Author's calculations

level we find that the hill districts are way behind the valley districts (table 1.3).

Table: 1.2 Rank of Districts in Education and Health Infrastructure Index

| Districts | Education | | | | Health | | | |
|----------------------|-----------|------|------|------|--------|------|------|------|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | 1981 | 1991 | 2001 | 2005 | 1981 | 1991 | 2001 | 2005 |
| Senapati | 7 | 7 | 6 | 6 | 8 | 8 | 8 | 7 |
| Tamenglong | 5 | 5 | 4 | 4 | 1 | 3 | 4 | 4 |
| Churachandpur | 6 | 6 | 5 | 5 | 6 | 5 | 6 | 5 |
| Chandel | 4 | 4 | 7 | 7 | 5 | 4 | 7 | 8 |
| Ukhrul | 8 | 8 | 8 | 8 | 4 | 2 | 5 | 2 |
| Imphal (East & West) | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| Bishnupur | 2 | 3 | 2 | 2 | 3 | 6 | 2 | 6 |
| Thoubal | 3 | 2 | 3 | 3 | 7 | 7 | 3 | 3 |

Source: Based on Authors calculations.

Table: 1.3 Rank of Districts in the Overall or Composite Infrastructure Index of Manipur

| Districts | Composite index of Overall Infrastructure | | | |
|----------------------|---|------|------|------|
| | 2 | 3 | 4 | 5 |
| 1 | 1981 | 1991 | 2001 | 2005 |
| Senapati | 6 | 8 | 5 | 5 |
| Tamenglong | 5 | 4 | 4 | 4 |
| Churachandpur | 8 | 7 | 7 | 8 |
| Chandel | 4 | 6 | 6 | 7 |
| Ukhrul | 7 | 5 | 8 | 6 |
| Imphal (East & West) | 2 | 2 | 1 | 1 |
| Bishnupur | 1 | 3 | 2 | 3 |
| Thoubal | 3 | 1 | 3 | 2 |

Source: Based on Author's calculations

1.7 Ranks of Composite Indices for Overall Infrastructure Development (1981-1991-2001-2005)

In the overall Infrastructure index or in the composite infrastructure index, it was found that over the years there has been a change in the ranks of the districts. We also observe that the overall infrastructure index of Imphal has come to be the best, replacing Bishnupur (top in 1981) and Thoubal (top in 1991). Imphal is followed by the districts Thoubal and Bishnupur. As far as the worst district in terms of overall infrastructure indices are concerned, it is Churachandpur followed by Chandel. Thus we see that the hill districts lag behind the valley districts in terms of aggregate infrastructure development. Even at the disaggregate

2.1 Standard Deviations of Infrastructure Indices: 1981-1991-2001-2005

In order to know whether inter-district variation in the infrastructure indices has increased or decreased over time, Standard deviation of the indices has been computed for the period 1981-2005. Standard Deviation is a measure of dispersion, and if there is an increase in its value, disparity is said to have increased. The inter-district variations, as measured through the standard deviation of overall infrastructure index, shows, a marked increase in 2005 in comparison with previous years. At a disaggregated level we find that the nearly all the infrastructure

index namely agriculture, education, health and finance show an increasing trend, implying that the inter-district disparities have increased over the years in all these sectors. Except for transport infrastructure, which has shown a declining trend, which could be because of the implementation of certain government policy, where as all other indicators of infrastructure clearly reflect that disparity has increased.

Table: 2.1 Standard Deviation of Infrastructure Indices: 1981-2005

| Index | Standard Deviation | | | |
|-------------|--------------------|-------|-------|-------|
| | 1981 | 1991 | 2001 | 2005 |
| 1 | 2 | 3 | 4 | 5 |
| Agriculture | 0.430 | 0.870 | 0.839 | 0.922 |
| Transport | 0.901 | 0.898 | 0.765 | 0.801 |
| Finance | 0.809 | 0.649 | 0.503 | 0.847 |
| Education | 0.517 | 0.560 | 0.633 | 0.634 |
| Health | 0.334 | 0.284 | 0.394 | 0.399 |
| All | 2.229 | 2.716 | 2.511 | 3.162 |

Source: Based on Author's calculations

2.2 Correlation between different kinds of Infrastructure Indices (1981-1991- 2001-2005)

As far the correlation of the infrastructure indices were concerned, it is observed that in 1981, agriculture infrastructure index and health infrastructure index are less correlated with any other index, but transport infrastructure index is strongly correlated with financial and educational infrastructure index (Table 2.2).

Table: 2.2 Correlation between the Infrastructure Indices in 1981

| Variables | Agriculture | Transport | Finance | Education | Health | All |
|-------------|-------------|-----------|---------|-----------|--------|--------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agriculture | 1 | 0.221 | -0.053 | 0.091 | -0.059 | 0.276 |
| Transport | 0.221 | 1 | .758* | .764* | 0.014 | .902** |
| Finance | -0.053 | .758* | 1 | .891** | 0.186 | .894** |
| Education | 0.091 | .764* | .891** | 1 | 0.304 | .928** |
| Health | -0.059 | 0.014 | 0.186 | 0.304 | 1 | 0.283 |
| All | 0.276 | .902** | .894** | .928** | 0.283 | 1 |

Note: ** Significant at 0.01 level, * Significant at 0.05 level
Source: Based on Authors calculations

Further, as far as the correlation among the infrastructure indices in 1991 is concerned, it is observed that health infrastructure index is less correlated with any other index, but agriculture infrastructure index is strongly correlated with transport infrastructure index. It is also observed that transport infrastructure index is significantly correlated with Financial and educational Infrastructure index (Table 2.3).

Table: 2.3 Correlation between the Infrastructure Indices in 1991

| Variables | Agriculture | Transport | Finance | Education | Health | All |
|-------------|-------------|-----------|---------|-----------|--------|--------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agriculture | 1 | .866** | .386 | .453 | .113 | .804* |
| Transport | .866** | 1 | .712* | .715* | .203 | .947** |
| Finance | .386 | .712* | 1 | .841** | .616 | .836** |
| Education | .453 | .715* | .841** | 1 | .693 | .861** |
| Health | .113 | .203 | .616 | .693 | 1 | .498 |
| All | .804* | .947** | .836** | .861** | .498 | 1 |

Note: ** Significant at 0.01 level, * Significant at 0.05 level
Source: Based on Authors calculations

The correlation among the infrastructure indices in 2001 is concerned, it is observed that financial infrastructure index is less correlated with any other index, but educational infrastructure

index is very strongly correlated with transport, health and agricultural infrastructure index. It is also observed that transport infrastructure index is significantly correlated with educational and agricultural Infrastructure index (Table 2.4).

Table: 2.4 Correlation between the Infrastructure Indices in 2001

| Variables | Agriculture | Transport | Finance | Education | Health | All |
|-------------|-------------|-----------|---------|-----------|--------|--------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agriculture | 1 | .783* | .130 | .815* | .382 | .864** |
| Transport | .783* | 1 | .001 | .880** | .636 | .888** |
| Finance | .130 | .001 | 1 | .356 | .341 | .387 |
| Education | .815* | .880** | .356 | 1 | .751* | .982** |
| Health | .382 | .636 | .341 | .751* | 1 | .736* |
| All | .864** | .888** | .387 | .982** | .736* | 1 |

Source: Based on Authors calculations
Note: **. Correlation is significant at the 0.01 level, *. Correlation is significant at the 0.05 level

Finally, as far as the correlation among the infrastructure indices in 2005 is concerned, it is observed that, agricultural infrastructure is now strongly correlated with transport infrastructure and educational infrastructure. On the other hand, educational infrastructure is also significantly related with transport and financial infrastructure index but not with health infrastructure index. In fact, health infrastructure index is less correlated with any other index.

Table: 2.5 Correlation between the Infrastructure Indices in 2005

| Variables | Agriculture | Transport | Finance | Education | Health | All |
|-------------|-------------|-----------|---------|-----------|--------|--------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Agriculture | 1 | .888** | .607 | .827* | .255 | .877** |
| Transport | .888** | 1 | .750* | .849** | .519 | .949** |
| Finance | .607 | .750* | 1 | .894** | .521 | .879** |
| Education | .827* | .849** | .894** | 1 | .584 | .970** |
| Health | .255 | .519 | .521 | .584 | 1 | .589 |
| All | .877** | .949** | .879** | .970** | .589 | 1 |

Note: **. Correlation is significant at the 0.01 level, *. Correlation is significant at the 0.05 level, Source: Based on Author's calculations

2.2 Correlation between overall Infrastructure Index and Per capita District Domestic Product

Table 2.6 depicts the correlation between Per capita income and infrastructure index. The purpose here is to analyse the relationship between per capita income and level of infrastructure at the district level. As the number of observations was only 8, we could not undertake any regression analysis. Only simple correlation coefficients have been reported between Per Capita Income of District in 2006-7 at 1999-00 prices and Indices of infrastructure in 2001 and in 2005. As the impact of creation of infrastructure is likely to have an impact on income after a time gap we have estimated the relation between 2006-7 income and 2001 and 2005 indices of infrastructure. The only indices which come out to be significantly correlated with per capita income are education and health infrastructure. The correlation between overall index and per capita income is not found to be significant.

Table: 2.6 Correlation between Per Capita Income and Infrastructure Index

| Infrastructure Index | Correlation Coefficient (2005) with Per Capita Income of District 2006-07 at 1999-00 prices | Correlation Coefficient (2001) with Per Capita Income of District 2006-07 at 1999-00 prices |
|----------------------|---|---|
| 1 | 2 | 3 |
| Agriculture | .330 | .359 |
| Transport | .546 | .658 |

| | | |
|-----------|-------|--------|
| Finance | .702 | .321 |
| Education | .712* | .711* |
| Health | .815* | .883** |
| All | .668 | .703 |

Note: *. Correlation is significant at the 0.01 level (2-tailed).

** . Correlation is significant at the 0.05 level (2-tailed).

Source: Based on Authors calculations.

2.3 Law and Order as Infrastructure in Manipur

The factors responsible for poor development in Manipur are many. The development of infrastructural environment started very late in the state and has been facing financial crisis due to lack of financial assistance and unwillingness of capitalists to serve the State because of the deteriorating law and order situation.

Any development activity has its linkage with the state of law and order of that particular region. Law and order problem, in general differ in terms of magnitude and severity from one state to another. Manipur has been witnessing poor law and order scenario for the last few decades. The disturbed law and order condition has led to a situation where new investments do not come and old investment tends to be pulled out leading to flight of capital. The foreign investors hesitate to invest, for the risk of their capital and financial institutions feel reluctant to finance, resulting in negative impact on developmental activities. Peaceful social and political climate instills confidences in the mind of the people. The present administration set up for maintaining law and order in Manipur is as follows: It has nine districts and 38 (thirty eight) sub divisions, with 55 police stations, 10 fire stations, along with 13 sub stations. There are nine High Court Judges and one District and Session Judge. At the state capital, there is one High Court (Guwahati High Court Bench).

2.4 Concluding Observations

Thus we see that wide disparities do exist between the hill districts and valley districts in terms of infrastructural development. Be it the case of health sector, transport sector, education sector, communication sector or the financial sector, wide disparities are observed within the state. It was also found that a strong correlation exists between the various infrastructure indices. Further, the inter-district variations, as measured through the standard deviation of overall infrastructure index, shows, a marked increase in 2005 in comparisons with previous years. The correlation between overall index and per capita income is not found to be significant, but the only indices which come out to be significantly correlated with per capita income are education and health infrastructure. The government must come forward in a big way to reduce this disparity. The state can develop in a sustainable manner only if all the districts in the valley as well as in the hills get the benefits of development. In order to make the development process more inclusive, steps have to be take on priority basis so that benefits of development percolates down to the marginalized and the poor in an equitable way

References

1. Ahluwalia, Montek. S. (2001) 'Economic Performance of the States in the Post Reforms Period', Chapter 28 in Indian Economy since Independence (ed.), Yuva Kampa Academic Foundation, New Delhi
2. Annat, T.C.A., K.L. Krishna, Uma Roy Choudhary (1999). 'Measuring Inter-State Differentials in Infrastructure', Centre for Development Economics, Delhi School of Economics, Delhi
3. Biswanger, H.P.S.R. Khandkur and M.R. Rosenzweig, (1989) 'How Infrastructure and Financial Institutions Affect Agriculture Output and Investment in India, Policy Planning and Research Working paper No. 163, World Bank, Washington.
4. Boparal, S.S. (1997). 'Report of the Committee for the Educated Unemployed in the North - Eastern Region', Planning Commission, GOI, New Delhi, p. 30
5. Director of Census Operations, Census of India (1991) 'Manipur Series 15, Part XII -A and B district Census Handbook', Senapati, Imphal, pp. 4-5
6. Ghose B and P. De (1988) 'Role of Infrastructure in Regional Development: A Study Over the Plan Period', Economic and Political Weekly, Vol. 33, No.47/48, Nov. 21, p. 3039-3048
7. Gogoi, J.K. and H. Goswami (2004) 'Trade Related Capacity Building For Enhanced Participation of North East India in the Global Economy', Seminar paper presented in Outstretch Seminar on the WTO and India, Issues and Negotiations Strategies Organised by JNV-ICSSR-Cotton College Guwahati, 11-12 August, 2004
8. Todaro, M. (1977) 'Economics for a Developing World: An Introduction to Principles, Problems and Policies for Development, Longmans, London, p. 96
9. World Bank (1994) 'World Development Report: Infrastructure for Development', Oxford University Press