

## INTER DISTRICT DEVELOPMENT DISPARITIES IN ASSAM WITH RESPECT TO VARIOUS INDECATORS OF DEVELOPMENT

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### ABSTRACT

*The paper examines the inter district development disparities in Assam. The disparities are studied with respect to various indicators of development, i.e., rural population, urban population, male literacy, female literacy, dropout rate etc. The data used for the study are collected from secondary sources such as mainly census publications, economic survey report, directorate of economics and statistics of Assam etc. Principal Component Analysis is being used to study the district disparity. We found different development disparities among districts.*

**KEYWORDS:** Development disparity, Indicators of development, Male literacy, Dropout rate & Rural population

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### INTRODUCTION

In India, all the states and Union territories are not equally developed. Development is defined as ‘the act of process of developing or growth within the framework of available resources’ (Desai, 1991). Development depends on various factors, such as geographical proximity, proper infrastructure facilities, transport and communication facilities, availability of human resource, natural resource etc. Assam is a storehouse of natural resources, but lack of transport and communication facilities, insurgency problem, low level of capital formation makes the state to struggle with the development process. This paper tries to examine the inter district development disparities of Assam.

### REVIEW OF LITERATURE

Dandekar (1993) found that the economic disparity between Indian states have been increasing rather than decreasing over time. The Study of Shaban (2006) for the state of Maharashtra, using PCA for the benchmark years 1972-73, 1982-83 and 1988-89. The study found that regions of Vidarbha and Marathwada and the district of Ratnagiri, Raigadh Dhule and Jalgaon have been the least developed both at sectoral and the aggregate levels of development. Das (2017), in his study, found that wider spread disparities have been observed in different districts of the State in the level of development. Nalbari is found to be highest developed and the district Udalguri is on the lowest in the overall social infrastructure development among the districts of Assam.

### OBJECTIVE:

To study the inter district development disparities of Assam with respect to different socio economic indicators.

### Development Indicators

To find out the index values across the 27 districts of Assam in 2011-12, we consider the following indicators.

#### Demographic Index (Census 2011)

- Rural population( $X_1$ )
- Urban population( $X_2$ )
- Sex ratio( $X_3$ )
- Sex ratio (0-6 year age group)( $X_4$ )

#### Education Index (Census 2011)

- Male Literacy( $X_5$ )
- Female Literacy( $X_6$ )
- Gender Gap in Literacy( $X_7$ )
- Pupil Teacher Ratio Lower Primary School( $X_8$ )
- Pupil Teacher Ratio Upper Primary School( $X_9$ )
- Dropout rate in Lower Primary School( $X_{10}$ )
- Dropout Rate in Upper Primary School( $X_{11}$ )
- No of Lower Primary Schools( $X_{12}$ )
- No of Upper Primary Schools( $X_{13}$ )

#### Amenities Index (Census 2011)

- Percentage of household drinking water facilities within premises( $X_{14}$ )
- Percentage of household with electricity as a source of lighting( $X_{15}$ )
- Percentage of household with latrine facilities within premises( $X_{16}$ )

#### Economic Index Data (2011-12)

- Net area Irrigated( $X_{17}$ )
- Credit Deposit Ratio of RRB( $X_{18}$ )

#### Health Index (2011)

- No of PHC ( $X_{19}$ )
- No of CHC( $X_{20}$ )
- No of Beds in BPHC( $X_{21}$ )
- No of Beds in CHC( $X_{22}$ )

## DATA AND METHODOLOGY

To examine the development disparities with respect to different indicators of development, we take secondary data from various government publications. These are: directorate of economics and statistics, government of Assam, Census Publications, Economic Survey etc. The time period for the study is 2011-12. The state of Assam has now 33 districts. But in order to maintain comparability of the data of spatial units, the data for newly created districts have been merged with their parent districts.

We will calculate inter-district inequality according to the measures discussed above and then highlight the disparity in Demographic, Education, Health, Amenities and Economic conditions among the districts. The latter will trace the ranking of districts over time. As far as the above mentioned five indexes, there are a large number of variables in all five categories, especially in Education Index. However, we have to reduce the variables to an aggregate index so as to relate it to other measures. For this we have used the Principal Component Analysis (PCA) technique, with some innovation to calculate the weights since otherwise they would make no intuitive economic sense. The steps we have followed to calculate PCA are described below. Before running the PCA, the following procedure is adopted to convert raw data into a normalised form. This is done to make the raw data unit free as well as to get the relative position of each district in respect of different variables. First, the best and worst values in a particular indicator are identified. In case of a positive indicator, the highest value is treated as the best value and the lowest, as the worst value. In the present case, we consider all the positive indicators.

Once the best and worst values are identified, the following formula is used to obtain normalised values:

$$NV_{ij} = 1 - [\text{best } X_{ij} - \text{observed } X_{ij}] / R,$$

where  $R = \text{best } X_{ij} - \text{worst}$

$X_{ij}$ ,  $i =$   $i$ th observation and  $j =$   $j$ th district

Normalised values always lie between 0 and 1.

Once the normalised values are obtained for all the variables across the districts, the next step is to assign factor loadings and weights. The PCA is used to compute the factor loadings and weights of these indicators. Running the PCA in the software package SPSS, we have identified the Initial Eigen Values (Total) which is more than one. In our present case, it is 5.39, 4.51, 3.09, 2.02, 1.49 and 1.20. The number of Eigen values above one varies from data to data. Incidentally, the six components explain 80.48% variance of the variables included in the analysis.

The following formula is used to determine the index

$$I = \sum X_i (\sum |L_{ij}| \cdot E_j) / \sum (\sum |L_{ij}| \cdot E_j)$$

Where  $I$  is the index,  $X_i$  is the  $i$ -th Indicator;  $L_{ij}$  is the factor loading of the  $i$ -th variable on the  $j$ -th factor;  $E_j$  is the Eigen value of the  $j$ -th factor.

## RESULTS AND DISCUSSIONS

Table 1: Pca Result

District	Demographic Index	Rank	Education Index	Rank	Amenities Index	Rank	Economic Index	Rank	Health Index	Rank	Overall Index	Rank
Dhubri	0.55	2	0.64	2	0.31	19	0.14	18	0.50	7	0.54	2
Bongaigaon	0.37	10	0.29	18	0.48	9	0.11	19	0.16	20	0.30	18
Kokrajjar	0.33	13	0.35	15	0.23	22	0.37	7	0.32	14	0.33	15
Chirang	0.36	11	0.25	21	0.20	23	0.28	12	0.30	15	0.26	20
Baksha	0.41	6	0.41	13	0.28	21	0.73	2	0.61	4	0.44	8
Goalpara	0.38	9	0.46	10	0.52	6	0.17	17	0.21	17	0.41	11
Borpeta	0.41	6	0.51	7	0.52	6	0.35	9	0.44	9	0.48	6
Nalbari	0.31	14	0.31	16	0.60	4	0.29	11	0.64	3	0.39	12
Kamrup(M)	0.38	9	0.30	17	1.00	1	0.04	21	0.22	16	0.38	13
Kamrup	0.39	8	0.48	8	0.51	8	0.37	7	0.82	2	0.51	3
Darrang	0.16	17	0.25	21	0.36	17	0.38	6	0.53	6	0.29	19
Udalguri	0.40	7	0.28	19	0.33	18	0.90	1	0.17	19	0.32	16
Sonitpur	0.42	5	0.41	13	0.44	12	0.47	5	0.50	7	0.43	9
Lakshimpur	0.40	7	0.55	4	0.42	13	0.47	5	0.47	8	0.50	5
Dhemaji	0.25	15	0.35	15	0.30	20	0.27	13	0.27	15	0.31	17
Marigaon	0.49	3	0.38	14	0.48	9	0.36	8	0.19	18	0.38	13
Nagaon	0.60	1	0.72	1	0.58	6	0.63	3	0.89	1	0.70	1
Golagahat	0.40	7	0.41	13	0.47	10	0.27	13	0.42	10	0.41	11
Jorhat	0.39	8	0.52	6	0.53	7	0.30	10	0.47	8	0.49	4
Sivsagar	0.35	12	0.47	9	0.59	5	0.22	15	0.37	12	0.44	8
Dibrugarh	0.38	9	0.43	12	0.69	3	0.20	16	0.44	9	0.45	7
Tezpur	0.41	6	0.36		0.75	2	0.17	17	0.33	13	0.40	12
Karbi Anlong	0.23	16	0.43	12	0.31	19	0.62	4	0.58	5	0.42	10
Dima Hasao	0.16		0.26	20	0.39	15	0.11	19	0.12	21	0.24	21
Karimganj	0.41	6	0.56	3	0.40	14	0.08	20	0.19	18	0.48	6
Hailakandi	0.25	15	0.45	11	0.37	16	0.11	19	0.12	21	0.35	14
Cachar	0.45	4	0.54	5	0.45	11	0.23	14	0.41	11	0.48	6

Table 1 shows the result of demographic index, education index, amenities index, economic index, health index and overall socio-economic index for all 27 districts of Assam. The ranking of the districts is also given according to their index value.

We have divided the districts into two groups, according to the value of the particular index. These two groups are (i) Developed districts and (ii) Under developed districts. The 'developed districts' category have its index value higher than the average value of that particular index and the 'Underdeveloped districts' category has its value lower than that of the average. For example, the average value of the Demographic index is 0.37. the districts which have index value higher than the average value are called as developed districts and vice-versa.

The top and bottom three Districts of different Indices are given below:

### Demographic Index

The average index value for all districts is 0.37. The standard deviation is 0.10 and coefficient of variation is 27%.

DEVELOPED DISTRICTS: Nagaon (0.60), Dhubri (0.55) & Marigaon (0.49)

UNDERDEVELOPED DISTRICTS: Darrang (0.16), Karbi Anlong (0.23) & Dhemaji (0.25)

### Education Index

The average index value for all districts is 0.42. The standard deviation is 0.12 and coefficient of variation is 28%

DEVELOPED DISTRICTS: Nagaon (0.72), Dhubri (0.64) & Karimganj (0.56)

UNDERDEVELOPED DISTRICTS: Chirang (0.25), Darrang(0.25) & Dima Hasao (0.26)

#### **Amenities Index**

The average index value for all districts is 0.46. The standard deviation is 0.17 and coefficient of variation is 37%

DEVELOPED DISTRICTS: Kamrup(M) (1.00), Tinsukia (0.75) & Dibrugarh (0.69)

UNDERDEVELOPED DISTRICTS: Chirang (0.20), Kokrajhar (0.23) & Baksha (0.28)

#### **Economic Index**

The average index value for all districts is 0.32. The standard deviation is 0.20 and coefficient of variation is 65%

DEVELOPED DISTRICTS: Udalguri (0.90), Baksha (0.73) & Nagaon (0.63)

Underdeveloped Districts: Kamrup(M) (0.04), Karimganj (0.08) & Dima Hasao (0.11)

#### **Health Index**

The average index value for all districts is 0.39. The standard deviation is 0.20 and coefficient of variation is 51%

DEVELOPED DISTRICTS: Nagaon (0.89), Kamrup® (0.82), Nalbari(0.64)

UNDERDEVELOPED DISTRICTS: Dima Hasao (0.12), Hilakandi (0.12) & Bongaigaon (0.16)

#### **Overall Index**

The average index value for all districts is 0.41. The standard deviation is 0.09 and coefficient of variation is 24%

DEVELOPED DISTRICTS: Nagaon (0.70), Dhubri (0.54) & Kamrup ® (0.51)

UNDERDEVELOPED DISTRICTS: Dima Hasao (0.24), Chirang(0.26) & Darrang(0.29)

\*Index values are given in brackets.

### **CONCLUSIONS**

From the above analysis, we can conclude that the state of Assam has experienced development disparity with respect to different socio economic indicators. In each index, the 'Developed' and 'Under developed' districts are different. The standard deviation is highest in both Economic and Health Indices and the coefficient of variation is highest in Economic Index. Therefore, disparity present in both within and among the districts. All the districts are not developed equally.

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