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FACTORS AFFECTING DISPARITIES IN RURAL DEVELOPMENT OF ASSAM: AN INTER-DISTRICT LEVEL ANALYSIS

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ABSTRACT

There are so many hurdles of development in a rural and backward economy like Assam. The rural development of such an economy has been affected by several factors including geographical and physiographical variables. The study like inter- district disparities in rural development of Assam which are caused by different factors is very important for policy implications regarding equitable development in the region in particular and rural development in general. The present study attempts to analyze the factors understandings inter- district disparities in rural development of Assam on the basis of secondary sources data at the time of 2011 census. The broad factors that the study has been taken into account are rural infrastructure, resource availability, government expenditure on rural development programmes and industrial and urban growth. Further, the study also wants to find out the significant factors that lead to disparities in rural development. From the results it has been found that resource availability factor came out to be highly significant factor among the factors in disparities in rural development of Assam.

Keywords: Disparities, Factors, Rural Development, Resource Availability, Significant

1. INTRODUCTION

Assam is a backward and rural economy having so many hurdles of development. In order to have rural development in particular and development in general the need of the hour is to improve the different development indicators across the region equally. The disparities in different developmental indicators like education, health, agricultural productivity, employment etc. across the rural regions of Assam leads inter- district disparities in rural development in the state. The spatial disparities in rural development in a rural economy like Assam are caused by several factors ranging from infrastructure, availability of natural resources, industrialization and

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urbanization etc. along with different physiographical and geographical factors. The study like inter- district disparities in rural development of Assam which are caused by different factors is very important for policy implications regarding equitable development in the region in particular and rural development in general.

The present study attempts to analyze the factors understanding disparities in rural development and their extent in the different districts of Assam. Here, the study investigates the various factors influencing disparities in rural development of Assam on the basis of secondary data sources at the time of 2011 census which covers rural regions of 27 districts. Among the broad factors determining variations in rural development mention may be of various rural infrastructural facilities, resource availability, government expenditure on rural development programme and industrial and urban growth. Here, the rural infrastructure has been categorized into four indicators such as number of primary educational institutions, number of primary health centres, irrigation facilities and rural roads. Similar to rural infrastructure resource availability factor includes variables like average size of operational holding and access to land in the rural area. Again the study also wants to find out the significant factors that lead to disparities in rural development in particular and economic development in general.

2. REVIEW OF LITERATURE AND CONCEPTUAL BACKGROUND

The developmental disparities of an economy have been analyzed by various researchers. Choudhury (1992) made a study of inter-state and intra-state variations in economic development and standard of living. He stated that in order to understand regional variations in levels of economic development and disparities in the standard of living of the people of the different states one has examine in detail the sources of growth and factors influencing growth and structure at the regional level. In the study, the author analyzed inter-state disparity in terms of overall measures of state domestic product (SDP) and household consumer expenditure which gives an idea of the economic behavior of the states and the level of living of the people. Wanmali and Islam (1995) analyzed spatial distribution of rural services in selected regions and find existence of economic disparities along with demographic, functional and spatial characteristics of settlements among these regions. They further examine the changes in rural service provision in the context of decentralized service centre planning in India. Kurian (2000) found that inter-state economic and social disparities in India have been increasing in spite of various governmental measures to develop backward areas. The author investigated disparities in terms of demographic indicators, female literacy rate, state domestic product and poverty, development and non-development expenditure by state government, shares in plan outlay, investments, banking activities and infrastructure development. He found that accelerated economic growth since the early 1980's with increased participation by the private sector

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appears to have aggravated regional disparities. There has been emerging a marked dichotomy between the forward and backward group of states. Agarwala and Hazarika (2004) examined inter-district development disparities in Assam. They build an analysis of the disparities in different sectors of the State economy such as agriculture, industry and basic infrastructure and services (BIS), through which an overall inter-district disparity can be made. The objective of their study is to focus the relatively more backward districts of this backward State, so that the planning authorities as well as State and Central Governments may adopt appropriate measures for developing the relatively backward districts in particular and the State of Assam in general. Sarkar (2009) presented an analysis of inter-district disparities in infrastructural development of West Bengal State. Through various statistical techniques like ranking, co-efficient of variation, principal component analysis/factor analysis and rotated factor matrix (Kaiser Varimax Method), he analyzed the inter-district variations in infrastructural development. The study found that there are sharp disparities among the districts of West Bengal.

3. OBJECTIVES OF THE STUDY

The main objectives of the study are-

a) To find out the factors and their extent in district disparities in rural development across the State of Assam.
b) To depict the significant factors that lead to inter-district disparities in the rural development of the region.

4. RESEARCH QUESTION

Based on the above objectives the study wants to find out the answer to the research question that whether the resource availability factor has significant impact on disparities in rural development than the other factors like rural infrastructure, government expenditure on rural development programme and industrialization and urbanization.

5. HYPOTHESIS

The hypothesis undertaken for the study is such that inter-district disparities in rural development of Assam are unaffected due to the resource availability factor and it has not significant impact in reducing disparities in rural development of Assam.

6. DATA BASE AND METHODOLOGY

The study has been carried on the basis of secondary sources data for the census year 2011. The district level data of rural Assam have been compiled from different secondary sources like Census Report, 2011, Government of India, Statistical Hand Book, 2011, Directorate of

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Economics and Statistics, Government of Assam and Assam Human Development Report, 2014 (Planning and Development Department, Government of Assam). Besides these the study also uses data from different books, journals and internet.

Subject to the availability of data the study has been taken into account some indicators to understand factors responsible for disparities in rural development of Assam. Broadly, these factors are divided into four heads as- rural infrastructure, resource availability, government expenditure on rural development programme and urbanization and industrialization. Here, the broad head rural infrastructure is a composite measure of four indicators viz., rural health infrastructure measured by number of primary health centres per lach of rural population, education infrastructure measured by number of primary schools per lakh of rural population, irrigation infrastructure which is composed of percentage of irrigated area to net sown area and number of micro irrigation schemes per thousand hectares to the net sown area and rural roads measured by percentage of villages approached to rural paved roads. Similar to the rural infrastructure the resource availability has been categorized into two components- average size of operational holding and access to land which is derived from percentage of agricultural laborers to rural work force (main workers). The composite index of these two is meant for the resource availability index. The third probable factor is the urbanization and industrialization of different districts of Assam measured through a composite index of percentage of urban population to total population and district wise contribution of industry to gross district domestic product. The amount of government expenditure on rural development programmes per lakh of rural population for the year is added in order to find out index of government expenditure on rural development programmes.

In order to find out the effect of the various factors that leads to inter-district disparities in rural development of Assam the study fit a multiple regression model and simple correlation coefficient taking into account the factors as explanatory variables and rural development as dependent variable. Here, the variable rural development is computed as the composite index of four indicators viz, rural literacy index measured through rural literacy rate in the age group 7 years and above, rural health index as measured by simple average of rural child sex ratio and infant mortality rate, rural agricultural productivity measured by contribution of agriculture to district domestic product to net sown area of the region and rural employment which is computed through main workers as percentage of total population.

For sake of convenience of the study all the values of indicators have been standardized into a uniform value by converting into an index which has been used by United Nations Development Program (UNDP) in construction of HDI (Human Development Index). The value of the index is defined as-

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$$\text{Value of the index} = \frac{Actual\ Value - Minimum\ Value}{Maximum\ Value - Minimum\ Value}$$

Here, the value of the index lies between zero and one. Depending upon the value of the index the rural districts have been categorized into different rural development groups such as high, moderate, low and backward. If the value of the index is 0.751 and more then it is termed as high rural development (HRD). Again if the value of the index is 0.501 or more but less than 0.751 then the districts are termed as moderate rural development (MRD) region. For low rural development (LRD) to occur the value would be 0.251 or above but less than 0.501. Lastly, a region is termed as backward (B) if the value of the index is zero or more but less than 0.251.

7. RESULTS AND DISCUSSION

The district wise disparities in rural development of Assam have been shown in the Table 1.

Table 1: District wise Rural Development Index (I_{RD}) of Assam, 2011

Districts	I_{RL}[1]	I_{RH}[2]	I_{RAP}[3]	I_{RE}[4]	I_{RD} *	Status
1	2	3	4	5	6	7
Dhubri	0	0.845	0.104	0.248	0.299	LRD
Kokrajhar	0.338	0.519	0.355	0.578	0.448	LRD
Bongaigaon	0.451	0.824	0.599	0.212	0.522	MRD
Chirang	0.276	0.881	0.876	0.663	0.674	MRD
Goalpara	0.431	0.682	0.247	0.326	0.422	LRD
Barpeta	0.251	0.654	0.067	0.239	0.303	LRD
Nalbari	0.887	0.761	0.554	0.226	0.607	MRD
Baksa	0.562	0.745	1	0.711	0.755	HRD
Kamrup	0.766	0.772	0	0.504	0.511	MRD
Kamrup Metro	0.856	0.744	0.163	0.751	0.629	MRD
Darrang	0.252	0.328	0.104	0.266	0.238	B
Udalguri	0.371	0.837	0.041	0.836	0.521	MRD
Sonitpur	0.393	0.754	0.539	0.629	0.579	MRD
Lakhimpur	0.847	0.650	0.767	0.403	0.667	MRD
Dhemaji	0.669	0.456	0.553	0.723	0.600	MRD
Morigaon	0.458	0.597	0.181	0.443	0.420	LRD
Nagaon	0.594	0.723	0.231	0.231	0.445	LRD
Golaghat	0.834	0.701	0.411	0.914	0.715	MRD
Jorhat	1	0.687	0.357	0.857	0.725	MRD
Sibsagar	0.970	0.651	0.359	0.445	0.606	MRD

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Dibrugarh	0.707	0.702	0.543	0.670	0.656	MRD
Tinsukia	0.396	0.722	0.650	0.896	0.666	MRD
Karbi-Anglong	0.462	0.656	0.509	0.451	0.520	MRD
Dima Hasao	0.641	0.686	0.311	1	0.660	MRD
Karimganj	0.865	0.799	0.699	0	0.591	MRD
Hailakandi	0.706	0.479	0.267	0.170	0.406	LRD
Cachar	0.882	0.444	0.415	0.370	0.545	MRD
Assam (Mean)	0.588	0.678	0.404	0.510	0.546	MRD
SD	0.256	0.131	0.256	0.265	0.134	
CV	43.54	19.39	63.48	52.00	24.54	

* RDI= (2+3+4+5)/4

Sources: Computed from,

Census of India, 2011, District Census Hand Book, Assam

Statistical Hand Book, 2011, Directorate of Economics and Statistics, Government of Assam

Vital Statistics of India, Based on the Civil Registration System, 2013,

Office of the Registrar General, India, Ministry of Home Affairs, Vital Statistics Division, Government of India

Column 6 is the composite index of rural development calculated through simple average of column 2, 3, 4 and 5 which are showing rural literacy index (I_{RL}), rural health index (I_{RH}), rural agricultural productivity index (I_{RAP}) and rural employment index (I_{RE}) respectively. From the column 6 of the table it has been found that there exist about 25 percent rural developmental variations across the different districts of Assam as per value of the CV (coefficient of variation). The rural development index for the overall state of Assam is found to be 0.546. Darrang is only one backward and least rural developed region among the 27 districts of Assam. Across the state of Assam seven districts such as Dhubri, Kokrajhar, Goalpara, Barpeta, Morigaon, Nagaon and Hailakandi have low rural development position contrary to the 18 moderate rural development areas viz, Bongaigaon, Chirang, Nalbari, Kamrup, Kamrup Metro, Udalguri, Sonitpur, Lakhimpur, Dhemaji, Golaghat, Jorhat, Sibsagar, Dibrugarh, Tinsukia, Karbi-Anglong, Dima-Hasao, Karimganj and Cachar. Further, the only one district Baksa has the category of high rural development.

The district wise values of the indices of different factors for disparities in rural development of Assam have been compiled in the Table 2.

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Table 1: District wise values of the factors for disparities in rural development of Assam

Districts	Rural Infrastructure (IF)	Resource Availability (RA)	Government Expenditure (GE)	Urbanization and Industrialization(UI)
1	**2**	**3**	**4**	**5**
Dhubri	0.282	0.103	0.096	0.331
Kokrajhar	0.218	0.275	0.622	0.523
Bongaigaon	0.233	0.213	0.256	0.249
Chirang	0.255	0.401	0.556	0.307
Goalpara	0.242	0.275	0.189	0.230
Barpeta	0.354	0.473	0.124	0.426
Nalbari	0.370	0.459	0.188	0.314
Baksa	0.323	0.405	0.844	0.424
Kamrup	0.269	0.426	0	0.506
Kamrup Metro	0.253	0.536	0.072	1
Darrang	0.294	0.128	0.067	0.251
Udalguri	0.342	0.359	0.118	0.363
Sonitpur	0.152	0.485	0.136	0.291
Lakhimpur	0.142	0.596	0.360	0.240
Dhemaji	0.168	0.663	0.867	0.309
Morigaon	0.325	0.274	1	0.189
Nagaon	0.362	0.309	0.541	0.446
Golaghat	0.235	0.614	0.073	0.333
Jorhat	0.347	0.637	0.339	0.351
Sibsagar	0.297	0.752	0.361	0.173
Dibrugarh	0.200	0.746	0.164	0.105
Tinsukia	0.153	0.922	0.117	0.382
Karbi-Anglong	0.139	0.555	0.102	0.382
Dima Hasao	0.529	0.479	0.458	0.613
Karimganj	0.122	0.669	0.009	0.448
Hailakandi	0.288	0.463	0.015	0.513
Cachar	0.262	0.495	0.119	0.589
Assam (Mean)	0.265	0.471	0.289	0.381
SD	0.089	0.192	0.276	0.173
CV	33.58	40.76	95.50	45.41

Sources: Computed from,

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Census of India, 2011, District Census Hand Book, Assam
Statistical Hand Book, 2011, Assam, Directorate of Economics and Statistics, Government of Assam
Agricultural Census, 2010-11, Government of India
Minor Irrigation Census, 2006-07, Ministry of Water Resources, Government of India

The extent of inter-district level disparities for the factors understanding rural development of Assam can be seen through the coefficient of variation (CV) of the different factors. The columns 2, 3, 4 and 5 of Table 2 show the different computed values rural infrastructure, resource availability, government expenditure on rural development programme and industrial and urban growth respectively. From the CV of the factors it is found that government expenditure on rural development programme has highest disparity having CV value 95.50 than the other factors such as urban and industrial growth, resource availability and rural infrastructure with CV values 45.41, 40.76 and 33.58 respectively.

Now, let us find out the effects of the different factors that lead to inter-district disparities in rural development of Assam. This can be shown by finding out the overall significance of the various factors upon dependent variable rural development. To identify the factors that significantly account for disparities in rural development across the different districts of Assam a multiple regression line has been carried out. The model used in the analysis is-

$$RD_t = \beta_0 + \beta_1 IF_t + \beta_2 RA_t + \beta_3 GE_t + \beta_4 UI_t + U_t \text{ ---------- (1)}$$

Where, RD_t is dependent variable implying rural development index of district t.

IF_t, RA_t, GE_t, and UI_t are explanatory variables implying rural infrastructure index, resource availability index, government expenditure on rural development programme index and urbanization and industrialization index of district t respectively.

β_0, β_1, β_2, β_3 and β_4 are positive parameters and U_t is random disturbance term

t = 1, 2, 3 ---------- 27 (for 27 districts of Assam in 2011)

Now, using the OLS method the multiple regression line (1) has estimated. The estimated regression line is obtained as –

$$RD_t = 0.220 + 0.072IF_t + 0.501RA_t + 0.139GE_t + 0.080UI_t + U_t \text{ ------ (2)}$$

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Here, the results of the multiple regression analysis are shown in Table 3. It is found in the table that R^2 value is 0.535 which means there is an about 54 percent disparity in rural development of Assam as explained by the factors such as rural infrastructure, resource availability, government expenditure on rural development programme and urban and industrial growth. Again F value is found to be 6.325 which is highly significant at 1 percent level. Thus the overall fit of the model is a satisfactory one. From the table it is evident that t value for the resource availability factor is highly significant at one percent level. The t value for the constant term as well as the government expenditure on rural development programme are found respectively as 2.203 and 1.880 implying statistically significant. The coefficient of rural infrastructure and urbanization and industrialization though positive are not statistically significant. This non-significance of factors is not due to multicollinearity because the highest condition index is found as 12.511 (<20).

Table 3: Results of Multiple Regression Analysis of the Factors affecting Disparities in Rural Development of Assam, 2011

Explanatory variables/Constants	Co-efficient Values	Standard Error	t values	Sig.
Constant	0.220	0.100	2.203***	0.038
IF	0.072	0.243	0.296	0.770
RA	0.501	0.108	4.624***	0.000
GE	0.139	0.074	1.880***	0.073
UI	0.080	0.118	0.677	0.505
R^2	0.535			
F (4, 22)	6.325			0.002

*** implies highly significant

The Table 4 depicts the values of correlation coefficient and corresponding t values taking rural development as dependent variable and the factors as explanatory variables.

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Table 4: Simple Correlation Coefficient between Rural Development and the Factors for Disparities in Rural Development of Assam, 2011

Factors/Explanatory Variables	Correlation Coefficient	t value (significant at two tailed)
IF	-0.120	0.552
RA	0.667**	0.000
GE	0.189	0.344
UI	0.065	0.748

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

RD: Dependent Variable

In the Table 4 it also found that resource availability came out to be highly significant at 1 percent level. The other three factors are come out as statistically insignificant. The coefficient value of rural infrastructure having the negative value depicts rural infrastructure components are yet to make positive impact in rural development in 2011.

From the above multiple regression and correlation coefficient analysis it is evident that in light of the hypothesis adopted in the research study that inter-district disparities in rural development of Assam are unaffected due to the resource availability factor and it has no significant impact in reducing disparities in rural development of Assam is not accepted. Rather for the alternative hypothesis that resource availability has significant impact in disparities in rural development of Assam is accepted. In 2011 resource availability along with government expenditure on rural development programme has significant impact in disparities in rural development of Assam and it has positive impact in rural development in the economy. The other factors though don't have significant impact they have positive relationship with rural development of Assam.

CONCLUSION

From the above analysis of factors affecting inter-district variations in rural development of Assam the factor resource availability has come out to be highly significant factor and it has high positive correlation with rural development. This means the size of operational holding and access to land is contributing a lot in rural development of Assam and the equitable distribution of it reduces disparities in rural development in a significant manner. Though government expenditure on rural development programme has some significant impact on disparities in rural development of Assam the other factors such as rural infrastructure and urbanization and industrialization have very least or indirect impact rural developmental disparities. Thus, it is necessary to increase the lagging factor in the particular region so that equitable distribution of the amenities relating to the concerned factor took place. In this regard the allocation of

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components of resource availability and enhancement of government expenditure on rural development programme in different lagging districts is the need of the hour to reduce disparities in rural development of Assam to a certain extent. Again a more comprehensive study will be necessary for very backward as well as more difficult location areas.

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