Rural and Urban Multidimensional Poverty in Tinsukia District of Assam, India

Monika Das
Associate Professor,
Department of Economics, Tinsukia College

Abstract: This paper aims at measuring the level of multidimensional poverty in Tinsukia district, Assam. The paper also aims at identifying the proportional contribution of each indicator to multidimensional poverty. The present study is mainly a primary survey bases study. Using the Alkire and Foster methodology, the study found higher multidimensional poverty in rural area compared to urban counterpart. The contribution of nutrition indicator to MPI is high in rural areas followed by years of schooling while in urban child enrollment indicator contribute more to MPI followed by years of schooling.
Keywords*: A.F methodology, Multidimensional poverty, Rural and urban, Assam, India.*

I. Introduction:

Background: The existence of poverty in living standard between classes of people is widely believed to be an important development challenge across the world. Realizing the fact, efforts have been made at different levels to quantify the poor on the basis of the poverty line reckoned in money metrics terms for operational phase of interventions. UN, in its Millennium Development Goals targeted to halving the proportion of poor living in income less than $1.25 by 2015. According to the MDG Report, 2015, although the targets of eradication of extreme poverty and hunger have been met or almost met, the world is still having 825 million people living in extreme poverty and 821 million suffering from hunger in 2017(New UN Report, 2018). This signifies that measuring poverty in income dimension may yield some pertinent information on its chosen scale, but perhaps overlooks the multifaceted nature of human deprivation. Therefore, there has been a shift of conceptualizing poverty beyond its income dimension. The fundamental reconsideration of the concept of poverty particularly conceived broadly in economics, prompted in the capability approach developed by Amartya Sen. In capability approach Sen. viewed poverty as capability failure and thus rooted poverty as multidimensional. By portraying poverty in multidimensional space in terms of capability failure, Sen., invites direct attention to a range of specific capabilities relating to health, education, shelter and basic amenities. Unlike Sen, many scholars hold the view that for poverty reduction, rise in individual income can of course be very important but simultaneously it needs some social and economic arrangement such as facilities for education and health care as well as political and civil right. The framework of Chamber & Conway's livelihood approach, Basic needs approach of Hicks and Streeten, Atkinson's & Marlier's social inclusion, UNRISD's social protection, the concept of human security etc throw light on the multidimensional aspect of poverty. Over the last decades, both the theory and the practical measurement of multidimensional poverty have made rapid advance. The evolution of the human development paradigm in 1990 led to the strong theoretical foundation to measure multidimensional poverty. Human Development Report, 2010, introduces the global multidimensional poverty index which directly measures the combination of deprivations that each household experience.

The focus on multidimensional aspect of poverty has the potential to draw attention to government failure especially in relation to provision of public goods and how market function. While these conceptual arguments for an independent focus on measuring multidimensional poverty apply to all countries, there is also a significant relevance for India and Assam too. In India about 47.9 percent of Indian households that have more than five children are severely deprived of shelter, water, sanitation, health and education according to Indian Human Development Survey report, 2019. In Assam despite declining trend of poverty in recent years, 77 percent of rural people are without access to sanitation facilities, 14.2 percent are without having safe drinking water and 36.2 percent have no access to

electricity facility (the Human Development Report, 2016). The literature of poverty studies exposed that poverty has regional dimension means where the poor lives is an important dimension. Therefore, the variation in multidimensional poverty as well as material deprivation is found in rural and urban areas across all the countries of the world.

Tinsukia district of Assam: Tinsukia district is one of the 27 administrative districts of Assam. It is situated in between 27.23^0N to 27.48^0 N latitudes and 93.38^0 E longitudes at the north covering an area of 3790 sq.km. Located in the Upper part of Assam, the district is surrounded by Arunachal Pradesh in the East, Dibrugarh district in the west and in the north river Brahmaputra, in the south Arunachal Pradesh. As per 2011 census, total population of the district is 1325263 with population density 350 persons. Tinsukia district has 7 development blocks and 86 goan panchayat. The number of villages in this district is 1168 and 80.60 percent of population live in rural area. Total urban population in this district is 262992 lakes (19.94 percent) out of which 44051 (16.75) are slum dwellers (2011 census). According to the Statistical Hand Book of Government of Assam, 2011, there are 13 towns and 102 slum pockets in Tinsukia district. Despite of being one of the commercial districts with high opportunity and potentiality, people in this district are unemployed, living in poor condition and deprived in having access to basic amenities of life.

II. **Objectives**:

The objectives of the paper are - (1) to measure the extent of rural and urban poverty in the light of Multidimensional Poverty Index. (2) to identify the proportional contribution of each indicator to multidimensional poverty index

III. **Previous literature**:

In the literature there are a number studies construct multidimensional poverty index and decomposed it by the area or region to find out the differences in the extent and the nature of multidimensional poverty. **Alkire et. al** (2014), tried direct comparison of the multidimensional poverty of rural and urban areas using Global MPI, 2014. The result covering 105 countries found that 85 percent of multidimensionally poor live in rural area and across all the countries the composition of poverty differs across rural and urban areas. **Santos and Ura**(2008), attempted to estimate multidimensional poverty in rural and urban Bhutan applying the Alkire and Foster methodology using the 2007 Bhutan living Standard Survey data. Considering five dimensions- income, education, room availability, electricity and water for urban areas and two additional dimensions –access to road and land ownership for rural areas, their study found that multidimensional poverty in Bhutan is mainly a rural phenomenon. **Alkire and Kumar** (2012), tried to comparing both income and multidimensional poverty in rural and urban areas. The result they found is that relative deprivations are similar across individual indicator in rural and urban areas, but rural areas faces greater deprivation in sanitation, cooking fuel medium and assets. Rural urban differences in MPI is much higher than income. **Wang** et. al (2016), tried empirically to explore the coincidence and mismatch between the income poverty and multidimensional poverty using AF- methodology in china. The study found that the coincidence of income poverty and multidimensional poverty is 31 percent. This means that 69 percent multidimensionally poor households are not income poor. **Tran et. al** (2015), tried to examine static and dynamic disparities between monetary and multidimensional poverty in Vietnam. Their study revealed that monetary poor are not always multidimensionally poor. The coincidence between the two always less than 50 percent. **Suppa, Nicolai**(2016), assessed the comparisons between income and multidimnesionally poverty in Germany. The result found significant differences between the two measures. For income cut-off of 60 percent and k=33 percent, only 39.78 percent income poor are also multidimensionally poor.

IV. Methodology:

Data source: The present study is based on the primary data collected (on 2018-19) by field survey through a structured questionnaire prepared for the purpose. Moreover, some secondary data was also collected from OPHI, Global MPI Report, Statistical Hand Book of Assam, 2016, Assam Human Development Report, 2016

Study design: Tinsukia district was purposively selected as the study area for the present study based on the rationality that Tinsukia district is one of the commercial district of Assam. Despite of being an important industrial district, having the opportunity and potentiality, this district has the lower rank in Human Development Index (22nd, out of 27th). For the study, a multistage sampling method was applied. In rural area, out of 7 development block, one panchayat from one block was selected. From the selected Panchayat, 25 percent villages and from each village 25 percent or 193 households were randomly selected and in Urban area, out of 13 towns, Tinsukia town was purposively selected and out of 12 slum pockets (Census Report, 2011) 1 slum pocket was selected for the study and 25 percent or 159 households of the selected pocket was selected as sample household. Combining total of 352 sample households out of 775 rural households in Gotong Gaon Panchyat and 636 urban households in Mazid Pattety slum pocket of Tinsukia Town were considered in the present study.

V. Analytical strategy:

In order to fulfill the objectives, the present paper identifies the households that are multidimensionally poor using Alkire and Foster methodology (UNDP, Human Development Report, 2010). Considering the household as the unit of analysis, the study follows two steps – (a) Identification and (b) aggregation of the poor on the basis of two poverty cutoffs- deprivation cutoff and poverty cutoff. For identification of the poor, the following dimensions, indicators cutoff and weights were used (Table.No.1)

Table No.1 Dimensions, indicators, deprivation cut-off, and weights of the global MPI

Dimension	Indicator	Deprivation Cutoff	weight
Education	Years of schooling	No household member has completed five years of schooling.	1/6
	Child enrolment	Any school age child in the household is not attending school up to class 8.	1/6
Health	Nutrition	If any adult or child in the househol is undernourished.	1/6
	Mortality	Any child has passed away in the household in last five years	1/6
Standard of living	Floor	The household has a dirt, sand, or dung floor/not improved wall of the house.	1/18
	Sanitation	The household's sanitation facility is not improved/ if improved shared with numbers of families	1/18
	Cooking fuel	The household cooks with dung, wood, or charcoal	1/18
	Water	The household doesnot have access to pure drinking water.	1/18
	Electricity	The household has no electricity	1/18
	Assets	The household owns at most one of the following: radio, mobile phone, TV, bike, refrigerator, and doesnot own a car or truck.	1/18

Source: Alkire and Santos (2010, 2014), cf. Alkire, Roche, Santos, and Seth (2011) and Alkire, Conconi, and Roche(2013)

And for aggregation part, after setting the deprivation cutoff, a household is identified as poor if the household's deprivation score is equal t0 1/3. After that a censored deprivation score vector is obtain by multiplying each entry by the identification function express as follows.

$$C_i(k)=\sum_{j=1}^{d} w_j g_{ij}^{0}(k) \ldots\ldots..(1)$$

The censored deprivation score vector is denoted by C (k). At last, the MPI is constructed dividing the censored deprivation score vector by total population. This can also be easily verified by the product of H (head count ratio) and A (intensity: which is obtain by dividing the total deprivation score by total poor).

VI. Estimation Results

Multidimensional poverty Index of the sample households: Using the methodology of Alkire and Foster (UNDP, 2010, 2014), the multidimensional poverty was constructed on the basis of the FGT class of poverty measures for the households living in rural and urban areas of Tinsukia district. The study found higher uncensored headcount ratio or incidence of poverty in rural area (67 percent) compared to urban area (40 percent) of the district. If we see the intensity (A), less differences is found between the two locations of the district (48 percent in rural and 44 percent in urban) despite of having high differences in headcount ratio. As a product of partial indices of H and A, the higher value of multidimensional poverty index found in rural area compared to urban area of the district. In rural the value (M_0) found is 0.325 and in urban 0.175 that means 33 percent households are multidimensionally deprived in rural area while in urban 18 percent are multidimensionally deprived. In both the rural and urban area, the multidimensional poverty ratio is found high compared to state (16 percent) and national level (12 percent) (Table.2)

Table.2. MPI of the Sample Households

Area	H(Incidence)	A(Intensity)	M_0 (MPI)	M_1	M_2
Rural	0.673	0.483	0.325	-0.253	0.198
Urban	0.400	0.439	0.175	-0.058	0.052
Total population	0.542	0.433	0.235	-0.073	0.066
Assam(State)	0.358	0.446	0.161	--	--
India(national)	0.275	0.439	0.121	--	--

Source: Primary data, own calculation, For Assam and India (Global MPI Report, 2018)

(M_0= adjusted multidimensional poverty, M_1= adjusted multidimensional poverty gap, M_2= adjusted squared multidimensional poverty gap)

The adjusted multidimensional poverty gap (M_1) as well as severity of poverty (M_2) too found high in rural area (0.253) compared to urban area (0.058) in the district (Table No.2).

- **MPI at different poverty cut-offs:**

To know the impact on multidimensional poverty due to change in poverty cut-off, multidimensional poverty index was constructed for the sample households considering two additional poverty cut-off i.e k=40% and k=50%. Table.3 shows that both in rural and urban areas with increase in poverty cut-off to 40 percent and 50 percent, the incidence of poverty (H) and the value of MPI decrease. In rural area, the incidence of multidimensional poverty (H) at k=33%, k=40%, k=50% is 67 percent, 34 percent and 17 percent respectively. The corresponding value of MPI, decrease from the value of 0.325 at k=33 percent to 0.189 and 0.107 at k-40 percent and k=50 percent. In urban area the value of the incidence (H) decrease from 0.400 to 0.155 and 0.155 at the same poverty cut-off and the corresponding value for MPI decrease from 0.175 to 0.083 and 0.082.

Table. 3 MPI of the Sample Households for different poverty cut-off

Multidimensional poverty cutoff(k)	Rural			Urban		
	H	A	MPI	H	A	MPI
K=33%	0.673	0.483	0.325	0.400	0.439	0.175
K=40%	0.344	0.551	0.189	0.155	0.541	0.083
K=50%	0.170	0.628	0.107	0.097	0.841	0.082

Source: Primary data, own calculation

While the value of multidimensional poverty index decrease with increase poverty cut-off, but the intensity shows higher value with every increase of poverty cut-off.

Indicator-wise Uncensored and censored headcount ratio:

Table.4 shows the uncensored and censored headcount ratio in each indicator within the three dimensions. In the study, the higher uncensored headcount ratio is found in drinking water (0.791), nutrition(0.788) , housing floor(0.762) and cooking fuel(0.619) indicators and lower ratio is found in child mortality (0.015) indicator in rural area.

Table.4 Indicator wise Uncensored and Censored Head Count Ratio

Dimensions	**Indicator**	**Rural**		**Urban**	
		Uncensored head count ratio	**Censored headcount ratio**	**Uncensored head count ratio**	**Censored headcount ratio**
Education	Years of schooling	0.227	0.223	0.293	0.265
	Child enrolment	0.077	0.077	0.387	0.283
Health	Nutrition	0.788	0.621	0.195	0.134
	Child Mortality	0.015	0.015	0.040	0.040
Living Standard	Housing Floor	0.762	0.634	0.491	0.199
	Sanitation	0.595	0.553	0.134	0.076
	Cooking fuel	0.619	0.569	0.436	0.193
	Drinking Water	0.791	0.607	0.460	0.011
	Electricity	0.338	0.329	0.121	0.059
	Assets	0.332	0.294	0.557	0.277

Source: Primary data, own calculation

While in urban area, the higher value is found in assets (0.557) followed by housing floor (0.491), drinking water (0.460), cooking fuel (0.436) and lower value is found in child mortality (0.040). If we compare the uncensored headcount ratio found in each indicator, in rural area the higher value for each indicator is found compared to urban counterpart except in child mortality indicator and in indicator of health dimension.

Regarding censored headcount ratio i.e the ratio of households who are multidimensionally poor and simultaneously deprive in each indicator, the higher value in rural area is found in housing flour(0.634), nutrition(0.621) and in drinking water(0.607) in rural and in urban the corresponding value is found high in child enrolment(0.283), assets(0.277), and in years of schooling indicator(0.265) and lower censored headcount ratio is found in drinking water(0.011), child mortality(0.040) and electricity(0.059) indicators.

Percentage contribution of each indicator to MPI:

Though the censored headcount ratio shows the extent of deprivation among the poor, it does not reflect the relative importance of the indicators. Two indicators may have the same censored headcount ratio, but contribution to overall poverty may be different, because the contribution depends both on censored headcount ratio and the weight assigned to each indicator.

Table.5 Indicator-wise percentage contributions to MPI

Dimensions	Indicator	Rural	Urban
Education	Years of schooling	11.61	25.21
	Child enrolment	3.98	26.99
Health	Child Mortality	0.80	3.82
	Nutrition	32.33	12.82
Living Standard	Housing Floor	11	6.33
	Sanitation	9.60	2.43
	Cooking fuel	9.89	6.14
	Drinking Water	10.53	0.37
	Electricity	5.71	1.87
	Assets	5.10	8.81

Source: Primary data, own calculation

Table.5 Shows higher contribution of nutrition indicator (32.3) followed by years of schooling (11.61), housing floor (11) and drinking water (10.53) in rural areas. And in urban, the corresponding value is found high in child enrolment (26.99) followed by years of schooling (25.21), nutrition (12.82) and assets (8.81) indicator in urban area of the district and lower value is found in drinking water.

VII. Conclusion

The findings of the present study shows that 33 percent households in rural area and 17 percent in urban area in the district are multidimensional poor and this ratio is higher compared to state and national level. Compared to rural area, in urban censored headcount ratio, poverty gap and squared poverty ratio is found high. In the analysis of percentage contribution of each indicator to MPI, the difference occurs in nutrition indicator which is high in Rural area compared to urban. And in urban, the indicator shows high contribution to MPI, is years of schooling. One important point that was observed in the study that households both in rural and urban are less asset poor but poor in nutrition, sanitation, water, housing floor. This means that both in rural and urban, expenditure on purchasing asset are high compared to other basic amenities of life.

- **References:**

1. Alkire,S., and Foster, E., (2014). Measuring Acute Poverty in the Developing World: Robustness and Scope of Multidimensional Poverty Index. *World Development*, 59. 251-274.
2. Alkire, S. and Kumar, R (2012). Comparing Multidimensional Poverty and Consumption Poverty Based on Primary Survey in India. *Paper presented in OPHI workshop.* 21-22 Nov.
3. Bourguing, F and Chakravarty, S. (2003). The measurement of Multidimensional Poverty. *Journal of Economic Inequality*. 1(1), 25-59.
4. Census Report. (2011). *Statistical Handbook of Assam,* 2016
5. Human Development Report (2016). *Government of Assam.*
6. Santos, E. and Ura, K (2008). Multidimensional Poverty in Bhutan: Estimates and Policy Implications. *OPHI, Working Paper No.14,* University of Oxford
7. Sen, A. (1999). *Development as Freedom*. Oxford University Press
8. Suppa, N. (2016). Comparing Monetary and Multidimensional Poverty in Germany. *OPHI, Working Paper No. 103,* University of Oxford
9. Tran, Q., Alkire S., Klasen, S.(2015). "Static and Dynamic Disparities between Monetary and Multidimensional Poverty measurement: Evidence from Vietnam. *OPHI ,Working paper No.97.*
10. UNDP (2018), *Report of Global Multidimensional Poverty Index*
11. Wang, X., et.al. (2016). On the Relationship Between Income Poverty and Multidimensional Poverty in China. *OPHI, Working paper No. 101.*