Multidimensional Poverty Measurement in India:

Exploring Tools and Their Application to Assess Poverty and Deprivation

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Executive Summary

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The estimation of poverty in India is much debated during the recent years. However, most of the studies in India have tended to focus on poverty at a point of time and their methods of analyses have usually suffered from a uni-dimensional limitation (Filippone et al 2001), whereby they referred to only a unique proxy of poverty, namely equivalent income or consumption. In the view of Satterthwaite (2001) uni-dimensional poverty measures, at best, can lead to only a partial understanding of poverty, and often to unfocused or ineffective poverty reduction programs. They fail to capture many aspects of deprivation. These limitations of uni-dimensional poverty measurement are also compounded by other technical difficulties of income measurement, especially, in developing countries that reduce the value of such income based uni-dimensional poverty results. All these give indications of serious limitations to measures of poverty based on a single monetary indicator of resources (Atkinson and Bourguignon 1982, Maasoumi 1998) and underscore the strong need for a multidimensional approach to poverty analysis that widens the concept of poverty to reflect, for instance, dimensions other than just the monetary one. The impetus to develop a multidimensional framework has a range of diverse sources, which gives it a distinctive strength and stability. Amartya Sen, Robert Fogel, and other leading social scientists have given a normative account of the need for broader approaches. The measurement of poverty remains centered on the ability to spend on goods and services rather than on the capability to enjoy valuable beings and doings (Sen 1985), the methodological revisions, debates (GoI 2009; Deaton and Drèze 2002), acknowledgement of the multidimensional nature of poverty and of the need for inclusive development. There is a need to supplement India's long and august tradition of monetary poverty measurement with multidimensional poverty measures that capture the joint distribution of deprivations across the population.

Monetary Poverty v/s Multidimensional Poverty in India

The measurement of monetary poverty is based on monthly per capita consumption expenditure while the estimation of multidimensional poverty is based on three dimensions namely education, food and nutrition and living condition. In these three dimensions of multidimensional poverty we have considered nine indicators namely schooling, school attendance, food security, nutritional security, electricity, cooking fuel, own house, own land and assets. Moreover in

monetary poverty the poor and non-poor are differentiated by the poverty line whereas in case of multidimensional poverty multidimensional poor and non-poor are differentiated by using 33.33 per cent as the deprivation cut-off. In the present study both the monetary and multidimensional measurement of poverty in India and her states is based on the NSSO unit level data. In India, 37.8 per cent (40.76 crore person) were monetary poor in 2004-05 which decreased to 22.3 per cent (26.97 crore person) in 2011-12. The monetary poverty in rural area was significantly higher than that of the urban area. There is relatively poorer consumption situation in the SCs and STs population as compared to non-SC/STs. The deprivation in 'nutrition' and 'cooking fuel' were relatively higher as compared to other indicators. In 2004-05, 75.3 per cent of people living in the households were deprived in 'nutrition' and it decreased to 65.6 per cent in 2011-12. In 2004-05, multidimensional head count ratio (HCR), average intensity among multidimensional poor and multidimensional poverty index (MPI) were 53.0 per cent, 54.6 per cent and 0.28 which reduced to 34.1 per cent, 48.2 per cent and 0.164 in 2011-12 respectively. A comparison of the multidimensional poverty for the rural and the urban areas shows that HCR, Intensity and MPI in rural India were higher than that of urban India. The HCR, Intensity and MPI of STs and SCs were also higher than Non-ST/SC in both the years. Dimensional contribution of 'food and nutrition' was nearly half to measure multidimensional poverty in both the years. Education had about 30 percent contribution in MPI measurement. Contribution of living condition decreased over time.

Out of total population in India 33.9 per cent people in 2004-05 were poor in both monetary and multidimensional measurements of poverty. This share declined to 16.5 per cent in 2011-12. In contrary 43.1 per cent people were non-poor in 2004-05 in both measurement of poverty and the share increased to 60.1 per cent in 2011-12. That is there is a similarity, 77 per cent in 2004-05 and 76.6 per cent in 2011-12, in the measurement of poor and non-poor in the two methods. There were 19.1 per cent and 17.6 per cent people in 2004-05 and 2011-12 respectively in India have shaken off monetary poverty, but they are multidimensionally poor in at least at one third of the dimensions. If the poverty-reduction policies were undertaken targeting only at those in monetary poverty, then these shares of people will continue to live in multidimensional poverty of various degrees. Therefore, the poverty-reduction policies should cover not only monetary poverty but also multidimensional poor and deprived households.

The percentage of multidimensional poor was high (more than 50 per cent) in as many as eleven states of India in 2004-05. The multidimensional poverty declined over time and there were only two states (Chhattisgarh and Arunachal Pradesh) in 2015-16 with high percentage share (i.e., more than 50 per cent) of multidimensional poverty.

The estimated result of multinomial logit model reveals that that the multidimensional deprivation significantly decreased over time in India. The likelihood of multidimensionally deprived households and severely multidimensionally deprived households were more in rural area than urban area. The probability of multidimensionally deprived and severely multidimensionally deprived households increased significantly with the household size. Higher age of head of households was more likely multidimensionally non-deprived than multidimensionally deprived and severely multidimensionally deprived. SC, ST and OBC categories households were more likely multidimensionally deprived and severely multidimensionally deprived than multidimensionally non-deprived. Self-employed households and higher years of education of the head of the household were more likely multidimensionally non-deprived than multidimensionally deprived and severely multidimensionally deprived.

Multidimensional Poor, Non-Poor and Deprived Rural Households

On the basis of the methodology for identifying BPL provided in Socio Economic Caste Census 2011 by the Ministry of Rural Development the present study has estimated the percentage share of non-poor households by exclusion criteria, extremely poor households by inclusion criteria, deprived households by deprivation criteria and non-deprived households. In 2011, about 39 per cent households were non-deprived, i.e., excluded from BPL list, only one per cent household were extremely poor who were included in the BPL list. In the present paper, there were three measurements of multidimensional deprivation. Firstly, in all over India in 2011, 12928 households were extremely deprived by the intersection methods. Secondly, 49 per cent households were deprived by union method and thirdly, 13 per cent households were deprived by using the cut-off 33.33 as the deprivation score.

The SECC 2011 gives the insights about the status of the development and underdevelopment of rural households in India across different social castes. In a number of indicators ST households were more deprived in West Bengal compared to all India level. More than the half of the ST people was illiterate in West Bengal. About one third of the ST households in West Bengal were

deprived in respect of housing. They did not own any house with one room. Manual casual labour and cultivation was the main occupations of rural ST households. The resulting outcome of these types of occupations was the low income. The monthly income of 93 per cent of ST households in West Bengal was less than Rs. 5000.

The multidimensional headcount ratio of ST was relatively higher in West Bengal compared to all over India. The percentage shares of moderate deprived ST households were many folds than that of Non-ST households in West Bengal. The share of moderately deprived ST households was relatively low in some districts where STs were densely populated. These districts are Darjeeling, Purulia, Bankura, Dakshin Dinajpur, Jalpaiguri and Paschim Medinipur. Most of them are backward districts.

Multidimensional Poverty and Deprivations in India

The dimensions and indicators that are used by UNDP in their Human Development Report to measure multidimensional poverty are available only in the unit level data of National Family Health Survey (NFHS) of India. The present study also estimates the multidimensional poverty and deprivations in India and her states on the basis of unit level data of NFHS-3 and NFHS-4. This estimation is different from our earlier estimation of multidimensional poverty based on the NSSO unit level data in respect of the specification of dimensions and indicators. The multidimensional poverty significantly reduced in India between 2005-06 and 2015-16. Uncensored head count ratio of assets showed the highest reduction from 55.8 per cent to 27.8 per cent i.e., of 28 percentage points, followed by electricity and sanitation. In India, reduction of health and education deprivation has been slower than all the standard of living indicators. Considering health dimension, the highest absolute reduction was observed in 'nutrition' whereas the highest relative reduction was observed in 'mortality'. In censored HCR the highest absolute reduction in deprivation was observed in 'schooling'. The deprivation in the 'asset' indicator of multidimensionally poor people reduced drastically by 26.3 percentage points over a period of 10 years, followed by cooking fuel indicator where the reduction was by 23.6 percentage points and 'sanitation' had more or less the same reduction.

In India, multidimensional HCR (H) had been reduced by 23.5 percentage points during 2005-06 to 2015-16. The absolute reduction of average intensity of poverty (A) was 6.7 percentage points

and also Multidimensional Poverty Index (MPI) had reduced by 0.138. H, A and MPI were significantly higher in the rural area as compared to urban area. The contribution of health among three dimensions to multidimensional poverty measurement in India increased from 26.70 per cent in 2005-06 to 29.91 per cent in 2015-16.

The dimensional contribution of 'standard of living' to multidimensional poverty measurement was the highest in both the years. In schooling indicator of education 51 per cent of the multidimensional poor were deprived in 2005-06 which reduced to 46.9 per cent in 2015-16 while in case of attendance the reduction was of 13 percentage points. In standard of living maximum reduction of about 30 percentage points of the multidimensional poor was observed in case of 'asset' indicator followed by electricity and others while the least reduction of the multidimensional poor was observed in cooking fuel indicator in the same time period.

Our sub-group analysis pointed out that across social castes the multidimensional poverty was the highest among the STs and SCs. The maximum reduction of MPI was observed in case of ST group where it reduced from 0.274 in 2005-06 to 0.122 in 2015-16 and the least reduction was observed in case of General group where it reduced by only 0.102. The religion wise pattern shows that Hindu (80 per cent share of population) and Muslim (14 per cent share of population) had higher 'MPI', 'H' and 'A' in comparison to other religions like Christian and Sikh.

In both the years, female headed households are more deprived than male headed household. MPI and H were the highest when the household head had no education as compared to other level of education. In this group the reduction of MPI and H were maximum. Her we can conclude that increase in the education level of household head decreases the multidimensional poverty. The multidimensional poverty reduction has occurred in case of every household size but the highest reduction in MPI and H was observed in case of household having 8-9 members where it reduced by 0.159 whereas the least reduction was observed in case of household having 1-3 members. It is noteworthy that the poverty was higher in the household having more family members but the reduction in poverty was also higher in this group over the decades.

All the states showed reduction in multidimensional poverty but the maximum reduction in MPI was observed in 2 states namely Chhattisgarh and Jharkhand where it has reduced by 0.190

points followed by Bihar and others and the maximum reduction in H was observed in Sikkim where it reduced by 33.9 percentage points followed by Arunachal Pradesh and Chhattisgarh.

The estimated result of multinomial logit model is based on the pooled data (for two years 2005-06 and 2015-16) reveals that that the multidimensional deprivation significantly decreased over time in India. The rural households are more likely ordinary and severely multidimensional poor than multidimensional non-poor. The backward castes like ST, SC and OBC were more likely ordinary and severely multidimensional poor households than multidimensional non-poor. Years of education of the head of the households were more likely multidimensional non-poor household than ordinary multidimensional poor and severely multidimensional poor households. We have used cross dummies of social caste and religion for econometrics analysis of multidimensional poor. Over all Hindu and Muslim and all social castes of Muslim community households were more likely ordinary multidimensional poor and severely multidimensional poor than multidimensional non- poor. The likelihood of ordinary and severely multidimensional poor was more in relatively less developed castes like ST, SC and OBC of Hindu community households than General caste of Hindu households. Christian and Sikh community households are more likely multidimensionally non- poor than severely multidimensional poor households.

Poverty and the Deprivation of the Rural Sample Households in West Bengal

Poverty and Deprivation of the rural sample households of West Bengal had been estimated on the basis of field survey data for the years 2016-17. Primary data have been collected from 800 sample households of 32 sample villages in 16 sample blocks from five less developed districts of West Bengal, namely Bankura, Purulia, Paschim Medinipur, South 24 Parganas and Derjiling. Education level of the members of sample households was relatively low where as among all the members 4.8 per cent households were still illiterate. As regards to the housing condition, still 58.4 per cent houses have mud wall and bricks (pukka) which was found in only 28.9 per cent households. There were only 7.6 per cent households having concrete roof. In case of sanitation facility most of the households were still deprived. Only 43 per cent of households have sanitation facilities. Among the 800 sample households 37.1 per cent were landless households. The land productivity of the cultivating households was also very low. The main reason of this low productivity is that a significant portion of these districts is situated either in drought prone or hilly region. The majority of the labourers of sample households have engaged in casual

labour. Majority of the households have earned by selling their labour power. But only 13 per cent of laborers had been regular employed. It is evident that labour entitlement and social protection entitlement are more important as compared to other types of entitlement.

Among the sample households the incidence, depth and severity of food insecurity were 38.3 per cent, 9.3 per cent and 0.1 per cent whereas the incidence, depth and severity of poverty were 48.7 per cent, 13.3 per cent and 0.01 per cent respectively in 2015-16. The measurement of multidimensional poverty in terms of multidimensional head count ratio, multidimensional intensity of poverty and multidimensional poverty index for the sample population was 21.8 per cent, 43.6 per cent and 0.10 respectively. Across the social groups multidimensional poverty was high for STs and OBCs whereas monetary poverty was high for SCs and OBCs but the incidence of food insecurity was high for OBCs and General caste households. The incidence of food insecurity of SCs and STs was low because they had received more food grains from PDS compared to General and OBC. The incidence, depth and severity of food insecurity and poverty was high in Purulia districts, followed by Bankura and Paschim Medinipur. Least food insecure people were founds in Derjiling districts. Out of total population 54.8 per cent were non-poor as well as food secure but 30.3 per cent people were poor as well as food insecure. Whereas 43.1 per cent populations were monetary poor among whom only 13.6 percent were multidimensional poor and other 29.5 per cent were multidimensionally non-poor.

Role of SPPs on Poverty and Deprivation of the Sample Households

The present study analyses the social protection benefits (SPBs) at the household level and individual level on the basis of field survey data of 600 households from 24 sample villages of 12 sample blocks in the three backward districts (namely, Paschim Midnapore, Bankura and Purulia) of West Bengal for the year 2016-17. Among 600 sample households 33.2 per cent households were landless in 2016-17. The exchange entitlement of land was also deficient due to low productivity because of a significant portion of these three districts is drought prone and irrigation facilities was inadequate. The productive asset of sample households was also hardly found. The labourers were predominantly casual and the percentage of casual labour increased overtime where as the percentage of regular and self-employed labour decreased. It was observed that the average years of schooling of the workers also improved over time.

Households having the membership of different social protection programmes (SPPs) were given the opportunity to increase their entitlements. Here we have considered the social protection programmes that have directly benefited the households and they are related to food, health, housing, economic security and social security of the households. Earnings of the households by means of different forms of entitlements are categorized as labour entitlement, production based entitlement (both agriculture and other than agriculture), trade-based entitlement and transfer entitlement (from common property resources and social protection programmes). Among all entitlements the contribution of labour entitlement was highest followed by social protection. Among SPPs the relative importance in terms of the coverage was the highest in PDS, followed by NREGP, ICDS and MDM. Social security related programmes like IGNOAPS, NFBS, IGNWPS, IGMSY and IGNDPS are for specific beneficiaries; therefore, their coverage was limited.

The social protection benefits contribute for the reduction of 15.5 per cent food insecurity and 2.5 per cent poverty in 2016-17. The reduction of incidence of food insecurity and poverty was observed for all social classes. The reduction of food insecurity was the highest for SCs and the reduction of poverty was the highest for STs. Multidimensional poverty in terms of multidimensional head count ratio, multidimensional intensity of poverty and multidimensional poverty index for the sample population decreased in presence of SPPs. The SPPs are also multidimensional in nature and they have mitigated different aspects of deprivations of the household. Therefore, the impact of SPPs was better addressed in the multidimensional poverty measurement. SPPs contribute for the reduction of 37.4 per cent multidimensional head count ratio and 23 per cent of MPI in 2016-17. Across the social groups STs and SCs had the highest multidimensional HCR, intensity and MPI.

Average education of the households was negatively and significantly related to the incidence of poverty. Higher per capita gross cultivable land of the households decreases the probability of the incidence of poverty but not the depth of poverty. The agricultural production was not sufficient to overcome the poverty gap. Labour entitlement was much more important than production entitlement. Households were surviving by selling their labour power but the labour entitlement was also not sufficient for the poor households to cope with the poverty. Trade activities of the households significantly reduced the incidence of poverty. Demographic factors, namely household size, age of head of household and square of age of head of the household

significantly explained the incidence and depth of poverty. The benefits of social protection programmes, particularly public distribution system (PDS) had played a crucial role in increasing food security of the poor households – higher access of food grains from PDS reduced the incidence and depth of food security and poverty.

Policy Recommendations

From the above discussion the following policy recommendations may be made.

First, if the poverty-reduction policies are undertaken targeting only at those in monetary poverty, then a specific share of people will continue to live in multidimensional poverty of various degrees. Therefore, the poverty-reduction policies should cover not only monetary poverty but also multidimensional poor and deprived.

Second, since the ration cards are old documented and some of the households or the members have no ration cards on account of exclusion and inclusion errors, there is the urgent need for the issue of new ration card. Since the Government of India in implementing the National Food Security Bill-2013 for benefits of 75 per cent targeted rural people, the identification of the poor or stakeholders by appropriate statistical method at frequent time intervals is important. In this context the identification of extreme poor, poor, multidimensionally deprived and non-deprived on the basis of available information of Socio-Economic Caste Census 2011 will play a crucial role.

Second, since PDS benefit in kind certainly increases the food consumption baskets while cash benefits from other programmes diversify the consumption of the poor households in favour of luxury items, the study strongly recommends for PDS benefits in kinds to overcome food insecurity and poverty.

Third, to bridge the gap between demand and supply in most of the sectors where social protection programmes are being implemented, management and supervision has been decentralized to the local level and steps are being taken to strengthen the capacity of local governments, rules have to be enforced for the creation of stakeholder committees at the local institutional level.

Fourth, digitization of the records of the functioning of SPPs by Information Technology-enabled service is important for transparency and to minimize corruption.

Fifth, for effective execution of social protection programmes such rules for quality of services for each programme are essential.

Sixth, since the household's income from labour is supportive to overcome the incidence of food insecurity and poverty and since the education level and the skill formation of workers are relatively poor, in order to strengthen the labour entitlement spread of education is needed. Besides basic education, vocational training and technical skills are useful in gaining access to non-agricultural jobs or self-employment. Effective micro-entrepreneurship development programme is helpful for promotion of non-farm activities.

Seventh, since as per our finding the production entitlement, specifically agricultural production is important for food security and to overcome poverty and the greater part of the backward region is deficient in respect of irrigation, for the sake of multiple cropping which helps the households to increase production on one hand and increase labour demand on the other, spread of irrigation for production of compatible crops in the dry region is indispensable for production-led food security.

Eighth, while access to income from common property resources significantly reduces the incidence of food insecurity and poverty, for the sake of improvement of the existing right to use the forest resources by villagers is strongly recommended.

Ninth, while in the short run the social protective measures are important for the poor and vulnerable and the excessive dependence on social protection has raised the question of sustainability of livelihood in the long run. The study strongly recommends measures to enhance the own entitlement of the households to cope with poverty and deprivations.

lastly, given the limitations of the SPPs for poverty alleviation the accent should be placed on the overall development of rural areas because the backward region is predominantly rural. For rural transformation of this region the rapid development of infrastructure like road and power is a must. Rural development programs are to be so designed and directed as to gradually make the poor and vulnerable reliant on their own selves based on infrastructure.