Extent of Poverty and Vulnerability within the Rural Slums of India

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Abstract:

This paper estimates poverty and vulnerability among the Indian rural slums using NSS 69th Round, Schedule No. 1.2, data on Drinking water, Sanitation, Hygiene, Housing conditions and survey on slums. From the estimates it is found that vulnerability percentage is higher than poverty percentage in India. Among the states poverty and vulnerability are lowest in Delhi and highest in Chhattisgarh. Land holding is an important determinant of both poverty and vulnerability. Some other socio-economic factors like religion, social class, gender of the house head, types of family are also important.

Keywords: *Poverty, Vulnerability, Land Holding, External Shock*

Introduction:

Vulnerability is a relatively newer concept than poverty. Poverty is a static concept but vulnerability is a dynamic concept. Measuring vulnerability is an important issue for development planners. Vulnerability measures a household's proneness to shock. It tries to quantify the extent to which a family can absorb external shocks. Such shocks may be natural (including drought, flood, climate change, some accidents, some epidemic like Covid-19, etc.) or man-made (including recession, food inflation, civil war, etc.). Extreme shock may make almost everybody vulnerable. By extreme shock many ancient cultures destroyed all over the world. However, there are some less severe shocks which can be absorbed by some families and can't be absorbed by other families.

The vulnerability approaches can be classified (Hoddinott and Quisumbing,

2003a; 2003b) into three main categories. They are as follows.

1. The welfare-based approach
(Glewwe and Hall, 1998; Cunningham and Maloney, 2000; Ligon and Schechter, 2003) emphasizes the effect of these shocks on family welfare.

2. The risk-based approach lays emphasis on the uninsured exposure to shock (Gaiha and Imai, 2004).

3. The poverty-based approach is a dynamic version of poverty. The emphasis here is on the probability to fall below the poverty line (Chaudhuri et al., 2002, Chaudhuri, 2002).

These three approaches may differ widely. In the welfare-based approach many families still remain above the poverty line after absorbing a large welfare-based shocks. Similarly, in the risk-based approach families well above the poverty line may be less affected by uninsured exposure to risk. In the poverty-based approach families well above the poverty

line may have less chance to fall below the poverty line by large external shocks.

An analysis of vulnerability ideally requires panel data on individual's consumption experience for a sufficiently long time-period. However, such data are rare for the poor and developing countries. Moreover, even if such data are available, they are often not representative. As for example, the ICRISAT panel data that Indian researchers used cover only the semi-arid areas of some parts of south India (Gaiha and Imai, 2004; Gaiha et al., 2007). An alternative is to measure vulnerability by using aggregated panel data (Jha et al., 2009). In the poverty approach vulnerability is measured (Chaudhuri et al., 2002) from the cross-sectional data. The idea is to identify the household characteristics that "contribute to different per capita consumption levels of households that are otherwise observationally equivalent" (Chaudhuri et al., 2002). It is then possible to derive an empirical distribution for these features, given certain very restrictive assumptions. Vulnerability is then captured by measuring the probability that a household with these features would fall below the poverty line.

There are two important deficiencies of this method (Jha et al., 2009). Firstly, it is sensitive to distributive assumptions about the error term. Secondly, the accuracy of the estimates depends upon whether the distribution of consumption across households, given a set of characteristics at a given point in time, is an accurate representation of the time-series variation of the consumption of the households.

In another work (Sengupta and Ghose, 2010) developed a more direct and simple method. This approach depends on the nature of consumption data as provided by the National Sample Survey Organisation. This is a non-parametric approach, as it does not depend on special distributional assumptions. It is also direct as it depends only on the observed consumption data rather than on the household features as emphasized by the poverty approach. In a sense, it is thus free of the uncertainty involved in transmitting these household features into observable income. Again, the various asymmetries involved in the pathway between income and expenditure are internalized in this approach. However, as in all cross-sectional analysis, the impact of general shocks that tends to have an economy-wise effect cannot be analysed.

Following (Sengupta and Ghose, 2010), this paper tries to estimate consumption vulnerability of Indian rural slums from NSS 69th Round, Schedule No. 1.2, data on Drinking water, Sanitation, Hygiene, Housing conditions and survey on slums.

A brief introduction is given in this section. Section-2 gives a brief review of existing literature. Section-3, discusses the data features and the methodology used in this study. Section-4 presents estimate of poverty and vulnerability percentage of India by some socio-economic factors. Finally, the conclusion is given in Section-5.

2. Review of Literature:

Reviewing the existing literature, some of the important works and their findings are mentioned here. Agarwal et al. (2005) in a

work on Indian slum found that identification and mapping of all slums is crucial to locate unlisted slums, which are often more vulnerable and usually remain out of any Government program interventions. Gaiha et al. (2007) measured the vulnerability of households in rural India, based upon the ICRISAT panel survey. They employed both ex ante and ex post measures of vulnerability. The latter were decomposed into aggregate and idiosyncratic risk, and poverty components. Their decomposition shows that idiosyncratic risks account for the largest share, followed by poverty and aggregate risks. Despite some degree of risk-sharing, the landless or small farmers are vulnerable to idiosyncratic risks, forcing them to reduce consumption. Income augmenting policies therefore must be combined with those that not only reduce aggregate and idiosyncratic risks but also build resilience against them. Swain and Floro (2007) developed a theoretical framework to examine the mechanisms through which the pecuniary and non pecuniary effects of the SHG program on the beneficiaries' earnings and empowerment influence their households' ability to manage risk. They found that SHG members have lower vulnerability as compared to a group of non-SHG (control) members. Jha et al. (2009) found that either income or consumption expenditures as measured over short periods of time has been regarded as proxies for the material well-being of households. However, a household's sense of well-being depends not just on its average income or expenditures, but also on the risks it faces. Hence vulnerability is a more satisfactory measure of welfare. They measured the

extent of vulnerability as expected poverty, and examined the importance of its determinants. Jha et al. (2010), in another work, analysed the effects of access to Rural Public Works (RPW) and the Public Distribution System (PDS), a public food subsidy programme, on consumption poverty, vulnerability and under nutrition in India based on the National Sample Survey (NSS) data, 50th round in 1993-1994 and 61st round in 2004-2005. They found significant and negative effects of household participation in RPW and food for work programmes on poverty, under nutrition (e.g. protein) and vulnerability in 1993 and 2004. They confirmed that PDS decreased vulnerability based on 80 percent of the poverty threshold. The same result was found by Imai and Annim (2009). Patnaik and Narayanan (2010) found that the households adopt a wide variety of risk coping measures. These measures are receiving monetary transfers, relief, selling of livestock and borrowing. The means of coping are specific to the nature of shocks created by the disasters. Receiving monetary transfers are the most effective means of coping for households during floods. While monetary transfers are used by households to cope with occupational shocks, they are not likely to be used to cope with health shocks. Relief is primarily used by households to cope with the shortfall in income / consumption. Silbert (2011) found that natural disaster risk influenced future poverty rates. He found that smaller, rural and more educated households are less likely to be in poverty in the future. Importantly, these household characteristics are correlated with lower levels of aggregate risk. Jha et al. (2012) using ARIS/REDS data set for

rural India they measured household vulnerability as expected utility and its components. They concluded that between the years 1999 and 2006 household vulnerability is most explained by poverty and idiosyncratic components. For risk coping strategy, households rely heavily on informal instrument such as their own saving, transfers or capital depletion and they also try to cope with covariate risks by participating in government programmes. A coping strategy using government programmes has vulnerability (idiosyncratic risk component) reducing effects.

3. Data and Methodology:

A proper analysis of vulnerability ideally requires panel data that could trace down the individual's consumption experience for a sufficiently long time-period. However, such data are rare and difficult to come by, especially for the poor and developing countries. Moreover, even if such data are available, they are often not representative. As for example, the ICRISAT panel data that Indian researchers used cover only the semi-arid areas of some parts of south India (Gaiha and Imai, 2004; Gaiha et al., 2007). An alternative is to measure vulnerability by using aggregated panel data (Jha et al., 2009).

However, Sengupta and Ghose (2010) utilized a more direct and simple method. This approach depends on the nature of consumption data as provided by the National Sample Survey in its different rounds. The approach is non-parametric, as it does not depend on special distributional assumptions. It is also direct as it depends

only on the observed consumption data rather than on the household features as emphasized by the poverty approach. In a sense, it is thus free of the uncertainty involved in transmitting these household features into observable income. Again, the various asymmetries involved in the pathway between income and expenditure are internalized in this approach. However, as in all cross-sectional analysis, the impact of general shocks that tends to have an economy-wise effect cannot be analysed. This paper followed the method developed by Sengupta and Ghose (2010) for measuring vulnerability.

3.1. Vulnerability Measurement:

The National Sample Survey (NSS) data sets have two advantages in that they cover the whole country and not just the semi-arid parts as the ICRISAT data set does, and that the NSS surveys cover a much larger number of households than the ICRISAT data set. Another advantage of the NSS data is that it has several dimensions like the rural–urban break-up, and break-ups according to social groups, religions, and types of households.

In the case of the NSS data sets, the household consumer expenditure during the last 30 days is to be ascertained through direct questions, out of the following five sources: 1) Purchase, 2) Home-grown/home-produced stock, 3) Receipt in exchange of goods and services, 4) Transfer receipts such as gifts, loans, charities, etc., and 5) Free collection.

Among these five sources, the first three sources are more or less regular but the last two sources are very vulnerable. This

paper estimates the vulnerability percentage on the basis of the ratio of the total vulnerable consumption expenditure to the total consumption expenditure; this may be called the vulnerability ratio (VR). Like poverty, this is a static concept, which may rise or fall over time. However, unlike poverty, it gives us some idea about the potentiality of a household to face any external shocks. If a poor family has a high VR, obviously it is prone to be vulnerable. Even for a non-poor family, if this proportion is high, the possibility of falling back into poverty is quite high.

Following Sengupta and Ghose (2010) this paper measures poverty vulnerability from the NSS 69th Round, Schedule No. 1.2, data on Drinking water, Sanitation, Hygiene, Housing conditions and survey on slums. This round of NSS data gives us the different types of information about the slum people of India, covering all the states and union territories. This paper considers only 21 major states.

In the vulnerability literature, the poors are identified on the basis of per capita consumption. However, in 69th round NSS data families are not classified according as the nature of ration card i.e., figures of official poor are not available. For this reason, this paper has used the Poverty Report of Planning Commission, Government of India, June, 2014 to estimate and identify the poor families. This Poverty Report, published by Planning Commission-2014, provided the Below Poverty Level (BPL) consumption separately for each state and also for rural

and urban separately. Using this BPL consumption figure, not shown here, this paper has identified, first, the families which are officially poor. After that the poverty vulnerability percentage is calculated as: *Poverty Vulnerability Percentage or Vulnerability Percentage = 100 {(Poor Families + Non-Poor families that have V.R > 0.5)/ Total number of households}.*

Using this methodology, this paper tries to estimate the percentage of poverty and percentage of vulnerability for rural slum people of India for the 21 selected states and compare it with the corresponding poverty percentage. The paper also tries to link the percentage of both poverty and vulnerability with some geographical, social, religious and economic factors which may influence the vulnerability position of the slum people.

4. Data Analysis and Results:

From the above-mentioned data, the author has estimated poverty percentage and vulnerability percentage for rural slums of different states of India and compared them.

Table 4.1 shows a comparison of poverty percentage with expected poverty percentage or vulnerability percentage within the rural slum families of India. From this table it is seen that the vulnerability percentage is higher than poverty percentage within the rural slum families in all states of India except in Delhi, Goa, Jammu and Kashmir.

Table 4.1: State Wise Estimated Poverty Percentage and Vulnerability Percentage for Rural Slums of India

States	Poverty (%)	Vulnerability (%)
Andhra Pradesh	24.14	24.18
Assam	38.03	38.11
Bihar	55.78	56.07
Chhattisgarh	58.54	59.04
Delhi	4.17	4.17
Goa	22.22	22.22
Gujrat	41.56	41.87
Haryana	33.66	33.77
Himachal Pradesh	29.75	30.13
Jharkhand	45.99	46.47
Jammu & Kashmir	29.62	29.62
Karnataka	48.46	48.61
Kerala	19.12	19.18
Maharashtra	47.32	47.67
Madhya Pradesh	56.52	56.59
Orissa	49.88	50.08
Punjab	19.94	20.04
Rajasthan	44.47	44.90
Tamil Nādu	26.81	26.91
Uttar Pradesh	51.70	51.93
West Bengal	33.43	33.69
India	41.88	42.11

Source: Author's own calculation from NSSO 69th Round, Schedule 1.2, 2012.

That implies rural slum families, who are non-poor, of these three states have relatively high external shock absorbing capacity compared to slum families of other states. Among the selected states percentage of both poverty and vulnerability within rural slum households is highest in Chhattisgarh followed by Madhya Pradesh and lowest in Delhi followed by Kerala. Thus, with respect to poverty and vulnerability among the rural slum families Delhi places the best position and Chhattisgarh places the worst position.

Table 4.2 helps to make a comparison of poverty percentage and vulnerability percentage of rural Indian slum by types of households. From this table it is seen that vulnerability percentage is higher compare to poverty percentage for all types of rural slum households.

Table 4.2: Estimated Poverty and Vulnerability of Indian Rural Slum by Types of Households

Types of Households (Rural)	Poverty (%)	Vulnerability (%)
Self Employed in agriculture	39.11	39.31
Self Employed in non-agriculture	35.90	36.08
Regular wage/salary earning	23.01	23.23
Casual labour in agriculture	56.54	56.70
Casual labour in non-agriculture	49.84	49.93
Others	34.54	35.65

Source: Author's own calculation from NSSO 69th Round, Schedule 1.2, 2012.

Both poverty and vulnerability percentage among the rural slum households is lowest for 'regular wage/salary earning' households and highest for 'casual labour in agriculture' households. Thus, with respect to poverty and vulnerability those slum households belong to 'regular wage/ salary earning' category is in a relatively better position compare to all other types of households.

Table 4.3: Estimated Poverty and Vulnerability of Indian Rural Slum by Gender

Gender of the House head	Poverty (%)	Vulnerability (%)
Male	42.72	42.89
Female	36.46	37.09

Source: Author's own calculation from NSSO 69th Round, Schedule 1.2, 2012.

Table 4.3 shows a comparison of poverty percentage and vulnerability percentage of Indian rural slum by gender of the house head. From this table it is seen that vulnerability percentage is higher than poverty percentage both for male headed and female headed slum families. But the difference (between poverty percentage

and vulnerability percentage, not shown in the table) is higher for female headed families. That implies external shock absorbing power of the male headed families are relatively higher than female headed families. Though both poverty percentage and vulnerability percentage are higher for male headed families compare to female headed families.

Table 4.4: Estimated Poverty and Vulnerability of Indian Rural Slum by Religions

Religions	Poverty (%)	Vulnerability (%)
Hinduism	42.67	42.90
Islam	41.08	41.32
Christianity	29.00	29.00
Sikhism	19.21	19.21
Jainism	17.95	20.51
Buddhism	59.47	59.47
Others	56.52	58.26

Source: Author's own calculation from NSSO 69th Round, Schedule 1.2, 2012.

Table 4.4 shows religion wise poverty and vulnerability percentage for the Indian rural slum families. From this table it is seen that poverty and vulnerability is highest among the families belong to

Buddhism and lowest for families belong to Jainism. Both poverty percentage and vulnerability percentage are same for Christian and Jainism families. That implies within the non-poor families of this two religions external shock absorbing power is relatively higher compare to non-poor families of all other religions.

Table 4.5: Estimated Poverty and Vulnerability of Indian Rural Slum by Social Classes

Social Classes	Poverty (%)	Vulnerability (%)
ST	60.41	60.59
SC	48.90	49.16
OBC	40.66	40.87
Others	28.43	28.69

Source: Author's own calculation from NSSO 69th Round, Schedule 1.2, 2012.

Table 4.5 shows a comparison of poverty percentage and vulnerability percentage by social classes. From this table it is seen that vulnerability percentage is higher than poverty percentage for all social classes. Poverty and vulnerability percentage is highest for scheduled tribe class followed by Scheduled Caste and lowest for Others or General Class families followed by Other Backward Class.

Table 4.6 helps to make a comparison of poverty percentage with vulnerability percentage of Indian rural slum by different land holding classes. From this table it is seen that vulnerability percentage is higher than poverty percentage for all land holding classes. It is also seen that both poverty percentage and vulnerability percentage fall as we move from lower land holding class to higher land holding class.

Table 4.6: Estimated Poverty and Vulnerability of Indian Rural Slum by Different Land Holding Classes

Per Capita Land Holdings (Decimal)	Poverty (%)	Vulnerability (%)
Less than one	46.55	46.74
One to less than five	45.34	45.61
Five to less than ten	43.66	43.90
Ten to less than twenty	39.22	39.39
Twenty to less than fifty	35.18	35.36
Fifty to less than hundred	24.36	24.90
Greater than hundred	15.71	16.05

Source: Author's own calculation from NSSO 69th Round, Schedule 1.2, 2012.

That implies both poverty and vulnerability percentage are inversely related with per capita land holdings, in rural areas.

5. Conclusion:

From the above analysis it can be concluded that vulnerability percentage is higher than poverty percentage within the rural slums of India. Among the selected states of India vulnerability percentage is higher than poverty percentage, except in Delhi, Goa and Jammu & Kashmir. That implies among the non-poor rural slums of these three states external shock absorbing

capacity is relatively higher compared to other states. Poverty and vulnerability percentage is highest in Chhattisgarh and lowest in Delhi.

Among the rural slums both poverty and vulnerability percentages are lowest for 'regular wage/salary earning' families and highest for 'casual labour in non-agricultural' families. Both poverty percentage and vulnerability percentage is higher for male headed families compare to female headed families. But external shock absorbing power of the male headed families are relatively higher than female headed families. The percentage of poverty and vulnerability is highest for the families belong to Buddhism religion and lowest for families belong to Jainism religion. Poverty percentage and vulnerability percentage are same for Christian and Jainism families. That implies external shock absorbing power is relatively higher for the non-poor families of these two religions compare to non-poor families of all other religions. Poverty and vulnerability percentage is highest for scheduled tribe class and lowest for Others or General Class families. In rural areas both poverty percentage and vulnerability percentage fall as we move from lower land holding class to higher land holding class. That implies both poverty and vulnerability percentage are inversely related with per capita land holdings.

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