

# Contrasting the Levels of Poverty against the Burden of Poverty: An Indian Case

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## Abstract

*Comparisons of levels of poverty across contexts and circumstances overlook the composition and characteristics of the domain of non-poor. But implications of poverty in terms of compromised welfare as well as its potential for alleviation do depend on the structure and composition of the non-poor. On this premise, this note empirically illustrates a contrast between the levels and burden of poverty for Indian states. It finds that burden of poverty is not linear with levels of poverty implying that similar levels of poverty have differential potential for its alleviation.*

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*Key words:* poverty burden, poverty gap, alleviation potential

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## **Contrasting the Levels of Poverty against the Burden of Poverty: An Indian Case**

### **1. Introduction**

Levels of poverty have always occupied prominence in discussion on poverty owing to its conceptualization that splits the entire population into two categories of poor and non-poor. While levels of poverty is assessed with multiple measures like HCR, PGI, SPGI and FGT indexes<sup>3</sup>, it is exclusive to the domain of the poor that gets defined in terms of a given poverty line (Sen 1976, Kakwani 1980, Clark et. al. 1981). Such restriction is primarily motivated by the axiomatic principles of defining poverty in terms of the focus axiom. This axiom states that a measure of poverty should entirely focus on the incomes of the poor (Foster et. al. 1984, Foster and Shorrocks 1991). Most of the measures of poverty stated above conform to this axiom. However, without contesting the purpose and significance of this axiom, the levels of poverty thus measured may not truly compare across varying contexts and circumstances. The fundamental measure of poverty, i.e. the HCR, expresses the poor as a ratio of the entire population, which involves the non-poor. This measure is based on the likelihood principle expressing the likelihood of locating a poor in a given population (Subramanian 2005). According to this measure, and all other refined measures of the kind, the levels of poverty are fine-tuned for comparison across contexts that accounts for the distributional features of the poor. The comparison enabled with such refinement may differentiate levels of poverty but has the least to reflect on the implications of poverty. As regards the implications, levels alone will be deficient because it does not offer anything concerning its coincidence with the domain of the non-poor. The domain of non-poor assumes significance on account of the implications of poverty for a whole lot of reasons. One of these being in terms of poverty alleviation, which primarily depends on the incomes of the non-poor and the possible direct/indirect transfers from them to the poor.

The poverty levels, as conceived in terms of conventional measures, keep the understanding regarding its potential for alleviation beyond its purview. The idea of

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<sup>3</sup> Abbreviations mean as follows: HCR- Headcount Ratio, PGI- Poverty Gap Index, SPGI- Squared PGI, and FGT- Foster-Greer-Thorbecke Poverty Measure

remaining focused on BPL population may sound ideal but any possible change in their status depends upon their non-poor counterpart. Considering the welfare approach, poverty can only be alleviated with due direct/indirect transfer of resources from the non-poor to poor, without disturbing the income hierarchy of the non-poor (Fields and Ok 1996). Indeed, foreign aid is an available option, but not all of it is directed towards the poor, and whatever is directed, not all of it flows to them (Easterly 2002: 255-281). So, in any society, the potential for poverty alleviation needs to be viewed in terms of the incomes of the non-poor. Hence, on account of poverty reduction/alleviation, a given level of poverty may have varying potential of being reduced/alleviated depending on the available incomes of the non-poor. This calls for an assessment of Poverty Burden (PB) proposed by Quiggin and Mahadevan (2010). Such an assessment involves a valuation of poverty gap as against available resources i.e. the income gap of the non-poor. The index of PB is a variant of PGI. Theoretically, it is the ratio of poverty gap (PG) to potentially available resources (PAR), which is the combined additional income above the poverty line that can be taxed (Quiggin and Mahadevan 2010).

So, basically PB returns a ratio, which is the proportion of income transfer that is required from the additional incomes, over and above the poverty line (PL), of non-poor, in order to bring the poor at least up to the PL; and obviously, this is subject to the income transfer being complete, without any leakages. Apart from this, PB also qualifies better for comparison of extent of poverty among the states because of its properties as explained in Quiggin and Mahadevan (2010). Given that PB accounts for the distribution of incomes on either side of the poverty line, its comparison potential is robust irrespective of the population size and the distribution of the poor and non-poor in terms their incomes (Quiggin and Mahadevan 2010). Recognition of this alternative measure of poverty, with the due advantage of differentiating levels of poverty against their prospective for alleviation, has prompted us to contrast the traditional head-count measure with PB in case of Indian states.

The following section details on the methodology and data used for an empirical exposition. Third section shows the estimates of PB and its inferences for India and its states, divided into rural and urban area. Section four concludes.

## 2. Methodology and Data

As already mentioned, the method of PB, as proposed by Quiggin and Mahadevan (2010), is the ratio of poverty gap to the potentially available resource, and so,

$$PB = (PG/PAR)$$

Where, PG → Sum of gap of incomes of the poor, from poverty line

PAR → Sum of gap of incomes of the non-poor, from poverty line

The data for calculating PB has been adopted from Consumer Expenditure Survey conducted by National Sample Survey (NSS) in the 61<sup>st</sup> round (2004-05). We have considered Monthly Per Capita Expenditure (MPCE) for computing PB, in place of income. This has been the common norm of assessing poverty in Indian context in the absence of the data on income. But, again, this will not affect the results since PB is calculated as a ratio of two consumption figures, assuming that these represent the incomes of the households. As regards the PL for different Indian states by rural and urban residence, we have used the recommendations of the Tendulkar Committee report to the Planning Commission (2009)<sup>4</sup>. Based on these designated PL estimates, the computation of PG and PAR is done using the 61<sup>st</sup> round of NSS data. We have made some approximated adjustments to the MPCE values given by NSS data to ensure that it matches with the ones finally used by the Tendulkar Committee. Following these adjustments, we calculated PG and PAR and took their ratio to get PB for Indian states, separately by rural and urban residences. Such computation is in accordance with the respective PL's designated by the levels of MPCE. The results and their inferences are discussed in the next section.

## 3. Results and Discussion

Poverty burden ratio for rural India was 0.23 and that for urban was 0.06, meaning that for reducing poverty there is a need for transfer of 23 per cent of rural non-poor income, in excess of PL, to the rural poor, and similarly, for urban poor, it needs a

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<sup>4</sup> The poverty levels, for 2004-05, proposed by Tendulkar Committee (2009), which is based on Monthly Per Capita Expenditure (MPCE), are one of the most widely accepted estimates of poverty in India. According to this report, the overall poverty in India, during 2004-05, in form of Head Count Ratio (HCR), was 37.2%, and that for rural and urban India was 41.8% and 25.7% respectively.

mere 6% of the total additional income of urban non-poor<sup>5</sup>. This observation is crucial from a policy viewpoint in the sense that it informs on the amount of tax to be charged from those above PL, while considering the proportion of transfers ultimately reaching the beneficiaries. Now, prior to a discussion on PB for the Indian states, it is important to mention here that lower poverty gaps alone, or along with higher quantum gaps of incomes of non-poor, will give rise to a lower PB and vice-versa. This is in keeping with the concept of PB, as it is a responsive measure of mutuality between the poor and non-poor in terms their gaps from a normative poverty line.

The PB ratios and HCR for 29 Indian states and one Union Territory (Pondicherry) are given in Appendix, in Table A, for both rural and urban area. It may be noted that the PB ratio varied widely in rural areas when compared with the urban areas. The possible reason could be that it is responsive to the levels of poverty. The rural PB ratio ranged from 2 per cent in Delhi to 89 per cent in Orissa. These ratios are undoubtedly higher in rural areas of states like Bihar, Chhatisgarh, Jharkhand, Madhya Pradesh and Orissa. Surprisingly, there are a few states with reasonably higher HCR values in their rural areas, but are not having a greater PB ratio. For instance, the case of rural Uttar Pradesh with 43 per cent of HCR has a corresponding PB ratio i.e. 26 per cent. Similar patterns are observed in case of rural areas of Rajasthan, Gujarat and a few of the Northeastern states. Such an exposition hints at a reasonable polarization in the consumption levels of the poor and the non-poor in these states which gives rise to a lower PB ratio despite reasonably high levels of poverty. The urban areas have a considerably lower PB ratio even with comparable levels of poverty with rural areas. Although the urban areas of the same set of states like Bihar, Madhya Pradesh and Orissa display a larger PB ratio compared with urban areas of other states, they are apparently less responsive to the urban poverty in general, which again, could be due to the polarization of consumption levels in urban areas. A select set of states display a greater urban PB ratio when compared to the national urban PB ratio of 6 per cent. Undoubtedly

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<sup>5</sup> It is important to note here that the India level PB figures calculated in this paper do not match with that calculated by Quiggin and Mahadevan (2010) for three reasons. First is that present paper has calculated PB separately for rural and urban. Second, the PAR used in Quiggin and Mahadevan (2010) is the total national income, whereas in the present paper it is the sum of gap of incomes, of the non-poor, from poverty line. Lastly, the reference poverty line used here is different from Quiggin's paper.

this moderation in the level of PB ratio across all the states reflects the kind of polarization in expenditure between the poor and non-poor in urban India.

To make matters simple and comparable, a mapping of PB against the poverty level, in form of HCR, has been carried out for rural and urban segments of the states in Tables 1 and 2 respectively, which will be the centre for discussion henceforth.

As can be seen from Table 1, in the rural areas 16 out of 29 states have PB below 18%, which means that in these states reduction of poverty would require transferring at most 18% of the additional income, above PL, from rural non-poor to the rural poor. Nagaland has the least poverty, and resultantly, even the lowest PB at 3%. But the interesting cases are states like Karnataka and Tamil Nadu (TN), who represent lower PB at 15% and 17%, respectively, despite having very high poverty levels at around 38%. Hence, although the level of PB is conditioned by HCR or the level of poverty, this dependence could be weak in some cases. The reasons for low PB in Karnataka and TN could be that either the combined income of the non-poor is relatively higher or the poor are largely situated near the poverty line. In either case, if suitable measures are taken to ensure leak-proof transfers of income from the non-poor to poor then a lot can be achieved in terms of alleviating rural poverty in these two states. The burden of reducing poverty in Andhra Pradesh is similar to that of Karnataka and TN even though its poverty is comparatively lesser at 32%. Other major states like Punjab and Kerala also have very low PB at 6% and 4% possibly due to high levels of per capita income and human development index (NHDR 2001, RBI 2010).

Three major western states, i.e. Rajasthan, Gujarat and Maharashtra, and two major eastern states, i.e. Assam and West Bengal, have rural PB in the range of 20-30%. These levels of burden are feasible to manage, with some difficulties, through a mix of high taxation and foreign aid. But the condition of states like Tripura, Manipur, Chhatisgarh, Madhya Pradesh and Jharkhand is rather worse. All these states have PB in the range of 40-50%, and realizing a transfer of this magnitude would be rather difficult. These objectives seem tougher considering the fact that even if such large amounts are gathered, it is near impossible to ensure that all of it flows to the poor. Also, Bihar and Orissa are the worst-case scenarios. Not only do they experience extreme poverty but also

the burden of reducing poverty is large being close to 1 or 100%. According to the properties of PB, as elaborated in Quiggin and Mahadevan (2010), in these kinds of states, even if the incomes are equally distributed among everybody, the poverty will remain at its peak. Although the levels of poverty are on a higher side in states like TN and Karnataka, which is similar in Bihar and Orissa, their PB ratios differ substantially. The PB ratios of TN and Karnataka are quite in favour of poverty alleviation as against Bihar and Orissa where it seems rather difficult. Possible reasons could be the difference in the effectiveness of targeted programmes, like PDS, MNREGA, etc., between these set of states (Drèze and Khera 2011, Planning Commission 2005, Drèze and Oldiges 2007).

<b>Table 1: Positioning of Indian States (Rural) According to Poverty Head count and Burden of Poverty</b>						
<b>RURAL</b>		<b>Poverty Burden</b>				
		<b>Low (&lt;18%)</b>	<b>Medium (18-36%)</b>	<b>High (36-54%)</b>	<b>Very High (54-72%)</b>	<b>Extreme (&gt;72%)</b>
<b>Poverty (Head Count Ratio)</b>	<b>Low Poverty (&lt;12%)</b>	Nagaland	-	-	-	-
	<b>Medium Poverty (12-24%)</b>	Jammu & Kashmir, Meghalaya, Delhi, Kerala, Mizoram, Pondicherry, Punjab	-	-	-	-
	<b>High Poverty (24-36%)</b>	Goa, Haryana, Himachal Pradesh, Andhra Pradesh, Arunachal Pradesh, Sikkim, Uttaranchal	Rajasthan	-	-	-
	<b>Very High Poverty (36-48%)</b>	Karnataka, Tamilnadu	Assam, Gujarat, Uttar Pradesh, West Bengal, Maharashtra	Manipur, Tripura	-	-
	<b>Extreme Poverty (&gt;45%)</b>	-	-	Chhatisgarh, Madhya Pradesh, Jharkhand*	-	Bihar, Orissa

Source: Headcount Ratio is from Planning Commission (2009), and Poverty Burden is author's calculation using NSS (61<sup>st</sup> Round)

Now, we move on to the urban area of the Indian states (Table 2). Except eight states, the others have fairly low PB, which means that reducing poverty in the urban area is easier even for states like Tripura, Chhatisgarh and Jharkhand, who have comparatively

higher PB in their rural areas. Transfer of income within the urban area is also easier because unlike rural area, income of people in the urban area is much beyond the poverty line. This is the reason why, despite facing similar levels of poverty in rural and urban areas, states like Uttar Pradesh, Rajasthan, and Manipur, face much lesser burden of reducing poverty in their urban areas as compared to the rural ones. In fact, some of these states, and the others like Gujarat, Maharashtra, West Bengal, Karnataka, Madhya Pradesh, etc., who have considerably lower PB in urban areas compared to rural areas, could also contemplate the strategies of transferring incomes from the urban to rural areas. But for the states like Bihar and Orissa, alternative strategies need to be adopted.

<b>Table 2: Positioning of Indian States (Urban) According to Poverty Head Count and Burden of Poverty</b>						
<b>URBAN</b>		<b>Poverty Burden</b>				
		<b>Low (&lt;4%)</b>	<b>Medium (4-8%)</b>	<b>High (8-12%)</b>	<b>Very High (12-16%)</b>	<b>Extreme (&gt;16%)</b>
<b>Poverty (Head Count Ratio)</b>	<b>Low Poverty (&lt;10%)</b>	Himachal Pradesh, Mizoram, Nagaland, Pondicherry				
	<b>Medium Poverty (10-20%)</b>	Delhi, Jammu & Kashmir, Kerala, Punjab	Tamilnadu			
	<b>High Poverty (20-30%)</b>		Andhra Pradesh, Assam, Chhatisgarh, Goa, Gujarat, Haryana, Jharkhand, Karnataka, Maharashtra, Meghalaya, Tripura, Uttaranchal, W. Bengal	Arunachal Pradesh, Rajasthan, Sikkim		
	<b>Very High Poverty (30-40%)</b>			Madhya Pradesh, Uttar Pradesh	Orissa	Manipur
	<b>Extreme Poverty (&gt;40%)</b>					Bihar

Source: Same as Table 1

#### 4. Conclusion

In this paper we have essentially evaluated levels of poverty with an alternative called poverty burden that informs on the existing potential for poverty alleviation. Such



a potential is assessed in term of the income gaps of the non-poor when compared to the poverty gaps of the poor. As regard the comparison of levels of poverty across varying contexts and circumstances, the proposed approach of evaluating poverty involves a differentiation of these levels contingent upon the distribution of income of the non-poor. This is in recognition with the fact that an assessment of the levels of poverty needs to be accompanied with the inherent potential for its alleviation within the said population itself. A simple measure known as the Poverty Burden, which is the ratio of poverty gap to the potentially available resources, is computed both for rural and urban areas of all the Indian states. The results reveal interesting pattern of response of PB to the levels of poverty informing that lower or higher levels of poverty are not necessarily accompanied with lower or higher levels of PB. An inter-state comparison situates Indian states across levels and burden of poverty differentiating them in terms of the potential for alleviation of poverty. Obviously, not all the states with high/low levels of poverty have similar burden of poverty. With regard to rural poverty, a large majority of the states represent varying poverty levels with lower burden of poverty excepting the well-known poor states like Madhya Pradesh, Bihar, Orissa and Chhatishgarh manifesting higher level as well as greater burden of poverty. The urban scene of poverty distributes the states more or less along the diagonal spectrum of levels and burden of poverty. This exercise offers two vital clues; one, there needs to be unequal poverty alleviation efforts despite its similar levels, and two, prospect of poverty decline equally depends on the polarization of non-poor and the poor around the poverty line.

## Appendix

<b>Table A: Headcount Ratio and Poverty Burden for India (2004-05)</b>				
State	Headcount Ratio (%)		Poverty Burden (%)	
	Rural	Urban	Rural	Urban
AndhraPradesh	32.3	23.4	17.0	5.9
ArunachalPradesh	33.6	23.5	12.9	8.1
Assam	36.4	21.8	29.9	5.1
Bihar	55.7	43.7	82.9	19.5
Chhatisgarh	55.1	28.4	49.9	7.0
Delhi	15.6	12.9	2.4	2.1
Goa	28.1	22.2	6.1	5.4
Gujarat	39.1	20.1	18.6	5.3
Haryana	24.8	22.4	5.5	5.2
HimachalPradesh	25.0	4.6	5.3	0.5
Jammu&Kashmir	14.1	10.4	3.8	2.3
Jharkhand	51.6	23.8	53.6	5.9
Karnataka	37.5	25.9	15.4	6.0
Kerala	20.2	18.4	4.1	2.7
MadhyaPradesh	53.6	35.1	44.8	10.9
Maharashtra	47.9	25.6	31.0	6.1
Manipur	39.3	34.5	41.3	16.4
Meghalaya	14.0	24.7	4.3	4.6
Mizoram	23.0	7.9	9.8	0.8
Nagaland	10.0	4.3	2.6	1.1
Orissa	60.8	37.6	88.7	13.7
Pondicherry	22.9	9.9	3.7	1.7
Punjab	22.1	18.7	5.8	3.1
Rajasthan	35.8	29.7	20.9	8.1
Sikkim	31.8	25.9	8.6	9.2
Tamilnadu	37.5	19.7	17.2	4.3
Tripura	44.5	22.5	43.8	5.6
UttarPradesh	42.7	34.1	25.7	9.6
Uttaranchal	35.1	26.2	14.9	6.7
WestBengal	38.2	24.4	20.0	5.1
<b>All India</b>	<b>41.8</b>	<b>25.7</b>	<b>23.0</b>	<b>6.0</b>

Source: Same as Table 1

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