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MULTIDIMENSIONAL POVERTY IN INDIA: AN INTER-STATE ANALYSIS

Economics

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ABSTRACT

It is very difficult to draw a distinct demarcation line between affluence and poverty vis-à-vis living conditions, lifestyle and living standard. In this context, the multidimensional concept of poverty recognizes that the poor experience several forms of deprivation –poor health, lack of education, inadequate living standard, lack of income, social exclusion, disempowerment, poor quality of work and lack of security from exploitation and violence. It has been established that the Multidimensional Poverty Index (MPI) has the capacity to offer precisely such information on deprivations people face. A work has been done on state wise HDI levels by taking in to account relevant parameters. The calculated MPI dimensions and indicators helped to construct a MPI. It was found that among poverty dimensions, standard of living and education dimensions are found to be the significant determinants of HD. At the same time the study indicates that the fruits of development have not been distributed equally among all the persons in the society as even the states with better HDI have not shown much advantage over the states with high poverty levels as indicated by their MPI. It underlines the need of expansion of economic activities and educational facilities along with their equitable distribution.

KEYWORDS

INTRODUCTION

For many economists poverty is lack of basic amenities. Questions like how to define and measure poverty have been raised by different scholars from different perspectives, leaving chances of improvement. The income or monetary approach to poverty measurement was pioneered by **Booth** and **Rowntree** in the late 19th and early 20th centuries. However, with the passage of time researchers began raising doubts about the adequacy of income or expenditure level as a measurement of poverty. This is due to the realization that poverty not only includes level of income and expenditure but also refers to social, cultural, and political aspects of life.

Social scientists like **Anand** and **Sen** (1997), **Brandolini** and **Alessio** (1998), **Chakravarti** et. al. (1998), **Deutsch** and **Silber** (2008), **Duclos**, **Sahn** and **Younger** (2006), **Chakravarty** and **Ambrosio** (2006), **Kakwani** and **Silber** (2008), **Thorbecke** (2008), **Ravallio** (2011) and **Alkire** and **Foster** (2007, 2010,2011) have all sought to measure the poverty with a multidimensional approach, meaning there by that poverty is not only a quantitative term, it is also qualitative in its nature.

The fact is poverty is in fact, a relative concept. It is very difficult to draw a distinct demarcation line between affluence and poverty vis-à-vis living conditions, lifestyle and living standard. In this context, the multidimensional concept of poverty recognizes that the poor experience several forms of deprivation –poor health, lack of education, inadequate living standard, lack of income, social exclusion, disempowerment, poor quality of work and lack of security from exploitation and violence. It has been established that the Multidimensional Poverty Index (MPI) has the capacity to offer precisely such information on deprivations people face (**Alkire** and **Foster**, 2010).

RESEARCH ISSUE

The United Nations Development Programme (UNDP) developed Human Poverty Index (HPI) and Multiple Poverty Index (MPI) to focus on three key dimensions of human development namely Health, Knowledge and Income. HPI computed at the national/sub national level, is said to capture poverty using the unit data at household level. Both measures used the dimensions of Health, Knowledge and Income. However, in the Indian context the multidimensionality should cover other than Health, Knowledge and Income such as employment, empowerment, environment and safety and security.

The estimation of multidimensional poverty carried out by the Ministry of Rural Development used the concept of multidimensional poverty (**Sundaram**, 2003). **Srinivasan** and **Mohanty** (2008) used a simple measure to estimate the deprivations by caste and religion in Indian states. **Malik** and **Mohanty** (2010) used field based data linked multidimensional poverty with child schooling. Afew studies have included subjective well-being such as fear to face hardship (**Calvo**, 2008) in defining multidimensional poverty. As both the HDI and MPI are used in isolation, that too at the macro level, it has been found imperative to make an analysis at the state level. State wise HDI levels are taken into account. A MPI has to beworked out by defining the relevant parameters so as to arrive at meaningful and logical conclusions.

OBJECTIVES

1. To analyse the differences in poverty levels across major Indian states.
2. To examine the inter-state variations in multiple dimensions of poverty and human development in the states of India by constructing a MPI.

Hypothesis

H_0: Human development and multi-dimensional poverty are independent of each other i.e. Human development is not correlated with any of the parameters of multi-dimensional poverty.

H_1: Human development and multi-dimensional poverty are negatively correlated i.e. low level of human development reflects high level of deprivation indicated by the multi-dimensional poverty parameters of health, education and standard of living.

DATAAND METHODOLOGY

Data from National Family Health Survey (NFHS-III), National Sample Survey (NSSO), SRS Bulletin, Economic Survey and Census data of GoI were taken. A Multi-dimensional Index provided by Oxford Poverty and Human Development Initiative(OPHI) was usedto know the various dimensions of poverty and inter-state variations,

Table 1 MPI Dimensions And Indicators

Dimension	Indicators	Related to	Relative Weight
Education	Year of schooling	MDG2	1/6
	Child School Attendance	MDG2	1/6
Health	Child Mortality	MDG4	1/6
	Nutrition	MDG1	1/6
Living standard	Electricity		1/18
	Improved Sanitation	MDG7	1/18
	Safe Drinking water	MDG7	1/18
	Flooring		1/18
	Cooking Fuel	MDG7	1/18
	Assets	MDG7	1/18

The MPI combines two sets of data to measure poverty (**Alkire** and

Santos, 2011). First one is the prevalence of poverty, or the proportion of people (within a given population) who experience multiple deprivations, also known as multidimensional head-count ratio (H):

$$H = q / n \text{ ---(1)}$$

here q is the number of people who are multi-dimensionally poor and n is the total population. The second component is the intensity of their deprivation - the average proportion of (weighted) deprivations they experience:

$$A = \sum_i^n C_i(k) \text{ ---(2)}$$

where $C_i(k)$ is the censored deprivation score of individual i and q is the number of people who are multi-dimensionally poor. The MPI is the product of both:

$$MPI = H \times A$$

The Multidimensional Poverty Index (MPI) has three dimensions mirroring the HDI - health, education and standard of living which are reflected in 10 indicators of multi-dimensional poverty and intensity of deprivations at the household level, each with equal weights within its dimension. It has been estimatedto reflect the deprivational perspective of development. Deprivation in health is captured essentially through the nutritional level and child mortality and deprivation in educational attainments is captured through years of schooling and children enrolled. Similarly, to capture a decent standard of living, six indicators namely cooking fuel, toilet facilities, water, electricity, floor and assets are considered - a household is multi-dimensionally poor if it is deprived in at least two ofsix indicators, depends on the weight of the specific indicator in the overall measure. In other words, a person is identified as poor if he or she has a deprivation scorehigher than or equal to 1/3 of the (weighted) considered indicators. Eightof the ten indicators are connected to the indicators of Millennium Development Goals (MDGs). A step-wise regression is used to develop the three models.

Human Development In India

As per the Human Development Index, 2010India has a HDI value of 0.504. Among the states of India, the highest HDI is recorded for Kerala (0.625) followed by Punjab (0.569) and the lowest for Orissa (0.442), preceded by Bihar (0.447) and Chhattisgarh (0.449). The overall HDI score across Indian states shows a variation of 0.183 ranging between 0.442 (Orissa) and 0.625 (Kerala). Among the three dimensions of HDI, education and health dimensions have shown a greater degree of variation than that of income dimension.

In terms of education dimension of HDI, 11 states have not been able to attain the all India score of 0.400and Kerala ranks first (0.534) and Rajasthan stands at the last (0.333) showing a variation of 0.201 points. Inter-state variation in health dimension of HDI is maximum i.e. 0.253 points, with Kerala (0.854) at the top and Madhya Pradesh and Chhattisgarh (0.601) in the last. Income dimension of HDI reveals that 9 out of the 18 major states have better income index than the nation as a whole (0.465). Kerala comes up with first rank (0.535) and Bihar (0.398) proceeded by Orissa (0.400) stood at the last. Inter-state variation in income index is observed to be minimum i.e. 0.137. The point to be noticed is that the position of India in health dimension of HDI is better than that of income and education dimensions.

Globally, India ranks 119 out of 169 countries with a global HDI value of 0.504 and falls in the category of countries with Medium HD. It falls short of the world average, which is 0.624 (UNDP, 2010). The Indian states fall either in the category of Medium HD or Low HD as per the HDR 2010 classification. Kerala, with a global HDI of 0.625, is in the 'Medium HD' category. Other major states in this group are Punjab, Himachal Pradesh, Haryana, Maharashtra, Tamil Nadu, Karnataka, Gujarat and West Bengal. Other nine states, namely Andhra Pradesh, Assam, Uttar Pradesh, Rajasthan, Jharkhand, Madhya Pradesh, Chhattisgarh, Bihar and Orissa fall in the 'Low HD' category.

Theoretically, Human development presupposes smaller proportion of the 'poors' thereby, the states with better HDI (categorised as Medium HD) should have lower percentage of people living below poverty line than the states with Low HD. Thus, human development needs to be analysed in terms of multidimensional poverty indicators. While the HDI measures the achievement in the average progress, the MPI measures deprivation in human development.

Table 2 MPI And Its Components – India And States

India/ States	Rank	MPI	Component of MPI	
			H	A
Kerala	1	0.065	0.159	0.409
Punjab	2	0.12	0.262	0.46
Himachal Pradesh	3	0.131	0.31	0.423
Tamil Nadu	4	0.141	0.324	0.436
Maharashtra	5	0.193	0.401	0.481
Haryana	6	0.199	0.416	0.479
Gujarat	7	0.205	0.415	0.492
Andhra Pradesh	8	0.211	0.447	0.471
Karnataka	9	0.223	0.461	0.483
Assam	10	0.303	0.576	0.525
West Bengal	11	0.317	0.583	0.543
Orissa	12	0.345	0.64	0.54
Rajasthan	13	0.351	0.642	0.547
Uttar Pradesh	14	0.386	0.699	0.552
Chhattisgarh	15	0.387	0.719	0.539
Madhya Pradesh	16	0.389	0.695	0.56
Jharkhand	17	0.463	0.77	0.602
Bihar	18	0.499	0.814	0.613
India		**0.296**	**0.554**	**0.535**

Table 3 MPI Dimensions & Indicators – India And States

India/ States	Education Dimension		Percentage Deprivation In Education	Health Dimension		Percentage Deprivation In Health	Standard Of Living Dimension						Percentage Deprivation In Standard Of Living
	Schooling	School Attendance		Mortality	Nutrition		Electricity	Sanitation	Drinking Water	Floor	Cooking Fuel	Assets	
Kerala	0.01	0.07	20.3	0.04	0.12	40.4	0.05	0.04	0.09	0.03	0.15	0.11	39.3
Punjab	0.08	0.13	30	0.09	0.17	36.1	0.02	0.2	0.01	0.16	0.23	0.11	33.9
Himachal Pradesh	0.04	0.07	13.6	0.09	0.25	43.3	0.01	0.28	0.08	0.15	0.19	0.2	43.1
Tamil Nadu	0.09	0.08	19.4	0.11	0.21	37.5	0.07	0.31	0.05	0.12	0.3	0.24	43.2
Maharashtra	0.08	0.15	20	0.14	0.3	37.8	0.13	0.36	0.08	0.27	0.34	0.28	42.2
Haryana	0.08	0.2	23.8	0.15	0.3	37.6	0.08	0.34	0.08	0.24	0.39	0.25	38.6
Gujarat	0.12	0.13	20.3	0.17	0.33	40.6	0.09	0.36	0.1	0.24	0.36	0.29	39.2
Andhra Pradesh	0.19	0.13	25.1	0.16	0.29	35	0.08	0.41	0.06	0.19	0.42	0.35	39.9
Karnataka	0.12	0.21	24.9	0.17	0.33	36.9	0.08	0.41	0.12	0.19	0.42	0.32	38.2
Assam	0.19	0.21	22	0.19	0.37	31	0.41	0.45	0.23	0.5	0.55	0.42	47
West Bengal	0.25	0.23	25.4	0.19	0.42	32	0.39	0.47	0.07	0.48	0.57	0.43	42.7
Orissa	0.23	0.19	20.3	0.24	0.45	33.3	0.43	0.62	0.2	0.51	0.63	0.39	46.4
Rajasthan	0.21	0.32	25	0.28	0.44	34.2	0.31	0.6	0.24	0.36	0.61	0.47	40.8

Uttar Pradesh	0.18	0.36	23.4	0.37	0.46	35.8	0.48	0.62	0.07	0.58	0.66	0.41	40.8
Chhattisgarh	0.21	0.29	21.6	0.31	0.52	35.8	0.24	0.69	0.22	0.64	0.7	0.48	42.5
Madhya Pradesh	0.22	0.32	22.9	0.31	0.5	34.7	0.25	0.65	0.31	0.57	0.67	0.52	42.4
Jharkhand	0.26	0.45	25.3	0.3	0.56	31	0.55	0.73	0.42	0.63	0.76	0.55	43.7
Bihar	0.35	0.52	29	0.35	0.61	32	0.65	0.74	0.04	0.7	0.79	0.57	39
India	**0.18**	**0.25**	**24.0**	**0.23**	**0.39**	**34.7**	**0.29**	**0.49**	**0.12**	**0.40**	**0.52**	**0.38**	**41.3**

Multidimensional Poverty Index And Human Development Index

The statistical relationship between HDI and MPI was found as negative. The results confirm a significant negative relationship between the two (–0.899) at 0.01 level. The values of t and F statistics also confirm the significance of MPI in explaining HDI. High poverty levels have resulted in low level of human development.

Table 5 HDI and MPI – Statistics

Model		Unstandardized Coefficients		Standardized Coefficients	t	R	R Square	F
		B	Std. Error	Beta				
1	(Constant)	.605	.014		44.689			
	MPI	-.371	.045	-.899	-8.210	.899	.808	67.407

Source: Obtained from Information provided in the table 3 using SPSS

Table 6 Model Summary

Model	R	R Square	Std. Error of the Estimate	Change Statistics		
				R Square Change	F Change	Sig. F Change
1	.424[a]	.180	.048358	.180	3.503	.080
2	.723[b]	.523	.038097	.343	10.780	.005
3	.755[c]	.569	.037459	.047	1.515	.239

a. Predictors: (Constant), StandardofLiving
b. Predictors: (Constant), StandardofLiving, Education
c. Predictors: (Constant), StandardofLiving, Education, Health
d. Dependent Variable: HDI

In order to understand the relative significance of various dimensions of poverty in determining human development, step-wise regression was used to develop three models. To estimate the effect of standard of living dimension of MPI model one was set, and then model-2 and model-3 addthe education and health dimensions of MPI respectively. The information on change in R square explains the effectiveness of the variables added in the subsequent models. Variable entered in model-1 i.e. standard of living dimension of MPI, predicts only 18 per cent of variations in HDI, whereas model-2 with added education dimension of MPI, predicts 52 per cent of variations. Variable added in model-2 has significantly changed the values of R square and F and is significant at 0.01 level. It underlines the fact that the standard of living and education dimensions of MPI are helpful in determining the value of HDI up to 52 per cent and not the health dimension of MPI added in Model-3, which is not found statistically significant.

The statistical significance of variables excluded from each variable, are taken in to account. Model-2 provides information on the excluded variable i.e. health dimension of MPI, whose t value 1.231 is not statistically significant at .05 level of significance and thereby does not meet the criteria for inclusion, so estimation stops at model-2 with two variables as predictors.

Table 4 HDI and Coefficients[a] Associated with the Dimensions of MPI

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.795	.156		5.094	.000
	StandardofLiving	-.007	.004	-.424	-1.872	.080
2	(Constant)	1.261	.188		6.716	.000
	StandardofLiving	-.013	.003	-.788	-3.750	.002
	Education	-.009	.003	-.689	-3.283	.005
a. Dependent Variable: HDI						

The value of coefficients shows the relative effectiveness of each dimension of MPI in determining HDI (Table 4). Standard of living dimension of MPI is negatively correlated with HDI. The value of t-statistics associated with this is not significant at 0.05 levels as it does not explain, as a single variable, the significant variation in HDI (model-1). The same variable when associated with education dimension of MPI explains its significant negative effect on HDI. Both dimensions included in model-2 i.e. standard of living and education dimensions of MPI explain the negative impact of poverty in determining the value of HDI.

CONCLUSION

In an attempt to find the role of poverty as a determinant of HD, regression analysis confirms the negative relationship between the two. Hence, the null hypothesis is rejected as the analysis brings out the fact that among poverty dimensions, standard of living and education dimensions are found to be the significant determinants of HD. At the same time the study indicates that the fruits of development have not been distributed equally among all the persons in the society as even the states with better HDI have not shown much advantage over the states with high poverty levels as indicated by their MPI. It underlines the need of expansion of economic activities and educational facilities along with their equitable distribution. Thus, it can be concluded that to raise the level of human development concrete efforts at grass root level, not only towards raising economic resources and developmental opportunities but also to ensure their equal distribution, should be made. Let there be a consensus on the viewpoints expressed by Amartya Sen in his interview (The Hindu, December 24, 2015) that"If we are spending of security, it has to be human security… human security depends on education, health care and a social safety net… the neglect of education, health care, and social safety net has been so foundational in India, so deeply rooted in the class structure of the society,… we involved the idea of justice in a number of cases. I think as human development grows as a discipline, justice will increasingly become a bigger component of it".

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