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Impact of Human Development on Poverty Reduction in India: A cross state Analysis

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Abstract: **In this paper an attempt has been made to analyze the impact of HDI (for the three time points 2000-05, 2007-10 and 2011-15), Income Index, Educational Achievement Index and Health Index (for the two time points 2000-05 and 2007-10) on Below Poverty Line population (BPL) for fifteen major states of India. Double log model with ordinary least square technique is used here. The results show that all the four factors - HDI, Income Index, Educational Achievement Index and Health Index are contributing significantly to decrease the below poverty line population over time. The HDI elasticity of BPL population is increasing between the time points 2000-05 and 2007-10. Similarly, the income elasticity, educational elasticity and health elasticity of BPL population are also significantly increasing between the time points 2000-05 and 2007-10.**

Keywords: **population, BPL population, Income Index, Educational Achievement Index, Health Index, Human Development, Poverty Reduction.**

1. INTRODUCTION

Millions in India exist in abject misery of utter poverty, and this ugly phenomenon does not seem to abate. Developing countries like India need to reduce poverty desperately to return to their strong growth path. Moreover, economic growth is not fundamentally about materialism. It is considered as a crucial means for expanding the substantive freedoms, strongly associated with improvements in general living standards (such as greater opportunities for people to become healthier, eat better and live longer),that people value.

Theoretically, poverty is expressed as *income poverty* or *human poverty* or *poverty with respect to human capabilities*. Income poverty is further explained as – Absolute poverty and Relative poverty. Absolute poverty refers to the set of resources a person must acquire in order to 'maintain a minimum standard of living'. The World Bank's absolute poverty line of $1/day (or consumption poverty across the world) has met with much controversy in recent years as regard the methodology utilized and the adequacy of the standard itself. Relative Poverty, on the other hand, tells how well off an individual is with respect to others in the same society and is relevant for ascertaining status of people with improvement in the overall standard of living. Further, people-centered indicators have been developed to measure the depth of deprivation across countries. Human Poverty Index (HPI), developed by the UNDP, is a composite index with three main dimensions: a short life, lack of basic education, and lack of access to public and private resources. The modern approach defines Poverty as 'deprivation in human capabilities'; and argues that 'inequality of incomes' can differ substantially from 'inequality in several other spaces' (that is, in terms of other relevant variables) such as well-being, freedom and different aspects of the quality of life including health and longevity (Sen 1999, p.93)." According to **Global Wealth Report 2016** compiled by Credit Suisse Research Institute, India is the second most unequal country in the world with the top one per cent of the population owning 58% of the total wealth.

The "relative deprivation in terms of incomes can yield absolute deprivation in terms of capabilities. Being relatively poor in a rich country can be a great capability handicap, even when one's absolute income is high in terms of world standards (Sen 1999, p.89)." He opines that such biases can more readily be checked using the capability approach (e.g. in terms of mortality, morbidity, undernourishment, medical neglect, illiteracy etc.) than by the household level income assessments that are currently used.

Though, **United Nation's Millennium Development Goals (MGD) Programme (2015)**, encouraged India for reducing its poverty by half, still 24.7% of its 1.2 billion people (2011) living below the poverty line or having income of less than $1.25 a day. Poverty emerges as a big hurdle for overall development. Today India is one of the fastest growing nations of the world but it is almost impossible to maintain its lead in the face of large section of population still below poverty line. China and some other Asian countries have excelled quite well and they have succeeded in lifting people out of poverty quite fast. They have also improved their performance in case of social parameters like- literacy, gross enrollment ratio, drop out rate, infant mortality rate, maternal mortality rate, life expectancy at birth etc. This study would attempt to find whether relationship of poverty reduction with augmenting HDI, educational achievements and health performance is significant or not across fifteen major states of India.

Objectives:

1. To asses the impact of human development on reduction of number of below poverty line population.
2. To analyze the impact of income index on reduction of number of below poverty line population.
3. To examine the effect of educational achievements on reduction of number of below poverty line population.
4. To analyze the role of health performance for reducing number of below poverty line population

2. DATA SOURCE AND METHODOLOGY

The present research work extensively depends on the secondary data collected from various official sources- Planning Commission, Government of India reports, India Human Development Report etc.

To measure the impact of human development index, income index, educational achievement index and health achievement index on reduction of number of below poverty line population across fifteen major Indian states, double log OLS Regression Model has been used by using SPSS software for three points of time (depending on the available data in the time periods 2000-05, 2007-10 and 2011-15).

(a) Impact of human development index on number of below poverty line population:

$\log BPL_t = \log c_1 + d_1 \log HDI_t + u_t$

Here, BPL_t = Number of Below Poverty Line Population, HDI_t = Human Development Index for the time points 2000-05, 2007-10 and 2011-2015 respectively.

(b) Impact of Income index on number of below poverty line population:

$\log BPL_t = \log c_2 + d_2 \log Income_t + u_t$

Here, BPL_t = Number of Below Poverty Line Population, $Income_t$ = Income Index for the time points 2000-05 and 200-10 respectively.

(c) Impact of Educational achievements on number of below poverty line population:

$\log BPL_t = \log c_3 + d_3 \log EDU_t + u_t$

Here, BPL_t = Number of Below Poverty Line Population in 2009-10, EDU_t = Educational Achievement Index for the time points 2000-05 and 2007-10 respectively.

(d) Impact of Health achievements on number of below poverty line population:

$\log BPL_t = \log c_4 + d_4 \log HEALTH_t + u_t$

Here, BPL_t = Number of Below Poverty Line Population in 2011-12, $HEALTH_t$ = Health Achievement Index for the time points 2000-05 and 2007-10 respectively

Impact of Human Development Index on Below Poverty Line Population across Fifteen Major States in India:

Poverty reduction is a buzzword for all the developing countries like India. In the modern digital world it is a distance dream to reduce poverty only by jobs creation because illiterate, unhealthy, insecure population is the major reason behind it. Overall human development should be the key weapon of poverty reduction. In the below table the data of below poverty line population and human development index for fifteen major states of India are given as per availability of data.

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Table 1: HDI and BPL Population of Major 15 States of India:-

Name of the States	BPL 2004-05	HDI 2000-01	BPL 2009-10	HDI 2007-08	BPL 2011-12	HDI 2014-15	Reduction in BPL population between 2004-05 and 2009-10	Increase in HDI between 2000-01 and 2007-08	Reduction in BPL population between 2009-10 and 2011-12	Increase in HDI between 2007-08 and 2014-15
Andhra Pradesh	29.9	0.368	21.1	0.473	9.2	0.6165	8.8	0.105	11.9	0.1435
Assam	34.4	0.336	37.9	0.444	32	0.598	-3.5	0.108	5.9	0.154
Bihar	54.4	0.292	53.5	0.367	33.7	0.536	0.9	0.075	19.8	0.169
Gujarat	31.6	0.466	23	0.527	16.6	0.6164	8.6	0.061	6.4	0.0894
Haryana	24.1	0.501	20.1	0.552	11.2	0.6613	4	0.051	8.9	0.1093
Karnataka	33.3	0.432	23.6	0.519	20.9	0.6176	9.7	0.087	2.7	0.0986
Kerala	19.6	0.677	12	0.79	7.1	0.798	7.6	0.113	4.9	0.008
Madhya Pradesh	48.6	0.285	36.7	0.375	31.6	0.557	11.9	0.09	5.1	0.182
Maharashtra	38.2	0.501	24.5	0.572	17.4	0.6659	13.7	0.071	7.1	0.0939
Orissa	57.2	0.275	37	0.362	32.6	0.557	20.2	0.087	4.4	0.195
Punjab	20.9	0.543	15.9	0.605	8.3	0.6614	5	0.062	7.6	0.0564
Rajasthan	34.4	0.387	24.8	0.434	14.7	0.577	9.6	0.047	10.1	0.143
Tamil Nadu	29.4	0.48	17.1	0.57	11.3	0.6663	12.3	0.09	5.8	0.0963
Uttar Pradesh	40.9	0.316	37.7	0.38	29.4	0.542	3.2	0.064	8.3	0.162
West Bengal	34.2	0.422	26.7	0.492	20	0.495	7.5	0.07	6.7	0.003

Source: Planning Commission, Government of India reports, India Human Development Report and Kundu, Tadit(17 december 2015)," Why Kerala is like Maldives and UP, Pakistan." Live Mint.

From table1 it is found that between the time period 2000-01 to 2009-10 number of BPL population decrease with the increase in Human Development Index (except in the state Assam). Similar result has been found in the time period 2007-08 to 2014-15.

Table 2: Income Index, Educational Index and Health Index of Major 15 States of India:-

Name of the States	Income Index (2000-01)	Income Index (2007-08)	Educational Index (2000-01)	Educational Index (2007-08)	Health Index (2000-01)	Health Index (2007-08)
Andhra Pradesh	0.197	0.287	0.385	0.553	0.521	0.58
Assam	0.152	0.288	0.516	0.636	0.339	0.407
Bihar	0.1	0.127	0.271	0.409	0.506	0.563
Gujarat	0.323	0.371	0.512	0.577	0.562	0.633
Haryana	0.417	0.408	0.512	0.622	0.576	0.627
Karnataka	0.26	0.326	0.468	0.605	0.567	0.627
Kerala	0.458	0.629	0.789	0.924	0.782	0.817
Madhya Pradesh	0.127	0.173	0.365	0.522	0.363	0.43
Maharashtra	0.297	0.351	0.606	0.715	0.601	0.65
Orissa	0.076	0.139	0.372	0.499	0.376	0.45
Punjab	0.455	0.495	0.542	0.654	0.632	0.667
Rajasthan	0.293	0.253	0.348	0.462	0.52	0.587
Tamil Nadu	0.285	0.355	0.57	0.719	0.586	0.637
Uttar Pradesh	0.179	0.175	0.371	0.492	0.398	0.473
West Bengal	0.21	0.252	0.455	0.575	0.6	0.65

Source: India Human Development Report, 2011.

The income index, educational index and health index, which are the ingredients of HDI are given in table 2 for the time points 2000-01 and 2007-08. The state wise HDI of India in 2015 has been collected from the article "Why Kerala is like

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Maldives and UP, Pakistan" by Kundu, Tadit(17 december 2015). The detailed data of HDI ingredients in 2015 are not available there. So, the impact of income index, educational index and health index on BPL population are examined for the two time points 2000-01 and 2007-08.

3. EMPIRICAL ANALYSIS

In order to fine the impact of HDI on BPL population the ordinary linear regression model has been estimated, the results are given in table 3.

Table 3: Impact of log (HDI) on log (BPL) Population for three points of time 2000-05, 2007-10 and 2011-15 respectively:

Year	R square	F statistics	Log (Constant)	Coefficient of log(HDI)
2000-05	0.784	47.192 * (.000)	2.578* (t value=18.046) (.000)	-0.885* (t value=-6.87) (.000)
2007-2010	0.841	68.779* (.000)	2.049* (t value=13.698) (.000)	-0.917 (t-value=-8.293) (.000)
2011-15	0.741	15.849 (.002)	.867 (t-value=1.705) (.112)	-0.741 (t value=-3.981) (.002)

It is found from table 3 that, the impact of HDI on BPL population is negative (i.e. BPL population decreased with increase in HDI) and highly significant for all the three points of time- 2000-05, 2007-10 and 2011-15. The impact has significantly increased between the time periods 2000-05 (beta value 0.885) and 2007-10(beta value 0.917) i.e. the elasticity of HDI to decrease BPL population was 88.5% in 2000-05 and increased to 91.7% in the time period 2007-10. But the beta value has decreased to 0.741 in the time period 2011-15. Due to the limitations of availability of data, state wise BPL population data has been collected for the time points 2009-10 and 2011-12. So the percentage of decrease in BPL population between these two time points is negligible whereas the state-wise HDI data has been collected for the time points 2009-10 and 2014-15 i.e. the increments are significant. It may be the reason behind the decreased beta value in the time period 2011-15.

Table 4: Impact of log (Income index) on log (BPL) Population for 2000-05 and 2007-10 respectively:

Year	R square	F statistics	Log (Constant)	Coefficient of log(Income)
2000-05	0.822	60.038* (.000)	2.744* (t value=25.775) (.000)	-0.907* (t value=-7.748) (.000)
2007-2010	0.835	66.000* (.000)	2.234* (t value=17.049) (.000)	-0.914 (t-value=-8.124) (.000)

It is found from table 4 that there is highly significant negative effect of HDI's income index on BPL population. The income elasticity of BPL population was 90.7% in 2000-05 and increased to 91.4% in 2007-10.

Table 5: Impact of log (Educational index) on log (BPL) Population for 2000-05 and 2007-10 respectively:

Year	R square	F statistics	Log (Constant)	Coefficient of log(EDU)
2000-05	0.563	16.754 * (.001)	2.836* (t value=16.088) (.000)	-0.750* (t value=-4.093) (.001)
2007-2010	0.628	21.918* (.000)	2.410* (t value=12.775) (.000)	-0.792 (t-value=-4.682) (.000)

It is found from table 5 that the impact of education on BPL population is negative (i.e. as numbers of educated population increased the BPL population decreased) and significant. The education elasticity of BPL population has increased from .750 (2000-05) to .792 (2007-10).

Table 6: Impact of log (Health index) on log (BPL) Population for 2000-05 and 2007-10 respectively:

Year	R square	F statistics	Log (Constant)	Coefficient of log(Health)
2000-05	0.500	12.995 * (.003)	2.898* (t value=15.855) (.000)	-0.707* (t value=-3.605) (.003)
2007-2010	0.627	21.888* (.000)	2.338* (t value=11.503) (.000)	-0.792 (t-value=-4.682) (.000)

It is found from table 6 that the impact of health on BPL population is negative (i.e. as numbers of healthy population increased the BPL population decreased) and significant. The health elasticity of BPL population has increased from .707 (2000-05) to .792 (2007-10).

4. CONCLUSION

When poverty removal is an international agenda, a 'big push' effect is badly required to fulfill the dream. Though, job creation or employment generation is a very essential step to do so, yet it is not sufficient. The uneducated, unhealthy people of developing countries are the major reason behind all the problems. So, policy makers need to focus on human capital development rather than only income generation.

It is empirically proved in this paper that Human Development is the key factor for reducing the below poverty line population in India. The high and increasing impact of human development index on decreasing BPL population is already given in table 3. To understand the major factor of human development on reduction of BPL population the OLS regression analysis has been done with respect to income index, education index and health index respectively. It is found that the impact of all these three indices on BPL population is increasing significantly between the given time points. The income index elasticity of BPL population is comparatively high because increasing income decreases the poverty level directly. On the other hand the education elasticity and health elasticity of BPL population are comparatively low because poverty decreased by increasing educated and healthy population indirectly. An educated person's income becomes high. He is concerned about health and hygiene. So his out-of-pocket medical expenditure is also low. Consequently, he can rescue himself from poverty trap easily.

Though, this paper is based on official HDI data and its components, in practical life it is very wide and complex concept. So, with economic growth, literacy level and health, policy makers should also focus on population control, inequalities, gender gaps, women empowerment, political stability, unemployment etc. to rescue the nation from poverty trap.

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