

MULTIDIMENSIONAL POVERTY INDEX AND RECTIFYING DEPRIVATION

Ramsundar Bairagya

1. Introduction

The high growth of population is the main retarding factor for economic development in India. Poverty, in-equality, hunger, deprivation, mal-nutrition, unemployment, food scarcity etc. are the curse for the society today. Reduction of population growth is essential to improve the socio-economic condition of the people and to secure sustainable food security. India is basically a rural agricultural based developing country. Near about 68% of total population are engaged in agriculture. To create food-surplus, reduction of poverty, in-equality, improvement of health, sanitation, education, literacy, fair Public Distribution System (PDS), reduction of pollution, improvement of standard of life particularly in rural areas, higher growth of Gross Domestic Product (GDP) etc. are important objectives of planning in India.

Most of the scholars like Beaver (1966), Fitz Patrik (1974), Smith (1974) and Merwin (1974) tried to analyze corporate failure by some single variable, which is primarily known as *univariate analysis* of financial distress. Fitz (1974) examined the financial variables of companies that failed in 1920's and found that the best fitted financial variable for analyzing a corporate failure is Net profit- Net worth. Smith (1974) got with the opinion that the Working capital- Total assets are the best indicators of financial distress. Similarly Merwin (1974) also predicted that liquidity measurement indicator is the best indicator of financial distress. In all these researches financial distress is counted by a single variable. It was easy but not sufficient.

2. Capability Approach and its Functioning

The CA is mainly and primarily a framework of thought. It is a mode of thinking about some normative issues which can be used for a wide range of evaluative purposes. It focuses on the information that we need in order to make judgments about individual well-beings, social policies etc. and it consequently rejects the alternatives that are normatively inadequate. The CA also identifies social constraints that influence and restrict both well-being and evaluative exercises.

There is now an explosion of interest in the Capability Approach (CA) among the researchers and policy makers. The highly interdisciplinary nature of the CA has led to a literature that is the centre of all attraction. The CA is a broad normative framework for the assessment of individual well-being and social

arrangements, the design of policies and proposals about social change in society. It is used in several fields, mostly in development studies, welfare economics, social policy and political philosophy. It can be used for evaluating several aspects of people's well-being such as inequality, poverty and so on. It can also be used as an alternative tool for social cost-benefit analysis. Thus CA is not a theory that can only explain poverty, inequality or well-being, rather it provides a tool and a framework within which to conceptualize and estimate these phenomena.

The central characteristic of the CA is its focus on what people are effectively able to do and to be; on their capabilities. This is dissimilar to the philosophical approach that concentrates on people's happiness or desire fulfillment on income, expenditures or consumption. Sen (1979, 1980, 1984, 1985, 1987, 1990, 1992, 1993, and 1995) argues that our evaluation and policies should focus on what people are able to do and be, on the quality of their life, and on removing obstacles in their lives so that they have more freedom to live the kind of life that, upon reflection, they have reason to value.

In an important contribution, Sen (1976) viewed that the poverty measurement problem has two steps: (i) the identification of the poor and (ii) aggregation of the characteristics of the poor into an overall indicator. The first problem is mostly solved by the income (or consumption) method, which requires the specification of a subsistence income level, referred to as poverty line. That is a person is said to be poor if his/her income falls below the poverty line. On the aggregation issue Sen (1976) criticized two crude poverty measures the Head Count Ratio (proportion of person below the poverty line) and the Income Gap Ratio (the gap between the poverty line and average income of the poor, expressed as a proportion of the poverty line), as they are insensitive to the redistribution of income among the poor. The former also remain unaltered if the position of a poor worsens.

The well-being of a population or its poverty (which is insufficient well-being) depends both on monetary and non-monetary variables. Income as the sole indicator of well-being is inappropriate, as higher income or consumption cannot always improve the position of person's monetary or non-monetary attributes and markets for some non-monetary attributes do not exist. So income should be supplemented by other attributes like education, life expectancy, housing etc. The need for such a multidimensional approach to the measurement of inequality in well-being was already emphasized by Kolm (1977), Atkinson and Bourguignon (1982), Maasoumi (1986) and Tsui (1995).

The basic need approach advocated by development economists regard development as an important in an array of human needs and not just as growth of income (Streeten, 1981). Well-being is intrinsically multidimensional from the point of view of capabilities and functionings, where functionings deal with what a person can ultimately do and capabilities indicate the freedom that a person enjoys in term of functioning (Sen, 1985, 1992). In the CA functionings re closely approximated by attributes like literacy, life expectancy etc. and not by mere income. An example of multidimensional measure of well-being in terms of functioning achievements is the Human Development Index (HDI) suggested by UNDP. It aggregates at the country level functioning achievements in terms of the attributes- life expectancy, per-capita real GDP and educational attainment rate.

It can be observed that CA provides a foundation or base for multidimensional poverty analysis. The capabilities are the freedom that a person enjoys in terms of functioning. And functioning's are close approximation of functioning's (i.e. life expectancy, education, health etc.) means are the goods and services and ends are of intrinsic importance. As functioning are being and doing, the achieved functioning realized functioning not the potential. A person is multidimensional poor if he/she has failed to attain the threshold limit of functioning. Thus CA gives a philosophical and theoretical platform for measuring poverty or deprivation (in- sufficient well-being) in multidimensional space.

3. Global Scenario

The official global poverty statistics, based on World Bank figures, the number of people living below the international poverty line of 1.25 US dollar per day fell from 1.82 billion to 1.37 billion between 1992 and 2005 (Global Poverty Guide 2011). China accounted for 475 million of the reduction, implying poverty has increased elsewhere over this period. In India and sub-Saharan Africa, the increase was 21 million and 91 million respectively. One third of global poverty is located in India and just over a quarter in sub-Saharan Africa. The main cause is not only the rising population but also the wealth of our new millennium has tended to increase in in-equality rather than to reduce poverty. UNDP has reported that in 2005 the richest 500 people in the world earned more than 416 million. The World Bank's Global Economic Prospects 2010 estimated that 64 million people are on the verge of extreme poverty. The measurement of poverty is not flawless and is subject to some criticism. The developed countries indexes are quite different to developing countries for the inclusion of commodity baskets to calculate the poverty. The World Bank

follows the international poverty line. Based on India's poverty line national poverty rate is only 28% while it is 42% on the international basis. The prices of food particles are increasing not only in India but also in developed countries like U.S.A. and the U.K. Prices of essential food grains like rice, wheat and corn have been raising globally. According to FAO data food price index increased from 121 in 2006 to 274 in 2008. The major factor behind this rise in food grains is historic decline in the production of food grains all over the globe and finally increasing poverty.

4. Indian Scenario

According to 2011 Census, India's population increases 181 million people from 1.03 billion in 2001 to 1.21 billion in 2011 (Visaria L. 2011). The decadal growth rate of population is 17.6% compared to 21.2% during 1991-2001 suggesting a slowdown of growth. It is expected that India will become the most populous country in the world by 2030 overtaking China. India's population size is expected to stabilize at 1.8 billion at 2041. The state Uttar Pradesh is the most populous country in India with 199.6 million people covering 16.5% of country's population. The sex ratio of population has began to improve from 927 in 1991 to 933 in 2001 to 940 in 2011. The overall literacy rate in 2001 is 745 with 82.1% male and 65.55 female literacy rate. The child sex ratio has fallen from 945 in 2001 to 927 in 2001 to 914 in 2011. Though India possesses only 2.4% of world geographical area it covers 18% of total world population. This high growth of population is main retarding factor of economic development. Poverty, in-equality, hunger, mal-nutrition, unemployment, food scarcity etc. are the curse for the society today. Reduction of population growth is essential to improve the socio-economic condition of the people and to secure sustainable food security.

Creating food-surplus is an important objective of planning. India realized that food-surplus country dictated the food-deficit countries. India suffered very severe droughts during 1965 and 1966 and at the same time the American President restricted food aid to monthly basis under P.L.480 programme. Later the Prime Minister Indira Gandhi went in for seed-water-fertilizer policy popularly known as "Green Revolution". After the introduction of this policy India achieved self-sufficiency in food grains by the year 1976 and onwards (except in 2006-2007). The per capita availability of food grains increased from 395 grams to 445 grams per day during the period 1951 to 2007 (Datt R. and Sundharam K.P.M. 2010).

In spite of that, according to National Family Health Survey (NFHS) in 2006, 46% of children below 3 years are underweight, 33% women and 28% men

have a Body Mass Index (BMI) below the normal, 79% of children aged 6-35 months have anemia, as do 56% of married women aged 15-49 years and 24% of similar men, and 58% of pregnant women (Ghosh J. 2010). During the period 2003 to 2008 India's population increased by 8% while food grains increased by 5% only. All these indicators show the food scarcity in India and even in rural India the situation is worse.

5. Multidimensional Poverty Index (MPI)

The MPI capture the direct failures in functionings that A K Sen argues should form the focal space for describing and reducing the poverty. It constitutes a tool with an extraordinary potential to target the poorest people and track with the Millennium Development Goals (MDGs). S Alkire and E Foster (2010) developed a mathematical formula for Multidimensional Poverty Index (MPI) and it is composed of 10 indicators and 3 dimensions of the Human Development Index (HDI): Education, Health and Standard of Living. Education covers having no household member who has completed five years of schooling and having at least one child (up to grade 8) who is not attending school. Health includes having at least one member who is mal-nourished and had one or more children die. Standard of living covers having no access of electricity, drinking water, dirty cooking fuel and having no car facility.

To measure the deprivation this commonly used and accepted of the Multidimensional Poverty Index (MPI) introduced by Human Development Report 2010. It comprises of three important factors health, education and living standard parameters. Environment plays an important role for attaining all these three. The poor people must have the facility of improved cooking fuel, drinking water, sanitation to enhance the capability of environmental deprivation. According to Human Development Index (HDI) 2011, *India ranked 134* out of 187 countries of the world (Norway ranked the first and Congo, Democratic Republic the last).

Sen's Poverty Index:

$$P = H[I + (1 - I)G]$$

Where G = the Gini coefficient of the income distribution of the poor, H = the headcount ratio is the proportion of the population that is classified as poor, I = Income gap ratio (the gap between the poverty line and average income of the poor, expressed as a proportion of the poverty line).

$$P_{Sen} = H.G_z + PG.(1 - G_z)$$

Thus P_{Sen} is the weighted average of H and PG.

According to G. Vecchi (2007) the main drawbacks of Sen's measure depends on the Gini coefficient, it shares its main inconvenience and thus the Sen Index

cannot be used to decompose poverty into contributions from different subgroups. H is useful, but should not be used exclusively.

In MPI, the standard of living covers cooking fuel, toilet, electricity, floor and assets. Education covers years of schooling, number of children enrolled and finally the health include child mortality and nutrition. The MPI may be calculated by using the formula:

$$MPI = H \cdot A, H = \frac{q}{n} \text{ and } A = \frac{\sum_1^q c}{q}$$

Where q = the number of people who are multidimensionally poor

N = the total population

H = the headcount ratio

A = the intensity of poverty

c = the deprivation score that the poor experience.

In this multidimensional framework instead of visualizing poverty or deprivation using income or consumption (as sole indicators of well-being), we go with the term functioning failure, which is shortfalls from the threshold levels of attributes themselves, and then comes to a Poverty Index by aggregating the achieved functioning.

In the year 2005 for India the MPI statistics were as follows:

MPI = 0.283, Headcount = 53.7%, Households = 612203, Intensity of deprivation = 52.7%, Population vulnerable to poverty = 16.4%, Population in severe poverty = 28.6%, Clean water = 11.9%, Improved sanitation = 48.2%, Modern fuels = 51.1% National poverty line = 27.5%. About 1700 million people in the world live in acute poverty (a figure that is between the dollar 1.25/day and dollar 2 per day poverty rates).

6. Concluding Remarks

Environmental degradation affects people's functioning of capabilities through the impacts of main dimensions of MPI i.e. Health, Education and Standard of living in many ways. According to World Health Organization (WHO) bad environment means the diseases burden arising both from indoor and outdoor air pollution, dirty water and sanitary condition, lack of modern cooking fuels, and rapid climate change (GHGs increase in atmosphere) spread of tropical diseases like malaria dengue etc. Women spend more time than men to fetch wood and water, girls often spend more time than boys. This gender inequality also raises the deprivation. A sustainable clean development mechanism can only raise the deprivation giving the rural poor the modern essential amenities of life.

Abbreviations Public Distribution System (PDS), Gross Domestic Product (GDP), Capability Approach (CA), Human Development Index (HDI), Multidimensional Poverty Index (MPI), Millennium Development Goals (MDGs), World Health Organization (WHO), Green House Gasses (GHGs), National Family Health Survey (NFHS), Body Mass Index (BMI).

Acknowledgement In preparation of this paper I deeply acknowledge Prof. Jaydeb Sarkhel, Department of Commerce, Burdwan University, West Bengal, India, e-mail: jaydebsarkhel@gmail.com

References

1. Alkire S. (2002): "Valuing Freedom, Sen's Capability Approach and Poverty Reduction", *Oxford University Press*, New York.
2. Alkire S. and Santos E. (2010), "Acute Multidimensional Poverty: A New Index for Developing Countries", Human Development Research Paper, UNDP, July 2010.
3. Atkinson A. and Bourguignon F. (1982): "The Comparison of Multidimensional Distributions of Economic Status", *Rev. Economic Stud.* 49, pp. 183-201.
4. Bourguignon F. and Chakravarty S. (2003): "The Measurement of Multidimensional poverty", *Journal of economic Inequality*, 1, pp. 25-49, Netherlands.
5. Bourguignon F. and Chakravarty S. R. (2003): "The Measurement of multidimensional Poverty", *Journal of Economic Inequality* 1, pp. 25-49, Netherlands.
6. Datt R. and Sundharam K.P.M. (2010), *Indian Economy*, S. Chand and Co. New-Delhi, 66-79
7. Dre`ze J. and Sen A. K. (2002): "Development and Participation", *Oxford University Press*, Oxford.
8. Foster J.E., Greer J. and Thorbecke E. (1984): "A Class of Decomposable Poverty Measures", *Econometrica*, 52, pp. 761-765.
9. Global Poverty Guide (2011), uk.oneworld.net, accessed in October 2011
10. Human Development Report (2011), "Sustainability and Equity: A Better Future for All", UNDP, New York, USA
11. Kolm S.C. (1977): "Multidimensional Egalitarianisms", *Quart. Journal of Economics*, 91, pp. 1-13.
12. Robeyns I. (2003): "Sen's Capability Approach and Gender Inequality: Selecting Relevant Capabilities", *Feminist Economics*, 9(2/3), pp. 61-92.
13. Robeyns I. (2005): "The Capability Approach: A Theoretical Survey", *Journal of Human Development*, 6 (1), pp. 93-114.
14. Saith R. (2001): "Capabilities: The Concept and its Operationalization", *Queen Elizabeth House Working Paper 66*, Oxford University, Oxford.
15. Sen A. K. (1987): "The Standard of Living", in G. Hawthorn (Eds.), *Cambridge University Press*, Cambridge.
16. Sen A. K. (1990): "Justice: Means versus Freedoms", *Philosophy and Public Affairs*, 19, pp. 111-121.
17. Sen A. K. (1992): "Inequality Re-examined", *Clarendon Press*, Oxford.
18. Sen A. K. (1993): "Capability and Well-being", in M. Nassbaum and A.K. Sen (Eds.), *the Quality of Life*, Clarendon Press, Oxford.
19. Sen A. K. (1995): "Gender Inequality and Theories of Justice", in M. Nassbaum and J. Glover (Eds.), *Women, Culture and Development: A study of Human Capabilities*, Clarendon Press, Oxford.
20. Sen A. K. (2002a): "Rationality and Freedom", *Harvard University Press*, Cambridge.
21. Sen A. K. (2004a): "Element of A Theory of Human Rights", *Philosophy and Public Affairs*, 32(4), pp. 315-356.
22. Sen A. K. (2004b): "Capabilities, Lists and Public Reasons: Continuing the Conversation", *Feminist Economics*, 10(3), pp. 77-80.
23. Sen A.K. (1981), "Poverty and Famines: An Essay on Entitlement and Deprivation", Oxford University Press, U.S.A.
24. Tsui K.Y. (1995): "Multidimensional Generalizations of the Relative and Absolute Indices: The Atkinson-Kolm-Sen Approach", *Journal of Economic Theory*, 67, pp. 251-265.
25. Vecchi G. (2007), "Measurement of Poverty", Bosnia and Herzegovina Poverty Analysis Workshop. September 17-21
26. Visarai L. (2011), "India's 15th population Census: Some Key Statistics", *Yojana: a Development Monthly*, Yojana Bhavana, Samsad Marg, New Delhi, India.