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MEASUREMENTS OF INEQUALITY IN SOCIETY

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ABSTRACT

The underlying idea behind the construction of indices of economic inequality is based on measuring deviations of various portions of low incomes from certain references or benchmarks, that could be point measures like population mean or median, or curves like the hypotenuse of the right triangle where every Lorenz curve falls into. In this paper, it has been argued that by appropriately choosing population-based references, called societal references, and distributions of personal positions, called gambles, which are random, meaningful and contemporary indices of economic inequality, as well as various measures of risk can be achieved. To illustrate this and to explore a risk measure that takes into account the relativity of large risks with respect to small ones has been presented.

KEYWORDS

Inequality, consumption expenditures, consumption distribution, Global income inequality.

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INTRODUCTION

In order to measure inequality, one needs to determine the meaning of the degree of being unequal. Inequality measure can be estimated for any distribution—not only for income, expenditure or other monetary variables but it can be calculated for land and other continuous variables. In the absence of systematic data on the distribution of income in India, it is the data on the distribution of consumption expenditure that one turns in order to assess trends in growth and inequality for a money-metric welfare indicator.

In the common perception, India's impressive record of per capita income growth in the last three decades or so has also been accompanied by a widening of inequality, and it appears to be reasonable to expect that a similar trend must hold true for the growth in, and distribution of, consumption expenditure. The National Sample Survey Office's data on consumption expenditure, available in its quintiles 'thick' samples over the thirty-year period from 1983 to 2009-10, display—especially in the rural areas—not much in the way of growth; and commentators such as Ahluwalia (2011) and Bhalla (2011) see little evidence of a secular rise in inequality.

A similar structure would not hold if the objective is to capture elements of growth in per capita consumption expenditure or of the evolution of mean-dependent measures of inequality. A data problem which is of salience in an assessment of the evolution of consumption expenditure inequality is the quality of the NSSO's 55th Round consumption expenditure survey.

It is pertinent to note that the Ahluwalia (2011) and Bhalla (2011) diagnosis of roughly unchanging over-time inequality is largely a function of the sort of inequality measure employed: the standard Gini coefficient is a wholly relative measure of inequality, and a more plural approach to inequality assessment is advocated, one which finds space for both absolute and intermediate measures of inequality.

Research on inequality and on the impact of changes in income distribution on economic processes and social conditions has a long history in economics and was prominent in the works of Smith, Ricardo, Mill and Marx. For certain types of problems, changes in absolute inequality may be more important than changes in relative inequality. With regard to economic stability, it has been shown that absolute inequality can affect the demand for assets and thus lead to unsustainable asset price booms, while relative inequality partly explains why poor and middle-income US households became over indebted in the run-up to the subprime crisis of 2007.

LITERATURE REVIEW

The persistence of inequalities has always drawn the attention of scholars, activists and policy makers. In the literature, the persistence of underdevelopment in large pockets has been explained by traditional theories such as the 'vicious cycle' (Nurkse, 1953), 'cumulative causation' (Myrdal, 1957) or perhaps by an 'urban bias' in the development process (Lipton, 1977). Although the traditional and modern theories do predict convergence of unequal regions and groups (Lewis, 1954, Kuznets; 1955, Sala-i-Martin-2002) and spatial diffusion of commercial success (Elizondo and Krugman, 1996), there are numerous empirical examples to the contrary. India's post-reform experience has also failed to indicate spatial convergence in any perceptible degree (Vakulabharanam, 2005; Bhattacharya and Saktivel 2003; Kar and Sakthivel 2003; Marjit and Mitra 1996).

Lately there has emerged a substantial empirical literature about global inequality (e.g., Milano-vic, 2005; 2012, 2013; Sala-i-Martin, 2006; Piketty, 2014; van Zanden et al., 2014), but this literature has a limitation in that it is focused on the Gini and Theil Indices, which both measure relative differences between incomes (i.e. ratios of incomes to the mean). Inequality also can be measured in absolute monetary terms, and absolute and relative inequality trends can be quite different. If, for example, the income of the whole population increases by the same percentage, the Gini and Theil coefficients remain constant, even though the absolute income gap increases. The most appropriate measures to estimate the absolute degree of inequality are the Absolute Gini Index and the variance (see Chakravarty, 2001).

Various surveys show that people refer to both absolute and relative income differences when they talk about inequality (Ballano and Ruiz-Castillo, 1993; Harrison and Seidel, 1994; Amiel and Cowell, 1999), which might explain the conflicting assessments about the distributional outcomes of globalization. Depending on whether people have a "relative" or "absolute" inequality view, they claim that globalization leads to rising or declining income inequality around the globe (Ravallion, 2004; Atkinson and Brandolini, 2010).

Butler and McDonald (1987) have proposed ways to compare relative inequality between population subgroups using inter distributional Lorenz curves. In more countries, there is a strong evidence of inequality in socio-economic status (Rootman, 1988). Drez and Sen (1995) have found the disparities in economic and social development amongst the Indian states. The degree of inequality in society is linked to the stage of social evolution. Inequalities exist in all societies, but some societies are more unequal than the others.

Noorbakhsh (2002) has also analysed regional disparities amongst major states in India. Recently, Srinivasan and Mohanty (2004) have estimated level of deprivation among different caste groups based on possession of some basic social and physical amenities of life at the household level.

As a result of both higher measurement error and of the variance of the transitory component, income inequality tends to be higher than inequality in consumption expenditures in a given distribution. In addition, and perhaps of greater practical importance, the questionnaires for income and consumption are quite different, and yield different types of measurement error Deaton (1997). Although over the long-run consumption should come quite close to permanent income (except for the limited number of lineages where bequests are important), there can be considerable deviations in the short run, as households either save. There tend to be more people not saving than saving at the bottom of the distribution, and more people saving than dissuading at the top. Consumption is thus generally considered a better measure of current welfare than income. Second, income is not the same thing as consumption. Only when consumption data are unavailable in the survey, income-based indicators are reported. It is sometimes claimed that this argument carries less weight in developed countries, but for a counter argument (Slesnick (1998).

A large number of studies have been done for measurements of inequality [Atkinson (1970), Sen (1973), Butler and McDonald (1986) etc. Deutsh and Silber (1999). They have tried to capture the contribution to population inequality by subgroups defined by gender or other characteristics. Cornia (2004) has shown inequality in land concentration.

Srinivasan and Mohanty (2004) have estimated level of deprivation among different caste groups based on possession of some basic social and physical amenities of life at the household level. The degree of inequality in society is linked to the stage of social evolution. Noorbakhsh (2002) has analysed regional disparities amongst major states in India to find out if they are on a convergence or further divergence course. In many countries, there is a strong evidence of disparities in socio-economic status (Rootman, 1988).

STATEMENT OF PROBLEM

In a developing economy like India, there is a wide inequality in the distribution of economic variables. Therefore, there is a strong need to measure these inequalities in the terms of income, expenditure, health, standard of living, education

OBJECTIVES

The objective of this paper is to discuss the different techniques for measurement of inequality in terms of variable like, income, expenditure, health, standard of living, education etc.

ANALYSIS AND FINDINGS

MEASUREMENTS OF INEQUALITY

The measurement of inequality is related to some mathematical concepts, including dispersion, skewness and variance. There are many ways to measure inequality. Here, we have taken some standard methods.

1. Range: Range is the simplest measure of dispersion. It is calculated by difference between the maximum and minimum observations of a particular variable.

Range = Maximum value – Minimum.

The smaller value shows the lower inequality and higher value indicate the more inequality.

But range uses only two values from the overall data set. It does not take into consistent observations of other important underlying characteristics.

2. Range Ratios: The range ratio is calculated by dividing a value at one predetermined percentile by the value at a lower predetermined percentile. Any two percentiles can be used for producing range ratios. Here, we have considered ratio of 90th and 10th percentiles.

Range Ratio = Value of range ratios lies between one and infinity. The smaller value shows the lower inequality and higher value reflect the more inequality.

3. McLoon Index: The McLoon Index is good inequality measure for comparing one part of distribution to another part. It takes a larger proportion of data into account.

The McLoon Index value can be calculated by divide the sum of all the observations at or below the median value of variable. The low value of McLoon Index shows the lower inequality and higher value of this Index indicates a more equitable distribution.

4. Coefficient of Variation: The coefficient of variation is estimated by using the standard deviation (SD) and mean of the variable.

Coefficient of variation = Standard deviation of variable/Mean of variable

Main drawback of this measure is that, theoretically, it can take any value between 0 and infinity, and there is no standard that defines a reasonable value of the measure for particular phenomena.

5. Gini Coefficient: The Gini coefficient is good and acceptable measures of the degree of inequality of distribution or gives some idea whether the inequality is large or small; it derives from the Lorenz curve. Lorenz curve is a graphical presentation of the cumulative distribution function of a probability distribution. The Gini coefficient is double the area between the equality diagonal and the Lorenz curve. In the graphical presentation of Lorenz curve, a diagonal line shows perfect equality and the greater deviation of the Lorenz curve from this line, the greater inequality. Gini coefficient lies between 0 to 1, where 0 shows to perfect equality (i.e everyone has same quantity) and 1 shows to perfect inequality (i.e one person has all the quantity).

The inequalities can be measured in terms of any variable with the help of Lorenz curve and Gini-coefficient.

Gini-Coefficient (G) = $\frac{\text{Area between Lorenz curve and diagonal}}{\text{Total area under diagonal}}$

Where,

G = Gini-coefficient

n = Number of households

(yi) = Proportion of cumulated upto ith unit

(xi) = Proportion of cumulated households upto ith unit

6. Theil's T Statistic

The inequality measures discussed above are each appropriate in certain circumstances. The rationale for preferring Theil's T statistic is not that there is some inherent flaw in the other measures, but that Theil's T has a more flexible structure that often makes it more appropriate. If a researcher always had access to complete, individual level data for the population of interest, then measures like the coefficient of variation or the Gini coefficient would usually be sufficient for describing inequality. However, in practice, individual data is rarely available, and researchers are asked to make due with aggregated data. Returning to the example problem illustrates the point. What if the Universal Widget salary schedule did not reflect the exact salary for each employee but the average salary over each job category? It would be possible to compute values for the coefficient of variation or the Gini coefficient under the assumption that each employee receives exactly the average salary, but the results would only give an upper or lower bound of each inequality measure, because variance within each job category will contribute to total inequality. For most practical data, data that has some degree of aggregation or an underlying hierarchy (e.g. cities within regions within nations), Theil's T statistic is often a more appropriate and theoretically sound tool.

The following formulae give the algebra behind Theil's T statistic. While these particular equations use income as the variable of interest, Theil's T can address any number of quantifiable phenomena. When household data is available, Theil's T statistic is:

Where n is the number of individuals in the population, y_p is the income of the person indexed by p, and μ is the population's average income. If every individual has exactly the same income, T will be zero; this represents perfect equality and is the minimum value of Theil's T. If one individual has all of the income, T will equal $\ln n$; this represents utmost inequality and is the maximum value of Theil's T statistic.

CONCLUSION

If a researcher always had access to complete, individual level data for the population of interest, then measures like the coefficient of variation or the Gini coefficient would usually be sufficient for describing inequality. In practice, individual data is rarely available, and researchers are asked to make due with aggregated data and in this condition Thiel statistics can be used to measure the inequality. It can be used to directly compare the inequality in a classroom to the inequality in a country. Gini Coefficient is probably the most well-known and broadly used measure of inequality used in economic literature. The different inequality measures discussed above are appropriate in certain circumstances.

LIMITATIONS

The major limitation of the manuscript is its theoretical nature. Further adding the empirical work will demonstrate a better picture.

SCOPE OF FURTHER RESEARCH

The data analysis will reveal a better picture of this inequality and a comparative study between different economies can give better understanding of the concerned study.

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