

An Alternative Social Welfare Function Based on Theil's Entropy Measure

Gurupada Chakravarty

Chakravarty (1982) derived a Social Welfare Function based on a set of axioms conforming to widely shared views on measurement of welfare. The Social Welfare Function turned out to be a decreasing function of normalised Theil's Entropy Measure and an increasing function of the mean income. Theil's measure T as such, has a number of desirable properties and conforms to the Principle of Population Replication. The normalised measure $(T/\log n)$, however, fails to do so. By altering one of the assumptions in his set up an alternative Social Welfare Function has been derived. This Social Welfare Function is a negative transformation of Theil's measure as such, not normalised, and has some interesting properties and interpretations different from those of Chakravarty (1982).

Welfare implications of Gini Coefficient have been extensively analysed by Newberry (1970), Sheshinsky (1972), Kats (1972), Dasgupta, Sen, and Starrett (1973), Rothschild and Stiglitz (1973), Sen (1973, 1974) and Kakwani (1980, 1981, 1985), among others, following its criticism by Atkinson (1970). The ingenious measure based on the concept of Entropy proposed by Theil (1967) is yet to receive similar scholarly attention. The measure has been regarded as arbitrary by Sen. "But the fact remains that it is an arbitrary formula, and the average of the logarithms of reciprocals of income shares weighted by income shares is not a measure that is exactly overflowing with intuitive sense". (Sen, 1973, pp.35-36).

After about a decade, Chakravarty (1982) derived a social welfare function that will rank all possible income profiles with the same number of earners and same mean income in the same way as the normalised Theil's Entropy Measure. This welfare function has been arrived at on the basis of a set of axioms similar to those of Sen (1974) and Kakwani (1980, 1981). His axiomatic set up is reproduced and commented upon in Section 3, preceded by a brief recapitulation of the Entropy Measure advanced by Theil (1967) in Section 2. The social welfare function, suggested by Chakravarty is an increasing function of mean income μ and a decreasing function of normalised Theil's measure $(T/\log n)$.