

A New Pro Transfer-Sensitive Measure of Economic Inequality under the Lorenz Curve Framework in Analogue to the Index of Refraction of Geometrical Optics

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Paper Abstract: Index of refraction is found to be a good measure of economic inequality within the Lorenz curve framework. It has origin in geometrical optics, where it measures bending of a ray of light passing from one homogeneous transparent medium into another. As light refracts according to characteristics of different media, so also Lorenz curve does according to concentration of wealth or income in different strata. With the sole objective of applying this analogy to the Lorenz curve framework, first, I compute refractive (inequality) index for each stratum in a distribution to study condition in each with respect to the ideal condition, and then simply add all and standardise to propose an overall measure for the whole framework. I utilise data on decile group shares of income or consumption for 149 countries from the UNU-WIDER World Income Inequality Database (WIID3.0b), September 2014. Results are lively and remarkable. While a refractive index value of less than 1.00, in case of light, refers an ‘anomalous refraction’, such a condition of economic inequality is found too common for many of us (50-80 %) in reality. In contrast to that, in most of the countries, the index value of the richest group lies in between the proximities of 2.00 and 5.00, where the same of 1.00 depicts an ideal condition that is enviable. The summative overall measure appears to be pro transfer-sensitive and equivalent to those based on the length of the Lorenz curve and consequently goes beyond the Gini coefficient, which is simply transfer-neutral.