

APPLICATION OF SNELL'S LAW IN THE MEASUREMENT OF ECONOMIC INEQUALITY

Amlan Majumder
Dinhata College, India

In this paper, I present a pair of new measures of economic inequality with the application of Snell's law. The idea originates when I envisage, with fantasy, that a society without economic inequality is nothing but a state or condition where light touches everyone without refraction. The egalitarian line of the Lorenz curve framework, for measuring economic inequality, represents such an ideal condition. In reality, however, it deviates or refracts from the ideal condition, as we live in a stratified society with varying living conditions. Refractive index 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. Thanks to this analogy, first, I compute refractive (inequality) index for each income group in a distribution to study inequality condition in each, and then simply add all and standardise to propose an overall measure for the whole framework. I utilise data on quintile group shares of income or consumption from the UNU-WIDER World Income Inequality Database - WIID 3.4, 2017 with 180 countries and 5604 cases. Results are noteworthy. 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 to be too common for many of us in reality. In contrast to that, in more than 31% of the cases, the index value of the richest group lies above 2.00, where the same of 1.00 depicts an ideal condition that is enviable. With many attractive properties, the summative overall measure appears to be pro transfer-sensitive and ornamental going far beyond the most popular Gini coefficient, which is simply transfer-neutral.

amlan@amlan.co.in