Energy Engel Coefficient: A New Indicator for Measuring Poverty

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Abstract:

Poverty measurement is essential in shaping our understanding of poverty alleviation efforts. However, traditional monetary-based indicators often fall short of capturing the full extent of poverty. To address this, we propose the Energy Engel Coefficient (EEC), an energy consumption-based indicator that measures the share of cooking energy in total household energy use. This novel indicator provides a more comprehensive perspective on poverty, particularly in developing countries. Using the Chinese Residential Energy Consumption Survey (CRECS) dataset, we calculate the EEC to be 0.418, which is a high proportion of energy devoted to cooking. We demonstrate its applicability in urban-rural comparisons. The EEC proves to be more consistent with Engel's Law, which holds that poorer households spend a greater proportion of their income on food. The EEC identifies 13.9% of households as poor, of which only 14.2% overlap with measures based on household consumption expenditure. Our analysis reveals that rural households with lower incomes and smaller sizes are at greater risk of being ignored by traditional indicators. The EEC suggests that poverty is more pervasive than previously understood, revealing hidden forms of deprivation and underscoring the need for more comprehensive approaches to poverty measurement.

Keywords: poverty, basic needs, energy, cooking, Energy Engel Coefficient (EEC)

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