Profitability per unit of risk / dispersion

Nicolás Varela, UC3M

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Abstract

A new measure of profitability per unit of risk or dispersion in a regional economic system is presented.

The profitability y (or utility) is derived after accounting for diminishing returns and the impact of market dispersion. Revenue x is adjusted relative to the average market conditions m (average revenue per region), with the deduction of fixed operational costs and taxes sa, and accounting for the effects of market dispersion r^2 (squared distance to the target market).

The indicator is thus constructed as

$$y = \frac{log_e(\frac{x}{m} - sa)}{r^2} \tag{1}$$

with unfactoring

$$yr^2 = log_e(\frac{x}{m} - sa) \tag{2}$$

and expanded functional dependencies

$$e^{yr^2} = \frac{x}{m} - sa \tag{3}$$

reverting factored expressions

$$me^{yr^2} = x - msa \tag{4}$$

and reordering

$$\boldsymbol{me^{rry} = x - mas} \tag{5}$$

QED