

Deficit of Resource, Tension of Need and Utility of Wealth

Topic: Modelling resource dependency

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Directly from input-output model tension of need or utility of wealth do not express, only deficit of resources: .

Tension of needs corresponds to other type of deficit (δ), which:

depends on input and output not only, but else on stock of resources: ;

is essentially temporal, as input and output corresponds through the time pass. January stock of seeds being not enough for May sowing campaign will enforce farmer to be of “care and resolution” already in January;

is essentially of probability, of chance.

δ appears at a moment t , if at the moment stock of a resource r_i has been consumed in total: $r_i(t)=0$.

Few measures of δ may be introduced.

(1) Chance of “ δ appears” at some moment enough remote in time.

(2) Chance of “ δ appears” through some period, long enough.

(3) Average waiting time of first moment appearing δ ;

(4) Probability of appearing δ through unlimited period of time, weighted with decreasing value, for instance e^{-t} .

These measures are coherent in sense by order. All the measures depends on I , O (production program), and R . Stock of resources decreases, chances (1) and (2) and probability (4) increase, time (3) shortens. Marginal impact every species of resource into δ differs. is to be treated as r_i 's “marginal utility” for decreasing deficit. So δ may be regarded as tension of needs. Every alteration of production program (by MRS) may be valued as “decreasing δ ,” (useful), harmful, or neutral.