THEORY OF VALUE IN NONLINEAR ENVIRONMENT

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Abstract in original language
Recent economics environment may have been bow to nonlinear economics dynamics. Mainstream economics flowing from Ricardo's approach to equilibrium reaching lose foundation. Entropy theory of value is an analytical theory based on fundamental physical laws. The entropy theory of value is the analytical formalization of Walras' vision of value as a function of scarcity.

Key words in original language
Value; Entropy; Scarcity; Substitutability; Physics Laws.

1. INTRODUCTION

Recent economics environment may have been bow to nonlinear economics dynamics. Mainstream economics flowing from Ricardo's approach to equilibrium reaching lose foundation. Neoclassicists look up to methodology of physics. Therefore, explore optimum, homeostatis with internal and external environment. Human being becomes aggregate unit. On the other hand, classical ecomists as from Smith come from methodological individualism. This is a part of Austria School of Economics nowadays. Methodology comes from biology and evolution. This is not static and nonlinear.

2. ENTROPY THEORY OF VALUE

Entropy theory of value is an analytical theory based on fundamental physical laws (Chen, 2002). Dynamics of external economics environment is anchored in laws of physics. We suppose paradigm of theirs relevance and invariance. On the contrary thoughts of various schools of economics agree with changes in external economics environment only for a short run. Current economic crisis is a proof of momentariness of economics models. In comparison to physical laws are these constant in a long run. One of the conceptions suitable for explanation of this approach in nonlinear environment is translation entropy to economics thought.

Fundamental terms for explanation are energy and entropy. Energy is the subject of the first law of thermodynamics. Entropy is the subject of the second law of thermodynamics.

Entropy theory of value contains one of the peculiar roles in economicus thoughts. It came to broader consciousness in 1940s. Progress of entropy theory of value relate to woks of Shannon and Wiener on information theory

(Shannon, 1949; Weaver, 1949). However, Shannon's definition of information is not identical with current conception.

2. ANALOGIES ECONOMICS AND PHYSICS

World around as we described via abduction. Whole variable are simplified to (X,Y,Z…). Today the real world of economics might not describe merely in terms of conventional economic variable (unemployment rate, GDP, aggregate demand, etc.) (Jaynes, 1991). Jayson points that macroeconomic system does not move in response to first movers from common theories. The direction of increasing entropy is similar to behavior of conservation laws of nature and government. Just as thermodynamics system makes its approach to equilibrium in the direction of increasing entropy as constrained by the conservation of mass, energy, etc. Thermodynamic entropy of macrostate is defined by specifying pressure, volume, energy, etc. The number of macrostates can be realized by the logarithm of the number of microstates (quantum states). Economic entropy S we refer is a function: S (X,Y,Z…) = log W (X,Y,Z…). Where W is multiplicity factor of the macroeconomic state (number of different microeconomic ways in which it can be realized) S is a state of macroeconomic factor exp(S).

Results of implication physical entropy to economic entropy suggest following. The system does not necessarily move to neighboring higher entropy available.

3. VALUE ORIGINS

The entropy theory of value is the analytical formalization of Walras' vision of value as a function of scarcity (Chen, 2002). Chen point economic value is reduction information of entropy. From entropy law, the most universal law of nature, the increase entropy of system is spontaneous. Thus, the reduction of entropy in system takes effort. Current value theory, based on neoclassical theory of marginal utility, does not enable to measure value empirically.

Debreu points changes from calculus to convexity and topological properties, a transformation which has resulted notable gains in the generality and in the simplicity of the theory. By contrast, the entropy theory of value is established on measurable mathematical function with clear physical meaning (Chen, 2002).

Following part expresses mathematically an entropy theory of value according Chen (Chen, 2002). Value is function of scarcity. The scarcity can be defined as probability measure is a certain probability space. Value of any product has to carry out two rudimental conditions. The value of two products should be higher than value of each of them. These two products are independent. These products are not substitutes of each other. The value of any product is in conformity with theory of effective capital market. Therefore the value of any product is non-negative. As we mentioned above,

the only mathematical function that satisfy all of the above conditions is V(P) = -logbP. The b is positive constant. Further, if the scarcity of service or product can be estimated by probability measure, the expected value of this product is the average value of each possibility. The base b can be understood as the number of producers.

Figure 1: Value and Scarcity
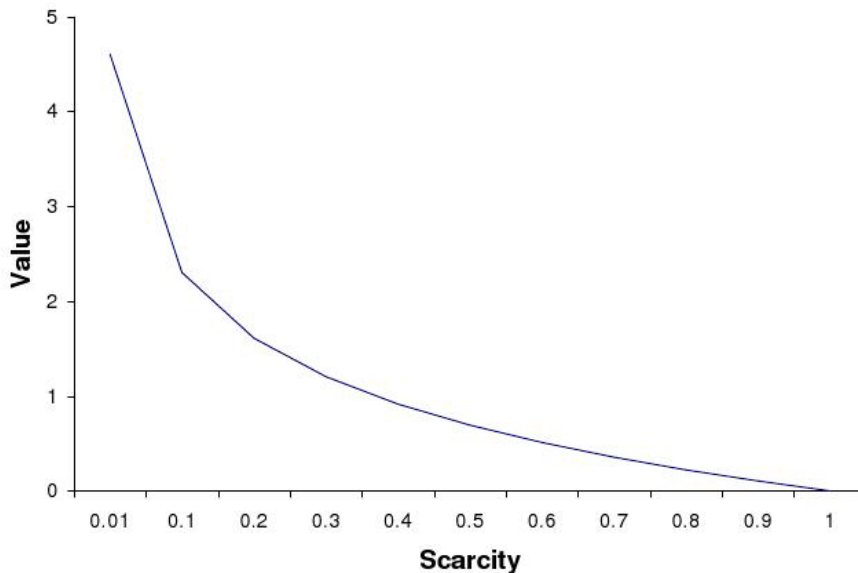
Source: Chen (2002)

Figure 1 is a graph, which shows that value is an increasing function of scarcity. Describes classical example why diamonds are worth more than water. In extreme abundance the value of a given commodity is equal to zero even if the commodity is very useful.

As Chen (2002) further pointed out, the social value can be divergent from economic value. F.i. most countries subsidize food production in various ways to guarantee the abundance of food, which causes its low economic value, see figure 2. Value is inversely related to the number of producers. When number of producers is small, the value of product is high. Concentration of branch is low (equals low entropy). These situations can reach monopolists and oligopolies.

Many product and services are not identical. The attribute which describe it is called substitutability. The value of single product X can be defined as its entropy. The total value of two products X and Y can be defined as their joint entropy. The equality holds only when both products are independent. Substitutability reduces the value of a product.

Figure 2: Value and Scarcity
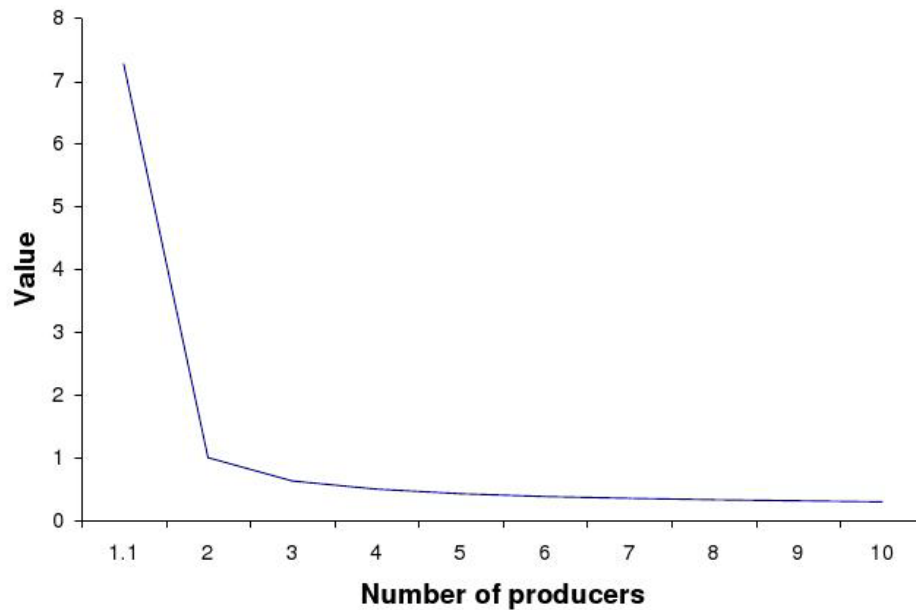
Source: Chen (2002)

4. DISCUSSION

Objectifised theory of value comes from entropy better from other explanation. The effort that has been made represents spontaneously increases in the entropy level. This approach is closest to an invariant measure of value of labor and other commodities. Theories built on physical foundation provide simple and intuitive results on practical problems. The entropy theory of value establishes an explicit link between economics value and physical entropy. Provides an analytical theory that is highly consistent with our intuitive understandings of economic value (Chen, 2002).

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