Economies as a self organized living system**

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Abstract

Open, dissipative and inanimate physical systems like oceans and atmosphere exhibit some dynamical emergent phenomena related to the set of patterns found in all complex systems. Ocean streams and periodic climate phenomenon, like "El Nino", would be examples of such patterns. Social structures and economies as a living complex systems present also a similar behavior leading to an assemblage of identities of large generality which reinforces the general systems theory point of view. However, unlike inanimate systems, all living systems, by definition, must have a mechanism connected with its adaptive properties which guarantee its existence.

This paper describes and models the structural changes of economies seen as a living system. It is based on the non linear "predator-prey" differential equations with variable coefficients, connecting the productive capital stock (K) and its resultant gross domestic product (GDP) or Y. Classical diminishing returns, as well as, productive increasing returns, multiequilibria points, multiperiodicity, irregularities in business cycles and the classical question "why people makes investments", can be understood within *this model approach. The early obsolescence of capital stock phenomenon emerges naturally from this approach as a need to economic growth in agreement with the Schumpeter's Creative-Destruction view. The model can be useful to analyze investment policies from an aggregated perspective. As example, a simple application of the method is presented for Brazilian economic serial data.*

Key words: Biomathematics; Self-organization; Non-linear equations; Economics

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