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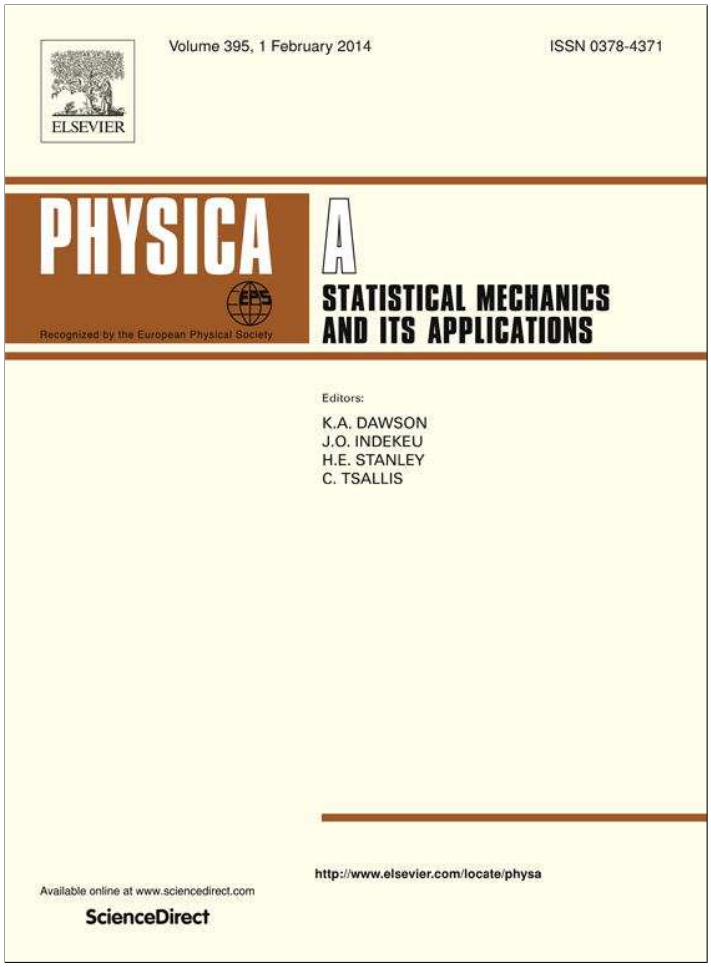

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A macro-physics model of depreciation rate in economic exchange

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ABSTRACT

This article aims at a new approach for a known fundamental result: barter or trade increases economic value. It successfully bridges the gap between the theory of value and the exchange process attached to the transition from endowments to the equilibrium in the core and contract curve. First, we summarise the theory of value; in Section 2, we present the Edgeworth (1881) box and an axiomatic approach and in Section 3, we apply our pure exchange model. Finally (in Section 4), using our open econo-physics pure barter (EPB) model, we derive an improvement in value, which means that pure barter leads to a decline in depreciation rate.

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1. Introduction

Economics is a field of knowledge dealing with 'wealth dynamics' (production, distribution and consumption) and certainly the most clearly value dependent among the social sciences. It attempts to determine what is valuable at a given time by studying the relative exchange values of goods and services. Its conceptions and models are based on value systems and views of human nature. In the economic models, the values can be quantified by being assigned monetary weightings. This emphasis on quantification gives economics the appearance of an exact natural science.

In its turn, physics is traditionally a science dealing with the quantification of the observable world, and thus is appropriate to develop a theoretical framework of economic dynamics based on suitable macro- and micro-models. The evolution of physics has been based on a progressive microscopic interpretation of reality from a previous well-established macro framework. In this work, the authors also want to depart from a macro-econo-physics perspective, trying to find a very simple model which is able to lead to a well-established economic result as an output.

This article contributes to the field of econo-physics, which has been steadily growing in the recent past, in particular by giving a new formal-physics approach to the theory of value, and thus obtain a well-known result in the economic domain. The authors introduce and discuss a model of depreciation rate within economic exchange.

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