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From Accounting to Firm Value

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Abstract

This research proposes a model to determine firm value and it argues that econophysics literature examine the robustness of the relation between accounting and physics. In this sense, the research shows the development of a theoretical model of the firm value that links the financial reporting, such as: operational, investment, financial, dividends, tax and market derived from corporate strategies adopted on the firm and it promotes new opportunities for empirical research.

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1. Introduction

This paper contributes to the econophysics literature by examining the robustness of the relation between accounting (valuation) and physics (thermal comfort). The laws of physics (i.e., the first and second law of thermodynamics) have important implications on thermal comfort and it also has in valuation of the firm. It is potentially significant that considering accounting through the lens of physics will enable research to make more complete and meaningful assessment of treat complex information systems such as accounting information systems and it could therefore leads to implement strategies and policies for the development of the firm (Matos, 2009).

This understanding of the economic world is supported on econophysics literature, such as: Mirowski, (1952); Mantegna e Stantley (2000); Voit (2003) and Defilla (2007). To Burda et al. (2014), this is an “approach to quantitative economy using ideas, models, conceptual and computational methods of statistical physics”. In this perspective, each research promotes, more and more, that nature began to be governed by physical laws and the

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researcher starts to wonder whether such laws are able to apply to Human or firms sphere was well. They began to think of a person made up society then maybe there was a physics of society (Ball & Ormerod, 2003).

One example is thermal comfort equation that provides an operational tool which measures personal parameters that enables one person to evaluate thermal comfort under specific conditions of the environment and accounts for the energy exchange between the human body and its environment. The equation is expanded by substituting each parameter with a mathematical function derivable from laws of physics. So, the objective of thermal comfort is provided information about the person and its environment. This framework starts knowing that the human body is assumed not to be in thermal balance. So, the heat balance equation can be determine in a continuous process made by iteration until obtain a satisfactory degree that it is classify as neutral. Also, it specifies a comfort condition that is the thermal neutrality, which means that a person must feel neither too warm neither too cold.

The question arises on the definition of comfort. To Fanger (1970) is “that condition of mind which expresses satisfaction with the thermal environment.” Parsons (2003) details “it is important to recognize that thermal sensation is how the person feels, not how the environment may be described.” So, comfort can be understood as a sensory experience or sense of well-being and a psychological experience that is related to how a person feels in relation to his environment. To evaluate the thermal comfort, Fanger (1970) was proposed one model. His research has so higher level of relevance that the International Organization for Standardization creates the ISO Standard 7730: 2005 (ISO, 2005). So, this research deals with complexity as a result of conjunction between the natural science and the social science and it applies this standard to firm value. The concept of measurement involves an approximation to the firm value through the investor’s behaviour.

Inevitably, the model incorporates this behaviour and six economic effects of the firm strategy for the measurement of the firm value. It explores a multidisciplinary context. The framework uses a thermal model interacting with value model. It is supported on accounting-oriented information conjoins with security prices. The model proposed in this research ensures that firm value is reasonable, consistent and reflects underlying market conditions. Also, there is some evidence to support that the diversity of information on valuation process was reduced. First, the standard is reliable and usable with sufficient scope for practical application, knowing that it is an analytical determination and the results allow to make interpretations. Second, the standard is precisely and unequivocally defined, because it relates with a mathematical model that has been empirical tested.

So, the model of this research is based in a theory that reliably predicts the results of experiments to which it is applicable and it is said to embody laws of physics. Others researchers have done the same in similar context (Georgescu-Roegen (1971); Cavagna et al. (1999); Ilinski (2001)). These results prove that firm value can be obtained through a thermal comfort model and it is validated by the experimental data.

Convergent to this line of research, Georgescu-Roegen (1971) argues that “our whole economic life feeds on low entropy”. Therefore, I consider that it instigates the discussion of interrelation between physics and accounting. Under these circumstances, several debates arise while accepting that a theory that explains all the phenomena does not exist. On the one hand, the theoretical framework of this paper is based on literature about accounting, in general, and auditing, in particular (Georgescu-Roegen, 1971). On the other hand, the empirical framework reflects the practices in this field of the disclosure of Annual Report of the firm (Olesen & Parsons, 2002).

The structure of the paper is organized as follows. Section 2 gives an overview from econophysics to the accounting context. Section 3 goes from accounting to firm value model. Finally, the section 4 presents the conclusion and developments for future research.

2. From econophysics to accounting context

Fanger’s model is an application of the firm value (de Dear & Brager (2002); Mattessich, (1995)). In other words, by testing the firm value with different variables, we can move towards understanding not only of the emergent behavioural rules for firms and investors, but also to learn from these rules. In this section, the aim is present the firm value model. From the accounting information system and the market information system, it was selected the “a” most relevant input variables from a set of “b” variables ($a \leq b$). All these variables were individual tested and each one it was justify the more relevant in terms of economic effect to a specific thermal comfort variable. The general debate of this research is centred on the emphasis in physics versus accounting and it is nonetheless important.

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