

# Financial Economics: Essays In Honor Of Paul Cootner

On the "usual" misunderstandings between econophysics and finance:  
Some clarifications on modelling approaches and efficient market hypothesis

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## Abstract

In line with the recent research and debates about econophysics and financial economics, this article discusses on usual misunderstandings between the two disciplines in terms of modelling and basic hypotheses. In the literature devoted to econophysics, the methodology used by financial economists is frequently considered as a top-down approach (starting from a priori "first principles") while econophysicists rather present themselves as scholars working with a (empirical data prone) bottom-up approach. Although this dualist perspective is very common in the econophysics literature, this paper claims that the distinction is very confusing and does not permit to reveal the essence of the differences between finance and econophysics. The distinction between these two fields is mainly investigated here through the lens of the Efficient Market Hypothesis in order to show that, in substance, econophysics and financial economics tend to have a similar approach implying that the misunderstanding between these two fields at the modelling level can therefore be overstepped.

JEL classification: G1, B4, B5

Keywords: Financial economics and econophysics; Statistical physics applied to finance; Efficient market hypothesis; Interdisciplinarity; Econophysics

## 1) Introduction

This article is a contribution in line with the recent research aiming to increase the dialogue between physicists (particularly econophysicists) and financial economists (Ausloos, 2001, 2013; Bouchaud, 2002; Bouchaud et al., 2002; Carbone et al., 2007; Chakrabarti & Chakraborti, 2010; Chen & Li, 2012; Durlauf, 2005, 2012; Farmer & Lux, 2008; Gabai, 2009; Jovanovic & Schinckus, 2015, 2016; Keen, 2003; Lux, 2009; McCauley, 2005, 2009; McCauley et al., 2007; Potters & Bouchaud, 2003; Sornette, 2014; Stanley & Plerou, 2001). Actually, a recent article by Sornette (2014) offers a titillating example of largely widespread confusions about the distinction between econophysics and financial economics. We claim here that the cross-fertilization between econophysics and financial economics requires an objective clarification of both approaches in order to open the door for an interdisciplinary and fruitful dialogue.

The misunderstanding evoked above seems to be rooted in the difference, pointed out by Sornette (2014), between the way of modelling in economics and how it is done in

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