

Econophysics and Financial Market Complexity

Rickles, Dean (2008) Econophysics and Financial Market Complexity.

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Abstract

In this chapter we consider economic systems, and in particular financial systems, from the perspective of the physics of complex systems (i.e. statistical physics, the theory of critical phenomena, and their cognates). This field of research is known as econophysics—alternative names are ‘ financial physics’ and ‘ statistical phynance.’ This title was coined in 1995 by Eugene Stanley, and since then its researchers have attempted to forge it as an independent and important field, one that stands in opposition to standard (‘ Neo-Classical’) economic theory. Econophysicists argue that the empirical data is best explained in terms flowing out of statistical physics, according to which the (stylized) facts of economics are best understood as emergent properties of a complex system. However, some economists argue that the methods used by econophysics are not sufficient to prove the existence of underlying complexity in economic systems. The complexity claim can nonetheless be defended as a good example of an inference to the best explanation rather than a definitive deduction.

Keywords: Econophysics, complexity, complexity systems, statistical physics, economics

[Specific Sciences: Probability/Statistics](#)

[General Issues: Models and Idealization](#)

Subjects:

[General Issues: Laws of Nature](#)

[Specific Sciences: Physics: Condensed Matter](#)

[Specific Sciences: Economics](#)

[Specific Sciences: Complex Systems](#)

ID Code: 3851

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Deposited On: 29 January 2008

Additional Information: To appear in J. Collier and C. Hooker (eds.), Handbook of the Philosophy of Science, Vol.10: Philosophy of Complex Systems. North Holland: Elsevier.