# Conceptual Difficulties with the Efficient Market Hypothesis: Towards a Naturalized Economics

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**Abstract.** The efficient market hypothesis—the thesis that it is impossible to gain a trading advantage in a free market—has been the centerpiece of much theorizing in economics the past three decades. Although the market model suggested by the thesis has certain commendable properties, such as simplicity, there have all along been worries about whether the assumptions underlying the hypothesis are workable. We argue here that those assumptions are not workable: there are conceptual difficulties with formulating the hypothesis, difficulties with the empirical support found for it, and further difficulties with the conception of cognitive agent it supposes any market player must be. Most fundamentally, in view of the lack of unanimity concerning proper statistical reasoning, not to mention the computational intractability of the leading techniques for statistical inference, we argue that the presumed computational equivalence of market agents is illusory and that their speed and effectiveness at incorporating information into market prices will be constrained at least by the speed and storage capacity of available computational devices.

**Keywords.** Efficient market hypothesis, naturalized economics, economic behavior, economic rationality, cognitive science, martingales, markets, random walk theory, stock analysis, computation theory.