Towards a new brain science: lessons from the economic colapse

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Abstract

Since the financial crash in 2008, economic science and the economic profession are under siege. Critics point fingers at ivory tower economists, devoted to the construction of unfalsifiable models based on unrealistic assumptions in purely theoretical basis. Economies are complex man-made systems where organisms and markets interact according to motivations and principles not entirely understood yet. Neo-classical economics is agnostic about the neural mechanisms that underlie the valuation of choices and decision making. The increasing dissatisfaction with the postulates of traditional economics i.e. perfectly rational agents, interacting through efficient markets in the search of equilibrium, has created new incentives for different approcahes in economics. Behavioral economics [2],[9] builds on cognitive and emotional models of agents, Neuroeconomics addresses the neurobiological basis of valuation of choices [8],[7] or Evolutionary economics [3], [5], [4],[1],[6] which strives for a new understanding of the economy as a complex evolutionary system, composed of agents that adapt to endogenous patterns out of equilibrium regions. The science of complexity may provide the platform to cross disciplinary boundaries in seemgly disparate fields such as brain science and economics. In this paper we take an integrative stance, fostering new insights into the economic character of neural activity. Key concepts in brain science like Hebbian learning and neural plasticity are revisited and elaborated, inside a new theoretical framework, that is sensitive to the new ideas that econophysics is proposing for financial markets. The objective here is to precisely delineate common topics in both neural and economic science, within a systemic outlook grounded in empirical basis that jolts the unification across the science of complex systems.

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