Introducing Chaos in Economic Gas-Like Models

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This paper considers ideal gas-like models of trading markets, where each agent is identified as a gas molecule that interacts with others trading in elastic or money-conservative collisions. Traditionally, these models introduce different rules of random selection and exchange between pair agents. Unlike these traditional models, this work introduces a chaotic procedure able of breaking the pairing symmetry of agents $(i; j)$, $(j; i)$. Its results show that, the asymptotic money distributions of a market under chaotic evolution can exhibit a transition from Gibbs to Pareto distributions, as the pairing symmetry is progressively broken.

Keywords: Complex Systems, Chaos, Econophysics, Gas-like Models, Money Dynamics, Chaotic Simulation.