

Evolutionary Finance: Survival and Extinction of Portfolio Rules

Igor Evstigneev
University of Manchester

Joint work with
Rabah Amir (CORE, Louvain-la-Neuve),
Thorsten Hens (University of Zurich), and
Klaus Schenk-Hoppé (University of Copenhagen).

The idea of this direction of work is to apply evolutionary dynamics (mutation and selection) to the analysis of the long-run performance of financial trading strategies. A stock market is understood as a heterogeneous population of frequently interacting investment strategies (portfolio rules) in competition for market capital. The aim of the work is to build a "Darwinian theory" of portfolio selection.

The paper reviews recent results pertaining to an equilibrium model of financial evolutionary dynamics based on the theory of random dynamical systems. The main focus is on the version of the model where investors adopt fixed-mix portfolio rules prescribing to invest their wealth in the assets according to constant, time-independent proportions. It is shown that, in this setting, the Kelly-Breiman strategy of "betting one's beliefs" is dominant: those traders who adopt it eventually gather total market wealth. Variants of this result dealing with more general, not necessarily fixed-mix, portfolio rules are discussed.