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Chapter 23 Heterogeneous Agent Models in Economics and Finance

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Abstract

This chapter surveys work on dynamic heterogeneous agent models (HAMs) in economics and finance. Emphasis is given to simple models that, at least to some extent, are tractable by analytic methods in combination with computational tools. Most of these models are behavioral models with boundedly rational agents using different heuristics or rule of thumb strategies that may not be perfect, but perform reasonably well. Typically these models are highly nonlinear, e.g. due to evolutionary switching between strategies, and exhibit a wide range of dynamical behavior ranging from a unique stable steady state to complex, chaotic dynamics. Aggregation of simple interactions at the micro level may generate sophisticated structure at the macro level. Simple HAMs can explain important observed stylized facts in financial time series, such as excess volatility, high trading volume, temporary bubbles and trend following, sudden crashes and mean reversion, clustered volatility and fat tails in the returns distribution.

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Keywords

interacting agents; behavioral economics; evolutionary finance; complex adaptive systems; nonlinear dynamics; numerical simulation

JEL classification

B4; C0; C6; D84; E3; G1; G12

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