

Abstract

Using the Heterogeneous Agent Model framework, we develop and incorporate an extension based on Prospect Theory into a popular agent-based asset pricing model. The extension covers the phenomenon of *loss aversion* manifested mainly in risk aversion and asymmetric treatment of gains and losses. Additionally, we explore a special case of the model's intrinsic dynamics termed Asynchronous Updating that affects agents' selection of trading strategies and mimics the *investor inertia* effect. Using Monte Carlo methods, we investigate behavior and statistical properties of the extended versions of the model and assess relevance of the extensions with respect to empirical data and stylized facts of financial time series. We find that the Prospect Theory extension is feasible, that it keeps the essential underlying mechanics of the model intact, and that it changes the model's dynamics considerably. Moreover, the extension shifts the model closer to the behavior of real-world stock markets. Contrarily, the Asynchronous Updating feature does not produce statistically different empirical distributions of most of the main variables. However, it dramatically increases chances of fundamentalists to survive in the market even when changes to more profitable strategies are increasingly facile.

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