





# Agent-Based Simulation in the Financial Management of Stock Portfolios

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## 1. Round 1

### 1.1. Reviewer 1

Reviewer:

The methodology section thoroughly outlines the simulation process but could benefit from additional details regarding the selection criteria for the 20 symbols. Clarifying why these particular symbols were chosen and their representativeness of the broader market could improve the transparency of the study.

The manuscript should aim to broaden its literature review to encompass a wider range of related works, including those discussing the limitations and challenges of agent-based models in financial market simulations. This would not only place the study in a broader context but also help in delineating its novel contribution more precisely.

The study's validation through expert opinions adds qualitative credence to the model. Introducing statistical measures for model accuracy and predictive validity, such as Root Mean Square Error (RMSE) against historical market performance, would strengthen the validation process.

The discussion section would benefit from a more detailed exploration of how the findings can be applied in practical stock portfolio management. Specifically, strategies for incorporating the study's insights into real-world investment decision-making processes would be valuable for both academics and practitioners.

Minor technical clarifications are needed throughout the text to improve readability and coherence. This includes clarifying acronyms upon first use and ensuring consistency in terminology. A thorough proofreading to correct typographical errors would also enhance the manuscript's quality.

Authors revised the manuscripts.

## 1.2. Reviewer 2

Reviewer:

The manuscript provides a detailed account of the agent-based simulation methodology. However, it would benefit from a clearer explanation of the agents' decision-making processes. Specifically, elucidating how agents' risk preferences (risk-averse, risk-taking, and normal) influence their trading decisions in the simulated environment could enhance readers' understanding.

While the manuscript references significant studies, it could further strengthen its literature review by including recent advancements in agent-based modeling within financial markets. This addition would contextualize the research within the current state of the field and highlight its contribution more effectively.

The validation of the agent-based model through expert consultation is commendable. However, incorporating a quantitative comparison between the model's predictions and actual market outcomes would provide a more robust validation. If feasible, a brief analysis comparing the simulated results with historical market data could significantly enhance the credibility of the findings.

The manuscript briefly mentions future research directions but lacks a detailed discussion on the limitations of the current study. Addressing potential limitations, such as the model's generalizability to markets outside Iran or to scenarios involving more complex financial instruments, would provide a more balanced view.

Including graphical representations of the simulation results, such as risk-return profiles of different agent types or time series plots showing the portfolio performance under various scenarios, could greatly aid in visualizing the outcomes. This would make the findings more accessible to readers not familiar with agent-based modeling.

Authors revised the manuscripts.

## 2. Revised

Editor's decision: Accepted.

Editor in Chief's decision: Accepted.