

## Artificial Intelligence Methods for Returns Expectations in Financial Markets

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**Abstract :** We introduce in this paper a new conceptual model representing the stock market dynamics. This model is essentially based on cognitive behavior of the intelligence investors. In order to validate our model, we build an artificial stock market simulation based on agent-oriented methodologies. The proposed simulator is composed of market supervisor agent essentially responsible for executing transactions via an order book and various kinds of investor agents depending to their profile. The purpose of this simulation is to understand the influence of psychological character of an investor and its neighborhood on its decision-making and their impact on the market in terms of price fluctuations. Therefore, the difficulty of the prediction is due to several features: the complexity, the non-linearity and the dynamism of the financial market system, as well as the investor psychology. The Artificial Neural Networks learning mechanism take on the role of traders, who from their futures return expectations and place orders based on their expectations. The results of intensive analysis indicate that the existence of agents having heterogeneous beliefs and preferences has provided a better understanding of price dynamics in the financial market.

**Keywords :** artificial intelligence methods, artificial stock market, behavioral modeling, multi-agent based simulation

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