

A Firm Agent Model based on Financial Statement Analysis

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Business scenario simulation is a crucial task for the decision-making of enterprise risk management, to cope with an uncertain business environment. A firm agent model, i.e. the game-theoretic stochastic agent [1, 2, 3], was developed by applying game theory to the stochastic agents described by the Langevin equations.

In this paper, economic network, which consist of an appliance manufacturer agent and parts manufacturer agents, is investigated. Interaction parameters between agents are estimated by financial statement analysis. The parts manufacturer agents behave in order to maximize own profit as Nash equilibrium, under given business scenarios of the appliance manufacturer agent using a financial statement and a decision tree. Business scenarios due to difference of firm size and cost structure will be discussed using Monte Carlo simulation.

[1] Y. Ikeda et al., Physica A 344 (2004) 87 – 94;

[2] Y. Ikeda et al., WEHIA04 2004;

[3] Y. Ikeda et al., The Nikkei Econophysics III 2004.