Intraday Trading Patterns in an Intelligent Autonomous Agent-Based Stock Market

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Abstract

Market Microstructure studies of intraday trading patterns have established that there is a regular pattern of high volumes near both the open and close of the trading day. O'Hara [1995] points out the many difficulties in specifying all the necessary elements of a strategic model for determining and attaining an equilibrium describing intraday patterns. We develop an autonomous agent-based market microstructure simulation with both informed agents and uninformed liquidity-motivated agents. Both types of agents can learn when to trade, but are zero-intelligence on all other behavior. We do not impose an equilibrium concept but instead look for emergent behavior. Our results demonstrate that trading patterns can arise in such a model as a result of interactions between informed and uninformed agents. Uninformed liquidity-motivated agents coordinate to avoid trading with informed agents and suffering adverse selection losses. The extent and pattern of coordination between uninformed agents depends on the learning specification, the percentage of informed agents and the degree of cooperation/competition among the informed agents.

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