Financial Market Simulators

Several researchers and financial experts try to understand the dynamics of financial markets and how traders behave within them. Two of the main aspects of these markets are price formation mechanisms and the reasoning behind trading actions taken by investors. There are analysts that look for patterns in price formation and summarise the factors that might influence it in order to discover if there is any level of prediction that can be associated with it. In the last decades there was a development of financial markets related to the agent-based approach. Researchers LeBaron and Levy proposed concepts such as agent-based simulation economics and micro-simulation. Agent-based models are a microscale model simulating the simultaneous operations and interactions of multiple agents in an attempt to re-create and predict the appearance of complex phenomena. For the purpose of our research several financial market simulators were taken into consideration with only two of them being considered for the experiment.

Financial Market Simulator - 2008-2012 Jean-Charles Bagneris

Strengths	**Weaknesses**
• Written in python • intended audience is financial markets researchers and experimenters • Agents, markets and the environment (the "world") are Python classes, derived from abstract ones provided with FMS • Very well documented	• Takes time to go through documentation • Agent classes proved to be difficult to understand and customise • Need to go through python exercises
Opportunities	**Threats**
• you may write your own agents, markets, engines and world classes • the resulting output (the transactions) is in comma separated values format	• Open Source – individuals can change code and therefore might introduce errors or bugs

JessX – 2008-2010

Strengths	**Weaknesses**
• Written in Java • intended audience is financial markets researchers and experimenters • JessX is available under GNU/GPL license for releases • inspired by the Euronext- NYSE microstructure (order-driven, continuous • contains tutorials	• Documentation seems to be missing some essential parts • Very difficult to customise agents on the platform
Opportunities	**Threats**
• different types of orders are allowed : Limit Orders, Best Limit Orders, Market Orders and Delete Orders • JessX includes analysis tools, such as graphs and tables	• Open Source – individuals can change code and therefore might introduce errors or bugs

As it was mentioned previously, other options were considered as well. For example AgEx, another financial market simulation tool, allows traders launched from distinct computers to act in the same market. However, this does not necessarily serve the purpose of stress testing the environment, but it could be useful to asses comparatively traders' performance against each other. A different financial market simulator was implemented by Alexander Federyakov. Although it is aimed at performing various experiments in order to observe market strategies and potential market collapses, the version was last updated in 2008 and at the moment does not provide enough documentation for the purpose of our research.