Marcus Luebke & Noah Anderson 238 Project Proposal

We want to simulate the economic behavior of a currency which is paid a priori in exchange for a certain type of work, and which is accepted at a discount for certain payments.

For example, Bob's business wants trees to be planted. Bob creates an external organization which automatically mints this currency for people in exchange for planting trees, which can then be exchanged on the market. To give the currency value and incentivize market activity (and thus tree planting), Bob will accept the currency at a discount for his business services. What discount should Bob put in place to incentivize the most tree-planting without bankrupting his business? The goal of this project is to answer this question by simulating the market and then adjusting the value of the discount. If successful, there are real organizations interested in the answer, as they are attempting to create such a currency.

There are clearly decision-making problems both in the simulation (which will be economic in nature) and in optimizing the discount. The harder problem here will be appropriately simulating the actors which compose the market, e.g. Bob's business, his customers, the tree-planters, and the speculators. There is uncertainty as to the behavior of agents (which affects whether or not buy/sell orders will complete) and their ability to make rational decisions. There are also environmental variables such as the effectiveness of certain tree-planting methods, general market risk and the exchange value of the currency over time. All of these factors compound into deeply uncertain behavior for the market, which Bob will need to consider as he chooses the discount. We should note that there is also uncertainty in how accurate our model is in describing how this would play out in the real world; however, addressing that is outside the scope of this project.