1067-91-1721 **Arjun Sanghvi*** (asanghvi@gmu.edu). *A Stability Study of Asset Price Equilibrium Models.* Preliminary report.

A previously developed heterogeneous agent model is used to simulate the price of a financial asset and successfully captures statistical properties standard to actual financial data. These stylized facts include: volatility clustering, fat tail distributions, and power law decay of price changes. Such properties are often absent from models that implement the neoclassical assumptions of Economics. These neoclassical equilibrium models are derived from geometric Brownian motion with drift:

$$y(t) = y_0 e^{(r-\frac{1}{2}\sigma^2)t+\sigma B_t}$$

The proposed model invokes price thresholds to simulate agent behavior over a long timescale. Agents often act, rationally or irrationally, based on the choices of others in the system - a characteristic called herding.

By introducing adjustable parameters to the Efficient Market Hypothesis (EMH) baseline model, we control and thereby determine the effect of such variables on the market dynamics. Using a bifurcation parameter we analyze the stability of the equilibrium model and find the point at which it becomes unstable. We find that for low levels of herding, the EMH becomes unstable; and as the level of herding is increased, the model achieves the most important stylized facts. (Received September 21, 2010)