1056-91-1129 **Yuanying Guan***, FSU Mathematics, 208 Love Building, 1017 Academic Way, Tallahassee, FL 32306. . Preliminary report.

Lucas pricing model has been a very popular model in macroeconomics during the past decade. However, it has certain unrealistic assumptions such as homogeneous agents assumption. In our research, we are trying to relax this assumption and incorporate learning schemes for agents to simulate pricing evolvement and agents' holdings change in the stock market. With heterogeneous agents and adaptive learning rules , we are able to set up dynamical systems for price change and share holding variation.

Some interesting numerical results show that, when agents have certain risk aversions, the pricing function of stock evolves in a chaotic way. Compared to a general convergent pricing kernel, this chaotic behavior could possibly give us more information about real market. Currently, we are looking for effective approaches to analyze behavior of pricing function in different cases, especially those chaotic cases. Nonlinear time series analysis has given us a general sense about structure of chaos. The topology structure of dynamics need to be explored and relevant market information would be explained.

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