

Referee report of the manuscript:

“Paradigm shift”

The manuscript proposes an interesting model to analyze agents' behavior in financial market. The model is simple since it is driven by few parameters. The main result shows the emergence of a cycle between two states: one with homogeneous beliefs and the other one with heterogeneous beliefs (or paradigms).

I want to rise just few minor comments:

- 1) In describing the iteration process, authors assert that if the propose order is r rank away from the closing price, agent changes her paradigm with a certain probability p_1 . Does the paradigm that gives the “wrong” prediction have the same probability to be selected in future periods?
- 2) This point is strictly related to the previous one. During the iteration, the new paradigm is “drawn uniformly over all remaining...”. Maybe it will be useful to consider a different distribution able to assign low probabilities to the paradigms that during different periods provided always wrong orders. An example of this mechanism can be found in Colasante et al. (2017).
- 3) In the analysis of results, authors prove that only the probability to receive good information influence the probability of entering in either the homogeneous or heterogeneous state. In my opinion, also the parameter p_2 plays an important role: you set the value for this parameter too low (0.05). By setting a higher value, for example 0.2, the probability of switching between the two states will be higher. Have you checked your results with different values?
- 4) In the Conclusion, it is not clear to me why you define the homogeneous state risky. Maybe this point could be better explained.
- 5) Frequently authors said that the model is robust to different values of the parameters. It will be better to provide some evidence for this like an appendix or some additional results in the manuscript.
- 6) I suggest to add in their references about experimental results in the conclusion also the paper of Anufriev et. al(2012) that focus on switch among different strategies.
- 7) I propose to change the notation in order to avoid confusion. For example, p_1^e has a similar format of the probability to change paradigm, maybe you could use different letter or just use roman numerals in the subscript. Moreover, instead of using p to indicate the probability to take part to the next auction you should use q .

References:

- Anufriev, M., & Hommes, C. (2012). Evolutionary selection of individual expectations and aggregate outcomes in asset pricing experiments. *American Economic Journal: Microeconomics*, 4(4), 35-64.
- Colasante, A., Alfarano, S, Camacho, E. and Gallegati, M (2017) “Long-run expectations in a Learning-to-Forecast-Experiment: a simulation approach” MPRA working paper 77618