

Reply to a Referee report, submission 2019-32 entitled “Overpricing persistence in experimental asset markets with intrinsic uncertainty”

Dear Referee,

Thank you for your useful feedback and comments. Below, we provide our response to your comments and we explain how we will implement the suggested changes in our revised manuscript. The original comment by the referee is provided in *blue italic*, while our replies are typed in black.

The paper proposes a new experimental design to study asset market bubbles. Students have to bet on which slide their professor is going to end the lecture. A number of securities that correspond to sets of three slides are then traded over one week. The security associated with the realized final slide pays off while the others do not.

This is a good summary of the experimental paradigm used in the paper.

Assessment

The experimental setup is original. Compared to standard experimental asset markets, its main strength is to add uncertainty about the payoffs and to add a field flavor. Unlike experiments that study uncertainty, however, participants could not even form beliefs about the probability of probabilities, which in my opinion is closer to real financial markets.

Thank you for this assessment. Indeed, bringing the experimental asset markets closer to reality was one of our goals in creating this new experimental setup.

Comments:

- *There is one more difference with standard lab experiments (SSW) that I think should be mentioned. Only the best performers in the experiment receive a payoff, which brings a tournament dimension to the experiment and may affect the results.*

This is a very good point. Relative compensation schemes are closer to the real-world situation at the work place than the non-relative compensation schemes (Powell & Shestakova, 2016; Buser & Dreber, 2014). Some SSW-like experiments also use tournament compensation schemes (see for example, Robin et al., 2012; James & Isaac, 2000; Cheung & Coleman, 2014). These experiments usually focus on the comparison of different compensation schemes on trading behavior and bubble formation. Previous literature (see Palan, 2013; Nuzzo & Morone, 2016, for a review) indicates that tournament compensation scheme increases risk-taking and inflates market bubbles. While investigating different compensation schemes was out of the scope of the current paper, we agree that it is necessary to note that implementing a different compensation scheme (i.e. a linear or quadratic scoring rule), instead of tournament, could impact the results. Therefore, in subsection “Discussion”, we will add the following text:

“It is important to note that the compensation scheme used in this experimental paradigm has a

tournament component, albeit a relatively weak one since a large fraction of the participants (the top 50%) receive a reward. Implementing such a step-wise compensation scheme was necessary when translating experimental currency into grades. In previous studies (i.e. Cheung & Coleman, 2014), tournaments have been shown to inflate market price bubbles. The small tournament component of our experiments could potentially impact trading behavior and bubble formation of the market and it could be considered as a limitation of this part of the design without impacting the main component of the new experimental paradigm. Different implementations of this experimental setup, such as laboratory versions of the experiment (i.e. in Andraszewicz, Wu & Sornette, under review), can easily remove the tournament component by reintroducing a monetary payment for instance. This should be tested further in future works.”

- *I would not state that the experiment is double-blind. The professor has an influence on which slide he ends the lecture. He could spend more or less time on slides towards the end of the lecture, possibly unconsciously. The fact that his beliefs do not predict the final slide is in my opinion not enough to conclude that the experiment is double blind. The professor could have done this on purpose in order to be able to advertise his experiment as double-blind.*

We understand the referee’s concern that the professor could influence the outcome of his lecture. We are completely sure that the professor did not consciously adapt his teaching style to the experiment. However, we cannot rule out the fact that some of the professor’s actions could happen unconsciously and unintentionally. Therefore, we replaced “double-blind” with “consciously double-blind” and we added a footnote explaining this term: “The professor did not have access to the market for the duration of the experiment and he would not consciously change his lecturing style as a result. However, it cannot be ruled out that the awareness of being in the experiment could result in the professor unconsciously adapting his behavior.”

- *The authors conduct follow-up experiment in which participants are additionally informed about the sum of all prices. Since this is important to assess the rationality of markets, I would like to see a discussion of how easy it was for participants in the main treatment to compute this sum.*

Thank you for this interesting comment. In the revised manuscript, we will add the following explanation answering the Referee’s comment:

“Computing the sum of prices at all times would be possible, but cumbersome given the large number of assets. On the other hand, one could roughly estimate the sum of prices when looking at several most expensive assets presented at the price bar chart available on the x-yotta platform. However, the main advantage of the treatment, in which we added the indices, was the fact that, in experiment 2, we clearly explained to all participants how these indices should be interpreted from the beginning. Therefore, by including the indices, we provide information about market rationality, available to all participants at all times.”

- *The fact that bubbles decrease from one week to the next is similar to standard asset market experiments, where bubbles also tend to disappear with experience. The authors may want to mention this similarity.*

Thank you, this is a very good comment. In the results and discussion of the revised manuscript, we will add a note that our finding mimics the effects found in other markets, using the SSW-design.