Classroom Experiments Module

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The Asset market bubble experiment

This online experiment is facilitated through http://econport.org. Econport is offered by the Experimental Economics Center at Andrew Young School of Policy Studies, Georgia State University. The asset market "bubble" experiment was first run by Smith, Suchanek, and Williams (1988)[1].

I ran this experiment in November 2006 for a two sections of BUS351 Financial markets, which in total had 25 students. We ran the experiment as joint experiments for both sections but not all students could attend at one time. We ran these experiments several times so that all students had a least one chance of participating and so that students understood how the experiment worked and its goals. The experiment was run in class twice 11/3/06 and 11/10/06 and during 3 lunch times and 2 evenings over November. The students had to trade at the scheduled experiment time, but they did not need to be in the same location to access the Econport server. All the day experiments were held in a computer lab.

While multiple experiments and output was created, all 25 students only analyzed the output from a single experiment run on 11/10/06 with 12 student participants. This run was chosen because it produced the asset bubble as predicted by Smith et al (1988). All market experiments and their results were available to students via Blackboard, and discussion between students took place on the discussion board (especially in the reformatting of the data into Excel which was a group project). While none of the other runs produced a bubble, all results were highly interesting for the goals of the experiment which were for students to understand three very difficult concepts in finance: rational expectations, efficiency, and liquidity.

Each student was required to submit a report worth 15% of their grade (Assignment 2 for the Fall 06 semester). This assignment had 9 short answer questions focused on the concepts or rational expectations and the no-trade model, smart versus uninformed traders, efficient markets, liquidity, risk aversion, zero-sum markets, the continuous double auction, and the limit-order book. Some background articles were provided to the students to help their answers. Students were asked as a group to reformat the data from the software output (in Figure 2) into a graph like that in Miller (2002:88)[2] with each price/bid/ask on the vertical axis and time on the horizontal axis (see Figure 1). A limitation of the software is that it does not produce data that is readily translated into such a graph and extra credit was given to those students who assisted in re-creating this graph for all students to use in their assignment.

This was a very ambitious and difficult assignment which we had to repeat several times in order for students to understand it. What made it successful was that it was fun and the repeated experiments were well supported by the students, even during lunch hour (so as not to take up additional class time). The students made use of the experiment in understanding 3 very important concepts repeated in class during the whole semester: rational expectations, efficiency, and liquidity. Somewhat surprisingly, it was the study of the limit order book (Figure 1) which was the most productive in helping students understand these concepts.

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[1] Smith, Vernon L., Gerry L. Suchanek, and Arlington W. Williams (1988). "Bubbles, Crashes, and Endogenous Expectations in Experimental Spot Asset Markets," *Econometrica*, 56:5, pp. 1119-1151.

[2] The graph from Ross Miller (2002) *Experimental Economics: How We Can Build Better Financial Markets*, replicates the one in Smith et al (1988), but with a more careful explanation in the preceding chapters. The reading of this text was a requirement for the course.

While students ended up doing more work than I expected, in terms of the reformatting of the data to produce Figure 1, this immersion itself was a useful exercise. The assignment was done very well given its difficulty and implementation. It required extra effort on the students to make this experiment work, however their enthusiasm helped this exercise to run smoothly. There was a good dispersion in the grades between those who knew what was going on as opposed to those that didn't, this can be seen in the distribution of grades for the assignment and helped in assessing the students ability and understanding of these very difficult concepts. Overall, I strongly believe that **all** students learnt a great deal.

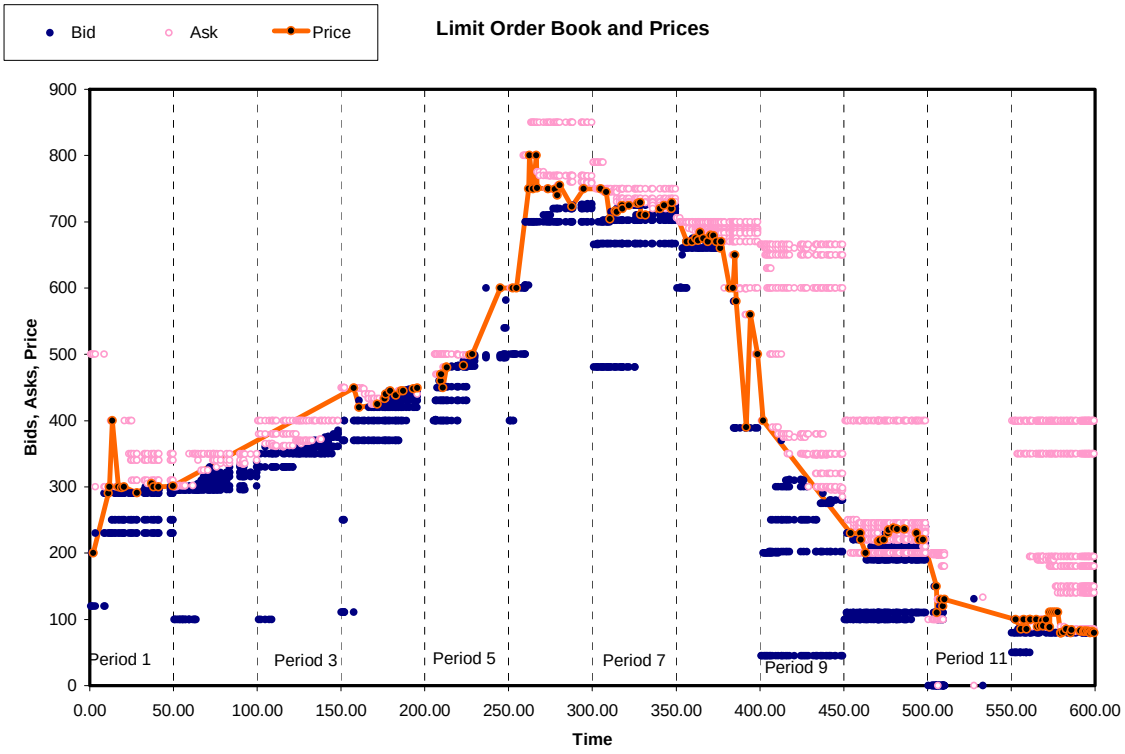

Figure 1

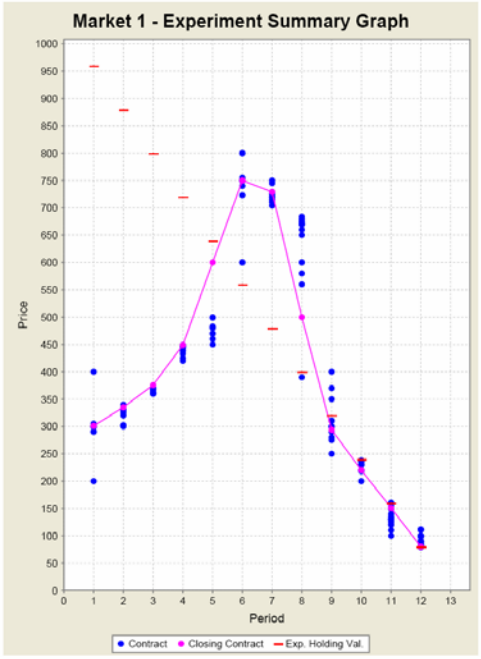

Figure 2

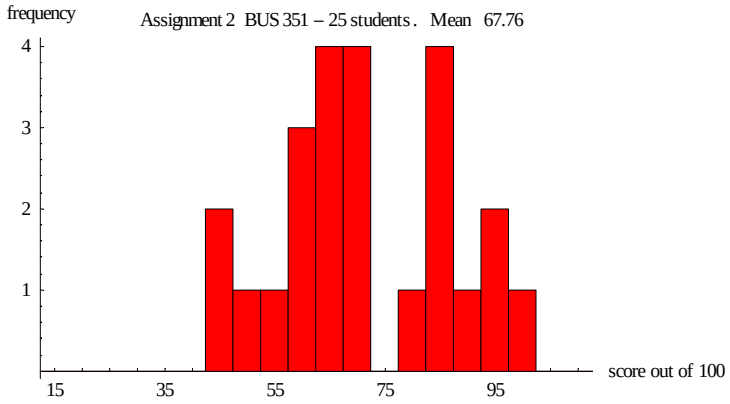

Figure 3