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Risk Aversion and Information Structure: An Experimental Study of Price Variability in the Securities Markets: Discussion

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DISCUSSION

KALMAN J. COHEN*: Ang and Schwarz [hereinafter A&S] state that their purpose "is to investigate experimentally whether the price variability of securities can be caused by (1) the risk aversion behavior of investors and/or (2) the particular type of information structure they possess."

Some economists would reject the methodology of experimental economics out-of-hand. While I have not personally used it, I am basically sympathetic with it. Hence, my comments assume that the basic experimental economics methodology is legitimate for addressing some research problems in financial economics.

A&S's lab experiment is meaningful and generally well designed to investigate the question posed in their stated purpose. My constructive criticisms are intended to improve the analysis and exposition, and my comments will be made in the order that the relevant considerations appear in the paper.

At the end of Section II, A&S's paragraphs A–C list several "relevant research questions to be addressed." They are not specifically answered there or in the concluding section. It would be helpful to the reader to have explicit answers to these questions, which I shall now provide.

- A. "Is there a difference in the behavior of prices between a market of speculators and a market of conservative investors?" [Yes.] "In particular, will the speculative investors induce greater price volatility into the market?" [Yes.] "Engage in more trades?" [No.]
- B. "Which of the the two types of investors appears to be more rational?" [Speculative.] "For instance, will the conservative investors adjust faster to relevant information?" [No.] "Will the speculative investors be more likely to respond to false information?" [No.] Which of the two types exhibits a longer memory toward past information; i.e., adaptive expectations?" [Conservative.] "Which uses no past history in forming rational expectations?" [Speculative.]
- C. "Is price volatility dysfunctional or functional to the process of price formation?" [Functional.] "Will a wide dispersion of bid/ask prices as well as a high variability between transaction prices transmit more or less information?" [More information.]

While A&S state that their "double action market" is somewhat "similar to that used on the floor of the New York Stock Exchange," there are two major differences. These relate to the thinness of the market (i.e., to the much lower number of traders) and to the lack of a specialist to provide supplementary stabilization of short-term price movements. This is *not* a defect of their experiment, but either these differences should be noted or else the statement implying similarity to NYSE trading should be deleted.

A&S make only brief reference to two psychological tests: the Jackson Personality Inventory and the Jackson, Hournay, and Vidmar tests. These were the basis for choosing participants with polar opposite extremes of risk aversion to comprise each of the two experimental markets. Hence, these tests are a *crucial*

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part of the experimental design. I am not familiar with the "field studies" to which footnote 4 refers. I would have much greater confidence in the meaningfulness of the experimental results if A&S could cite the following type of evidence: when these two tests were given to numerous actual participants in futures markets, those people whose trading motivation was *hedging* had much lower scores than those whose trading motivation was *speculative*. This type of evidence, or something similar based on real-world investors, would give me more confidence concerning the transferability of the A&S laboratory results to actual securities markets.

Figures 1 and 2 are confusing and difficult to interpret. While the results ascribed to them by A&S may well be accurate, I cannot independently confirm this. I fear it might be something like the technical analysts' charts, where people can read into them whatever they wish. Subjective interpretations of graphs and charts should be replaced (or at least supplemented) by numerical statistics.

A&S state several interpretations of experimental results based on "close examination" or "comparison of Figures 1 and 2." As I just stated, these are *subjective* rather than *objective* interpretations of the results. A&S should define relevant numerical measures of the experimental results and perform relevant tests of the statistical significance of the differences in these numerical measures between Markets 1 and 2. These might be nonparametric and/or parametric statistical tests, depending on the distributional assumptions they think are appropriate, and they should recognize the type of serial correlation mentioned in footnote 2. Without such tests, it is not at all obvious to me that the reported result "that Market 1 (speculative investors) has greater price volatility in 14 of 20 trading periods" is statistically significant. Similarly, A&S also say that "there is no significant difference in the total trading volume between the two markets"; but where is the supporting statistical significance test, and what confidence interval do A&S use?

A&S discuss various results related to the closeness of transaction prices to the "PIE or REE prices." Again, some numerical measures of "closeness" should be defined and computed, and relevant tests of the statistical significance of the differences between these closeness measures for Markets 1 and 2 should be made and reported.

In the security market microstructure literature, much attention is devoted to market bid/ask spreads and to serial correlation patterns in returns data. A&S could compute and analyze numerical measures related to bid/ask spreads and serial correlation patterns. It might be interesting for them to do so.

Section IV ends with the following two sentences: "In sum, we have observed that, although the speculative investors may induce a more volatile market, they also achieve greater convergence to equilibrium prices as well as a better allocation of resources. Thus, the role of speculators may not be entirely dysfunctional nor is greater price volatility necessarily harmful." This is really the *major conclusion* of A&S. As such, it should be emphasized as part of the paper's concluding Section V.

To summarize my overall reaction to this paper, I find it very interesting and suggestive. I think, however, that the analysis and exposition can be improved.