Behavior in a Simplified Stock Market: The Status Quo Bias, the Disposition Effect and the Ostrich Effect

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Abstract

Specific behavioral tendencies cause investors to deviate from optimal investing. We investigate three such tendencies in a simplified stock market. Subjects rarely follow the fully profit-maximizing strategy, most commonly by ignoring information and continuing to hold on to a stock regardless of its performance. The results support the predictions of the status quo bias, but not the ostrich effect or the disposition effect. These deviations cost subjects a substantial portion of their potential earnings.

Keywords: behavioral finance, experimental economics, status quo bias, self-signaling, disposition effect

JEL subject numbers: C91, D01, D53, D83

* This research is an extension of Brown's undergraduate honors thesis at Ohio State University. Financial support was provided by the Honor's College and the Department of Economics at Ohio State University. Kagel's research was partially supported by grants from the National Science Foundation. We received helpful comments from Hal Arkes and David Cooper. The usual caveat applies.

Recent research has shown a number of instances in which investors behave in ways that traditional economic theory does not predict. These deviations from standard economic theory have given rise to the behavioral finance literature (see Stracca, 2004 for a survey). This paper implements a simplified stock market experiment and examines whether subjects follow traditional profit-maximizing strategies, or deviate from them following previously established behavioral tendencies, namely the status quo bias, the ostrich effect, and the disposition effect.

Our experimental design is not intended to replicate the complexities of a large-scale stock market. Instead, we look to see if the behavioral tendencies suggested to exist in field settings are observed in a simple laboratory experiment. As such we keep only the most basic elements of stock trading: subjects hold only one stock at a time, and can observe the market and exchange stocks after every period in which prices change. Stocks follow a known distribution resulting in a clear identification of the optimal stock(s). The three behavioral tendencies we look for work against subjects acquiring this optimal stock, thereby reducing subjects' earnings. Thus, if these behavioral biases reveal themselves when the optimal strategy is so simple and transparent, they are likely to be at work in other markets which are much more complicated and the optimal strategy is much harder to determine as well.

Investors in our experiment do secure a little over half of the increased profits to be had as a result of following the optimal investment strategy (53.4%). However, they fall short of maximum possible earnings, primarily as a result of the failure to consistently compare the returns on their currently held stock to the returns on the available set of stocks. We distinguish this form of the status quo bias from the ostrich effect, the tendency of investors to observe their portfolio more often during strong performances than weak, which we do not observe in the data. Further, conditional on choosing to compare their existing stock to the available choices, subjects do *not* suffer from the disposition effect as they generally hold on to superior performing stocks and trade in poorer performing stocks.

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Appendix 1: Experimental Instructions

[This appendix is not intended for publication; it is for the use of referees and will be posted on a web-based version of the paper.]

Experimental Instructions

This experiment simulates a simplified stock market. It will consist of eight trials. In each trial you will trade stocks for twenty "days." To begin, you will select one stock to hold. During each day this stock's value will vary randomly. At the end of the day, you will decide whether to hold this stock or exchange it for another.

Each stock will be either a type A, B, or C stock. You will not be told the type of stock you are holding until the end of each trial. An A stock will increase its value on average, a B stock has no change in value on average, and a C stock will lose value on average. The chance that a randomly selected stock will be a type A stock is 25%. The chance it will be B is 50%. The chance that it will be C is 25%. This information can be useful when you decide whether to exchange your stock.

The value of the stocks will vary randomly from day to day. For a given day these are the probabilities of A, B, or C changing their value by a given amount:

	Stock value distribution per day						
Stock	-20	-10	-5	No change	+5	+10	+20
A	0.025	0.075	0.1	0.2	0.25	0.2	0.15
B	0.075	0.125	0.2	0.2	0.2	0.125	0.075
C	0.15	0.2	0.25	0.2	0.1	0.075	0.025

Thus a type A stock will increase by 20 in value on a single day 15% of the time, while a type C stock will only go up that amount 2.5% of the time.

You can exchange your stock at the end of any day except the last day of a trial. There is no cost for exchanging your stock and you will be able to select from each of the same twenty stocks as before. You can only hold one stock at a time.

In addition, when you exchange your stock you will receive information about the cumulative performance of all twenty stocks. After observing this information you can still decide to keep your current stock if you choose. Your decision to observe this information is entirely optional and will not influence the performance of any stocks.

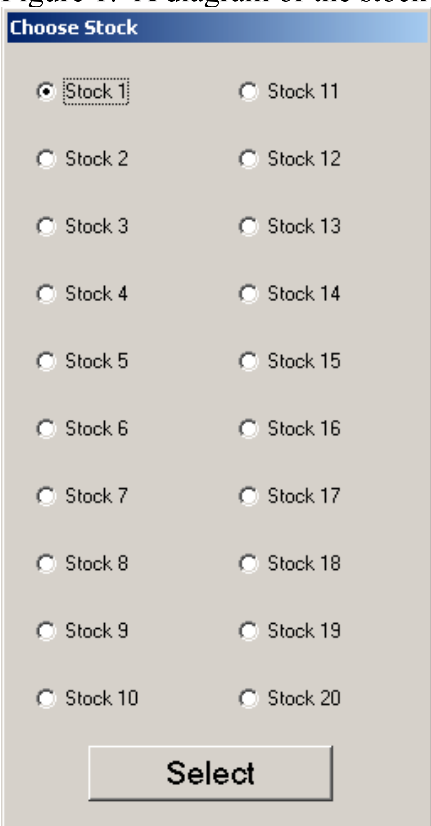
After the twenty days a trial will be completed, and the final value for your earnings for that trial will be recorded. After eight trials have been completed, one of your trial's totals will be randomly selected and you will be paid based on that total. Your dollar earnings will be equal to that trial's earnings divided by 10.

A typical experiment:

This section presents a step-by-step guide through a typical trial. Refer to Figures 1-5 for a diagram of the experimental computer interface window.

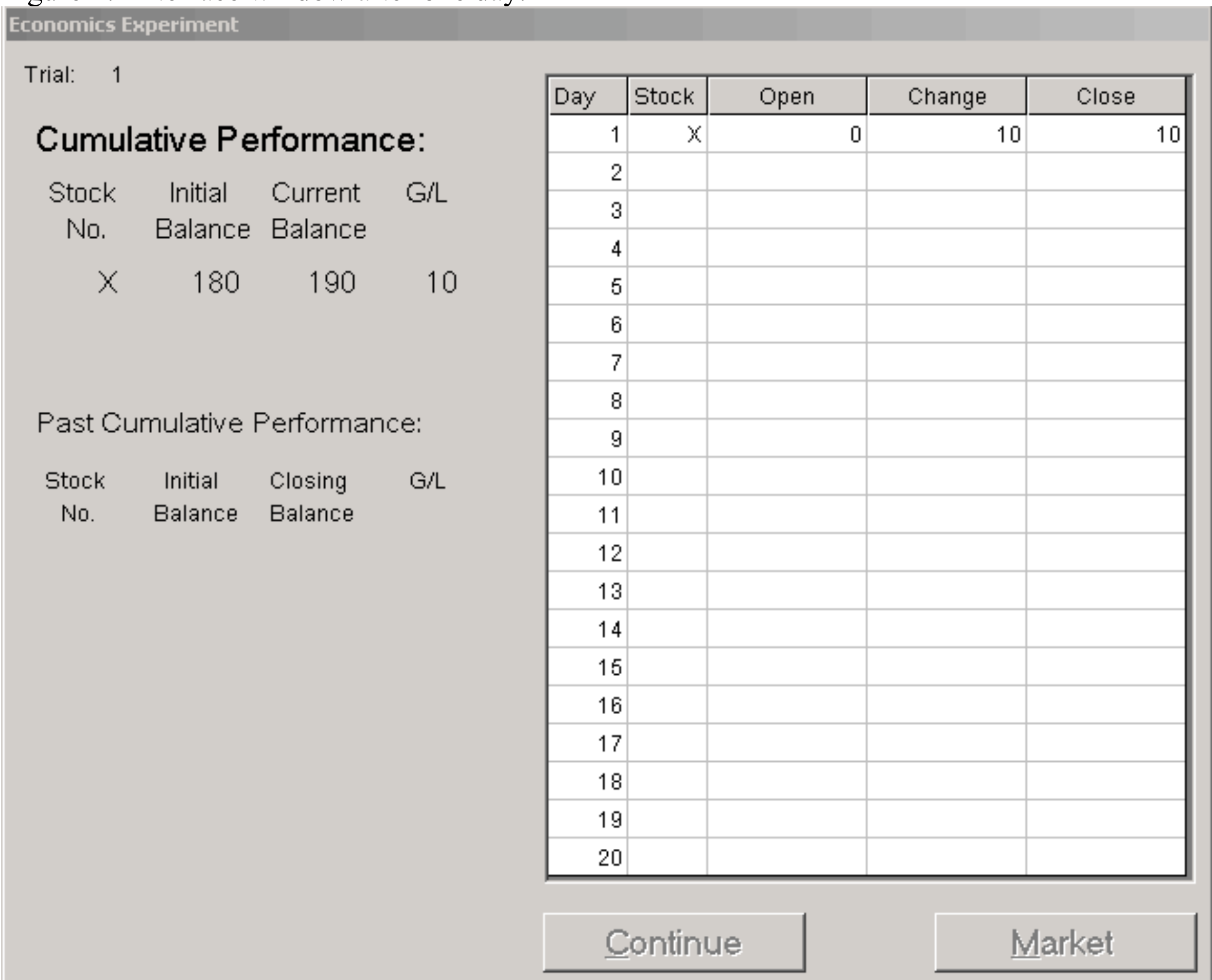
1. At the beginning of the experiment you will select one of twenty stocks (Figure 1). Any given stock will be an A, B, or C type stock with probabilities as specified above.

Figure 1: A diagram of the stock menu.



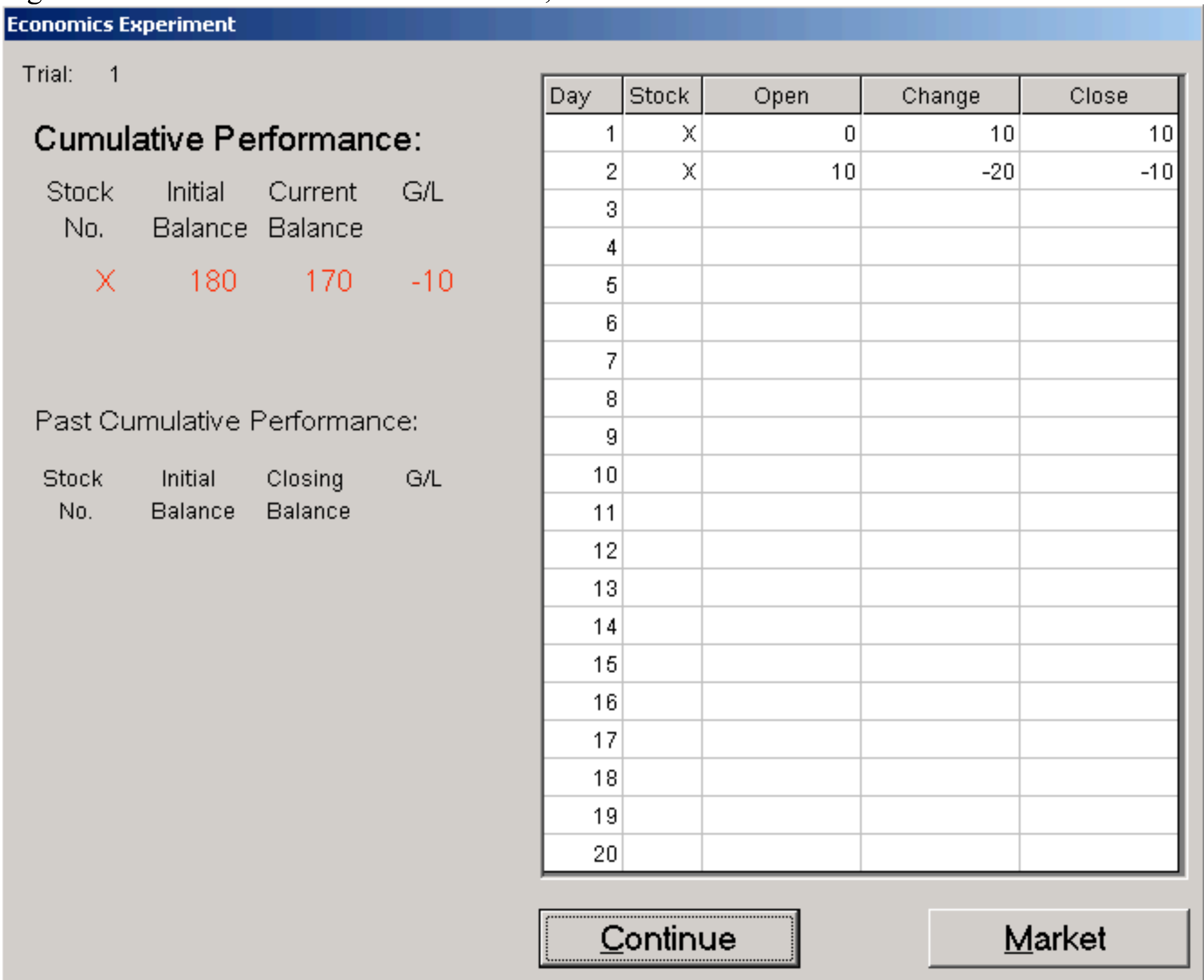
2. After you select a stock (in this case stock "X") you will observe its performance for the first day (Figure 2). There will be a twenty second delay between days. At the end of day 1 you may "continue" to hold your stock or observe the "market." If you keep your original stock, it will continue to vary randomly. If you observe the "market" you can choose another stock, or decide to keep your original stock.

Figure 2: Interface window after one day.



3. In this example the investor chooses to hold stock X.

Figure 3: Interface window after the choice, "continue."



4. In this example, after day 2, the investor chooses to examine the market of all stocks. Figure 4 shows the market interface window. The “total” column gives the total changes since the beginning of the experiment for each stock. The “chg” column describes the daily change for each stock, in this case day 2. The investor may select a new stock or “cancel” and return to the previous window. Using the “select stock” box, the investor chooses stock Y. Figure 5 shows the result of this choice.

Figure 4: The “market” window.

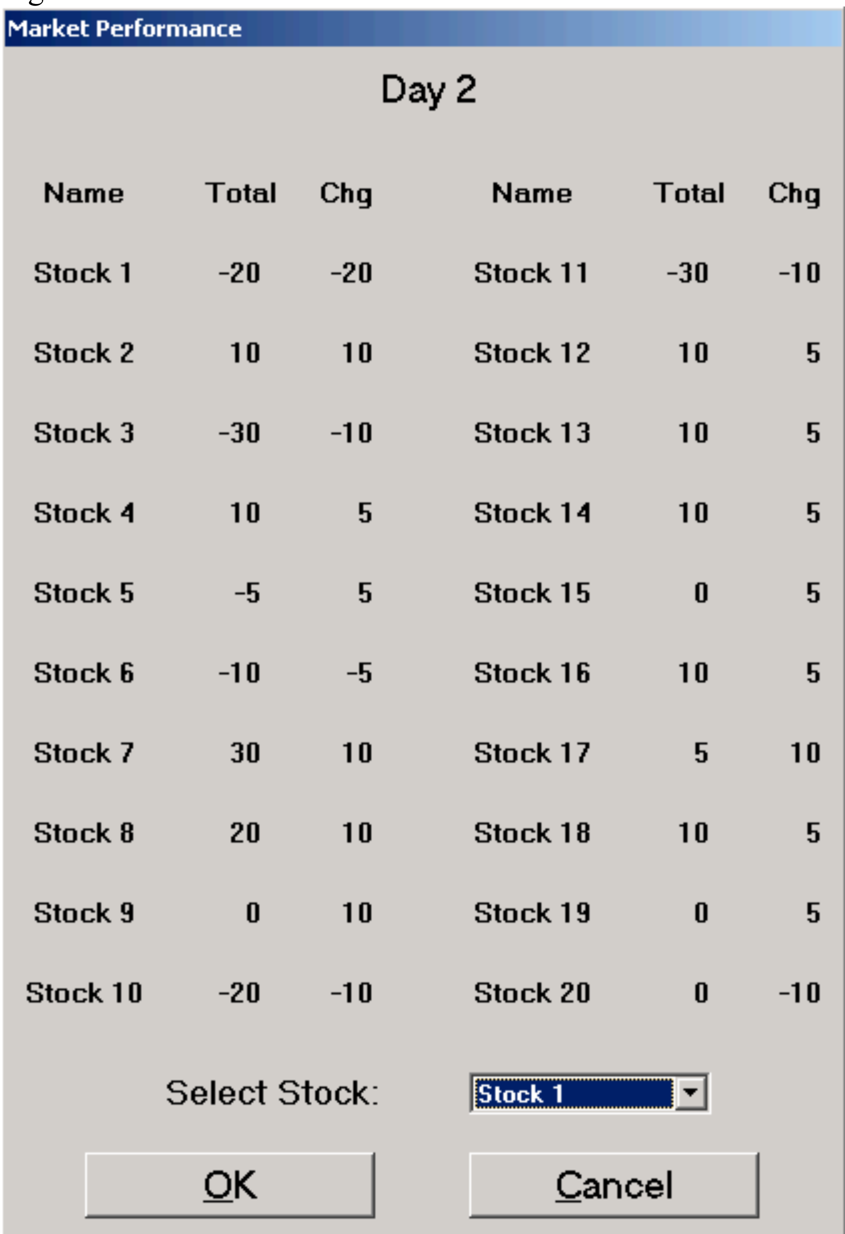
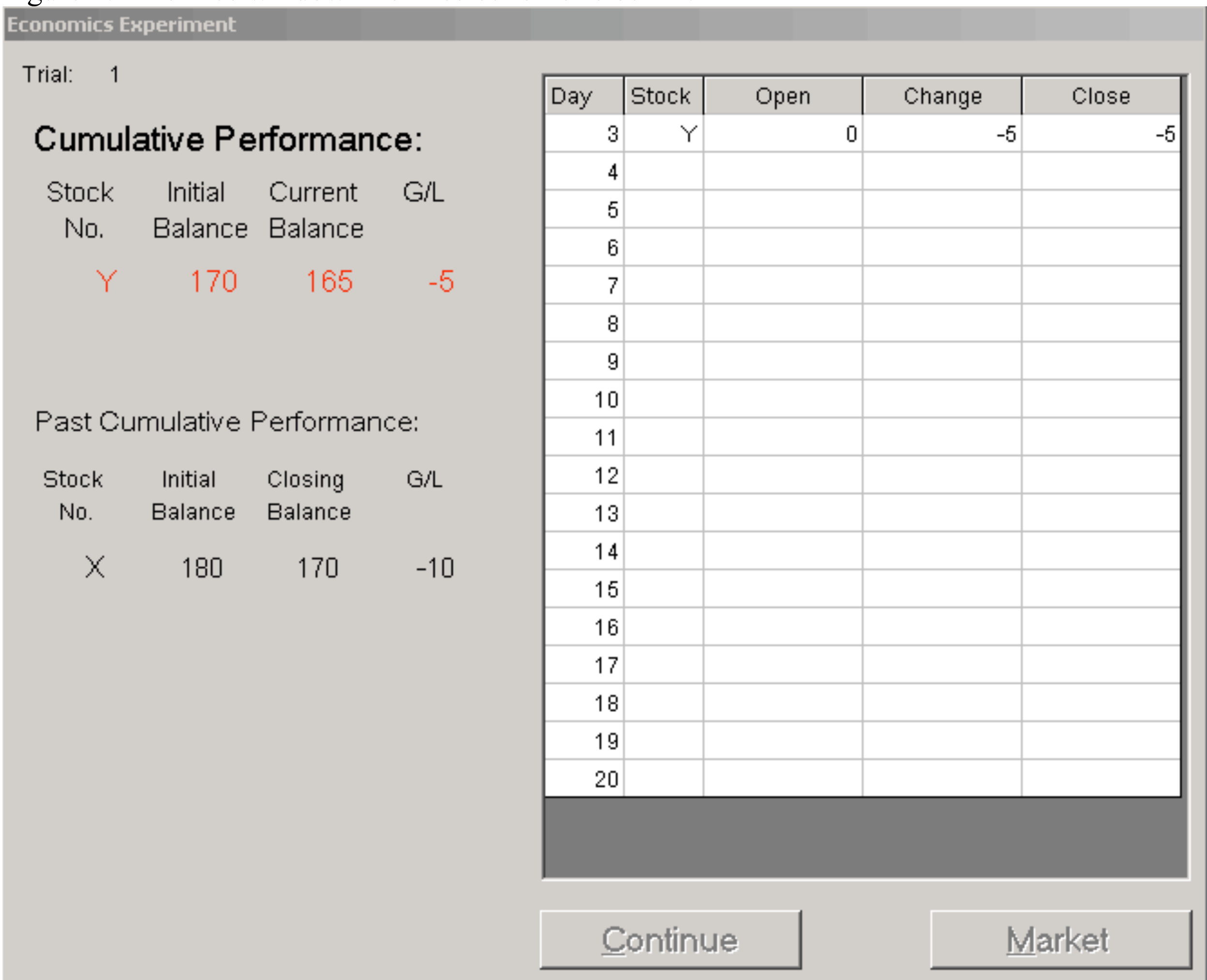


Figure 5: Interface window after a selection of stock Y.



5. Outcomes for stock Y have been placed in the current performance section of the trading history. In this example, stock Y lost 5 over day 3. Notice that the initial balance of stock Y is equal to the "closing balance" of stock X. All holdings in stock X have been transferred to stock Y. The performance of stock X is in the past cumulative performance section of the window.

6. Each trial will continue until twenty days have elapsed. At that time the current balance in your cumulative performance window will be your final total.

7. At the beginning of a new trial everything will appear as it did at the beginning of the last trial, except the trial number in the upper left corner will have increased by 1. Remember that for each trial the types of the twenty stocks are randomly chosen again. Thus, a stock that performed well (poorly) in the last trial may or may not perform well (poorly) in the next trial.

8. After eight trials have elapsed the experiment is finished. A trial will be randomly selected and you will be paid based on the current balance in your cumulative performance window for that trial.