

# Developments in Business Simulation & Experiential Exercises, Volume 9, 1982

## A STOCK MARKET INVESTOR SIMULATION

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### ABSTRACT

The purpose of this simulation is to help college students understand the objectives, process, and problems of personal portfolio management of stock exchange listed securities. This simulation provides a limited framework closely duplicating the required research, planning, and control of a personal portfolio. This is a financially riskless opportunity for students to participate in hands on investment decisions. This simulation is realistic, appropriately complex, yet easy to understand; it is relevant to today's security investment concerns. While the simulation has some luck in its conclusions, the simulation process produces personal learning which can be quantified and graded in a competitive atmosphere of students and the actual stock market.

### INTRODUCTION

It has become increasingly clear among instructors and their students that effective learning requires academic experiences approaching reality. Business educators have both an opportunity and a responsibility to provide that relevancy in their courses. But, the goal may be generally simplified and the course made more stimulative if students are offered an opportunity to learn about the investment markets through the use of a simulation.

Massie has written with regard to management that a program can be checked out and operating conditions simulated. In this way, difficulties can be carefully considered in advance" [2, p. 6:33. A simulation experience may offer the student of investments what financial planning provides to top level corporate line executives--a chance to test out ideas before they become too costly to change. Of course, a chance to actually invest in financial assets of any substantial size would probably be the best learning activity. However, a well-designed simulation of the securities markets should enable approximation of that situation without the potential costs and risks of an actual financial commitment [4, p. 1].

The use of a simulation will allow a student of investments to make a "dry run." The student may view the problem at hand, but he faces no personal financial risk [3, p. 1213. In the attempt to provide students with meaningful educational experiences, simulations thus approach reality but minimize costly errors. To be relevant, however, the simulation must be accurate in its format and combine the background theory of investing techniques with some student incentives and evaluations (perhaps a grade?). The evaluation might be determined by the instructor on the basis of change in size of the portfolio coupled with the logic and theory used by students in their written explanations for the actions they had taken. The marketplace would provide the incentive needed in reality since the potential loss of one's capital should be sufficient reason to have most investors act carefully. Thus, while students cannot lose their money in simulation, a grade for the exercise may serve a similar function if the grade is carefully explained and determined.

To initiate the simulation, the following material may be given to the student. Modifications may be easily inserted if the instructor chooses to do so. These changes may help to meet the needs, abilities, and academic backgrounds of the individual students enrolled in a course. Since students are working alone in this simulation, there may be some concern over the lessening of potential learning when compared to group experiences. However Gentry recently reported that

group size had no effect upon group performance, but group size was relevant to the amount of dissent in a group [1, pp. 451-603. A consideration in this simulation to set up groups of students for securities selection and portfolio construction was dismissed in order to have this simulation more closely match real world activities.

### THE SIMULATION

This simulation is designed to provide the student of investments with an opportunity to research, analyze, and practice the basic principles of investing in securities. Since this is a simulation, the results of the student's investment operations will serve to provide only indications of SUCCESS, or (for lack of a better word) FAILURE at investment operations. However, failure here will be without financial cost since there can be no permanent damage to one's individual wealth from a "simulation."

The following rules and forms have been developed to help the student appreciate securities market's requirements much as the real world of investments might force upon an investor. In the real world, however, the cost for errors would be much higher than in this simulation.

### Forms

The Investment Summary Fact Sheet (Form A) has been designed to encourage students to research and analyze corporations prior to making investment decisions. This form can be adopted as exhibited, or it may be adapted with modifications as appropriate for specific investment objectives. Forms B & C The Security Record, and Cash Balance Record, show students how to organize personal financial securities records and are used during the simulation to measure performance.

### Approach

The student's approach to this "game" should be as though the student did have the money to "play with." Actions should be taken as if they were real. Hopefully, someday in the near future, real investment operations will not be a game. Now is the time to learn how to play, before investors can get financially "burned."

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### GROUND RULES

- Assume that your cash funds available for investment total \$100,000.
- Investments may be selected from any domestic stock, bond, warrant, put, or call (not commodity) listed in The Wall Street Journal. You may not buy U. S. Treasury securities.
  - Transactions costs are to be calculated at two percent (2%) of each purchase or sale. The amount of the transactions costs will be added to the amount of each purchase and subtracted from each sale to determine total net costs and revenues.
  - Securities may be purchased by using market or limit orders.
    - If you purchase or sell by using market orders, the order will be assumed to have been consummated at the average of the high and low price listed in the Wall Street Journal issue which reports the actual transactions of that day, i.e., the paper. tomorrow.
    - If you use a limit order to buy or sell a security, consummation of that order will be assumed to have taken place if the price range of the security (as reported in the Journal) is ever, subsequent to placement of the order--equal (on a sell order), or above; or (on a buy order)--equal or below the limit price you specified (unless you cancel the order before it is transacted)
  - Only round lots may be used for trading stocks.
  - Bonds are assumed to be of \$1,000 multiple par values.
  - Dividend income will be added into your cash balance record if you own the dividend paying stock at the time it goes ex-dividend as reported in the Journal.
  - Interest paid to bondholders should be added to the cash balance record, if it would have been received by the owner of the bond. Accrued bond interest should be calculated when buying or selling bonds since it will not be taken into account in the market price of the bond when it is purchased or sold.
  - Tax free (municipal) bonds will receive special treatment of the interest received. You will assume that you are in a 30% marginal tax bracket and therefore municipal bond income (which is tax free) is worth  $1/.70 = 1.43$  times the interest received when added to your cash balance record.
  - All transactions will be assumed to be on a same-day settlement basis. Cash should be withdrawn and/or deposited to the cash balance record on the day the transaction takes place. Short sales are not permitted.
  - No funds may be borrowed to purchase securities.
  - Each purchase and each sale instruction (order) must be preceded by the completion of an "Investment Summary Fact Sheet." This sheet should be retained and given to the professor each Monday for all transactions not previously reviewed. Justifications for purchases and sales must be outlined in less than 250 words on that sheet--prior to the placement of an order in the market.
  - Funds in the "bank" and not being used in the "market" will receive day-of-deposit to day-of-withdrawal interest. The calculation of interest income will be made by having unused cash in full units of \$6,000 earning \$1.00 per day. This is about equal to the current rate of interest in savings institutions.
  - This simulation will begin on the date announced in class.
  - The results of your simulation will be determined by adding the value of all cash in the cash balance record plus the market value of all securities held at the end of the simulation. The securities' valuations will be based upon their closing prices listed in the Journal issue one day after the last day of the simulation. You do not have to sell all your securities, just value them.
  - During the course of the simulation you must purchase at least five (5) different securities, place no more than 30% of your portfolio in any one security, and have no more than \$20,000 in cash on hand after the end of the second week of the simulation.

### FORMS

- "A" Investment Summary Fact Sheet
- "B" Security Record
- "C" Cash Balance Record

### REFERENCES

- Gentry, James W. "Group Size and Attitudes Towards The Simulation Experience," Simulation Games, Vol. 11, No. 4, 1980 pp. 451-460.
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- Terry, G. R., Principles of Management (Homewood: Richard D. Erwin, 1968).
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