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Meeting the Decline in College Enrollments Using the Money Game in the Classroom

by

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I. Introduction

Colleges and universities are said to be at the onset of an era characterized by declining enrollments--exemplified by the fact that some institutions have already experienced a decline while others have witnessed a 'leveling off' of enrollment. (In general, public institutions perhaps have fared better than private due to the higher tuition costs of the latter.) The reasons cited for the current and forecasted declines in enrollment are many, among which are: (1) there are relatively fewer college-age individuals--due to the fact that the 'baby boom' children have completed that phase of their careers; (2) of those eligible for college, some are voluntarily choosing professions or careers which do not require a college education--partly due to higher wages currently being paid in these professions and partly due to the 'back-to-the-simple-life' or 'back-to-earth' life style that is in vogue; and last (3) some individuals feel they cannot afford the spiraling costs of a higher education.

Faced with this problem, current efforts by the institutions seems to be devoted primarily to enticing students to enroll in their particular Institution by modifying requirements, offering special services, and other strategies which may even include the lowering of academic standards. However, they are essentially competing among themselves for students who

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have already made the decision to attend college. Perhaps their energies should be focused on persuading students who have decided not to continue their education to reconsider their decisions. It is partly due to this latter line of thinking that an expanded use for 'the money game' was developed. But first, we must describe what the money game is.

II. The Money Game Rationale

The money game is a series of 'bookkeeping' computer programs which permit students to buy and sell securities listed on any of the larger stock exchanges. The game originated as a device to allow students in undergraduate and graduate investment courses the opportunity to exercise their ideas generated in these courses. Recognizing that investment decisions have a future orientation and that predictive errors are bound to occur, some of the main presumptions of today's courses deal with developing strategies to meet the uncertainty of the future in an optimal way. The more popular strategies tend to suggest that investment performance can be improved by allocating one's funds across groups of assets; that is, by investing in portfolios rather than in an individual security. The shift toward the broader perspective of portfolio management presents a distinct challenge to the instructor of large numbers of students with learn-how-to-get-rich-quick expectations. Providing the students with practical or realistic experience was deemed desirable and thus the money game was developed.

As mentioned previously, the money game is a series of elaborate bookkeeping computer routines. Each student (or group) is assigned a hypothetical sum of money at the beginning of the semester. With these funds, he may purchase, sell, sell short, or terminate a short position

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on any of the approximately 5,000 securities listed on the major exchanges (option trading is now allowed.)

The programs furnish weekly financial statements for each student which reflect the results of their trading decisions after taking transactions costs into account. These statements include composition of wealth and an inventory of their portfolios at current market prices; a cash balance reconciliation; a detailed transactions summary, and an overall ranking of their performance.

III. Design Constraints

Whenever efforts of this nature are undertaken, several objectives need to be considered. The novel feature of this set of programs lies in the particular blend of compromises which were made while trying to satisfy each objective as fully as possible.

It would, of course, be nice to construct a recording system identical in all respects to one found in a brokerage house. Unfortunately, academic institutions cannot afford personnel to write the trading orders, punch the data cards, and perform the myriad of other auxiliary chores required. Only three labor units are available; the computer, the participating students or players, and a nominal amount of funded assistance (equivalent to one student grader). Part of the detailed work of input preparation must, therefore, be performed by the players; and herein lies one of the major difficulties in the design of the programs.

The one talent which nearly all students possess in abundance is the facility to make careless errors. Thus, it becomes imperative that they receive a minimum number of very clear instructions. In addition, precautions need to be taken to detect all errors which they will make.

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There is an additional reason to constrain student input. A player's success is measured by the amount of money he makes over the course of the semester. His gains are a function of the movement of the prices of the securities he selects. To prevent chaos and maintain control, either prices provided by the students must be carefully monitored or they should be provided by an Independent party. We chose to take the latter course.

Constraining the player input naturally shifts the burden to either the computer or the funded student assistant. Neither of these resources are available in unlimited quantities so additional allocative judgments had to be made, including a retreat from perfect realism.

The foregoing was simply intended to convey to the reader the essence of the trade-offs which had to be considered while designing the programs. The details of the inputs and outputs will now be presented.

IV. Required Player Input

A listing of the securities which can be traded is made available to all players. This listing assigns numerical identification to the stocks listed in the Wall Street Journal. Once this list is established it remains constant over the duration of the game. That is, no additions or other modifications are possible.

Also, each group of players is assigned a group identification number. (The players are encouraged to form groups of two or three in order to benefit from the dialogue which will result during the decision-making process.)

To initiate a transaction the player has to punch one data card which contains only four pieces of information.

The group number is punched anywhere between columns 1 and 10, the stock identification number anywhere between columns 11 and 20, and the

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number of shares to be traded anywhere between columns 21 and 30. All of these are punched with decimals.

The fourth piece of required data is a transaction code punched in column eighty. A 'B' initiates a buy order. An 'S' initiates a sale, or it will terminate a short position. Since the players are not allowed to hold simultaneously both a long and a short position in any given stock, an S wipes out all, or part of, an existing long or short positions as the case may be. To initiate a short sale an S is used again, only with the additional requirement that the number of shares be preceded by a minus to indicate he is selling shares he does not own. Any other punches in column 80 are considered errors and the transaction card is ignored. To recapitulate

<u>To Initiate</u>	<u>Punch In Column80</u>	<u>Other Special Requirements</u>
A buy order	B	Must have sufficient cash to cover Purchase
A sell order	S	Must own at least the number of shares sold
A short sale	S	Punch a minus before the number of shares traded
The termination of a short position	S	Have a short position of at least the number of shares terminated

It is also possible for the student to claim any dividends he is entitled to receive and to make corrections to his cash balance. Due to the space provided the required instructions will not be detailed here. They are simple, however, If a cash correction is made, five rows of asterisks are printed across the bottom of the financial statement. This makes any abuse easy to detect by scanning the duplicate copy of the output.

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V. Processing the Player Input

Since inventories are maintained (on disk) for each group throughout the semester it is important that the data used to update these inventories be error free. Therefore, two programs are used to process the student generated data whenever the transactions are run.

The first program, called PREPORT, reads in the student prepared data and cards for all stocks previously traded and generates three distinct outputs. First, new student transaction cards are machine punched with the group number properly aligned for subsequent sorting purposes. Second, a listing is prepared in numerical order, of all the stocks active through the current week together with a corresponding set of punched cards.

The student assistant spends the bulk of his time punching current prices into these cards. They are in the same order as they appear in the Wall Street Journal so the task takes, at the outside, about an hour each time transactions are permitted. Rarely has the list of traded stocks exceeded 250 items even with as many as 60 groups playing the game.

After completing the pricing the assistant merely sorts the machine punched transactions cards by transaction type and then by group number. Following this, he feeds the transactions cards and price data into a second program called REPORT. The output of this program is the financial statements for the players.

VI. Psychological Aspects

Considerable competitive spirit is stimulated by the game, but interest can be accentuated by a variety of means. Among the means employed are:

(1) basing a portion of the student's course grade on their financial standing in the game; (2) inviting local businessmen and/or brokers to participate--

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as this lends an air of seriousness to the game and allows businessmen to try out any pet theories they may have; and (3) provide for monetary rewards to top performers--the money being donated by local firms.

Some critics of these types of attempts to motivate point out that the period of time over which the students are involved is so short that they will view investment in the market as a purely speculative activity. There is validity to this argument.

Nevertheless, there are benefits beyond the development of a core of Wall Street Journal readers. Most students, graduate and undergraduate alike, have had precious little exposure to decision making in the face of true uncertainty. Predictably, after their first brush with the game, they begin to feel ill at ease and to complain that they really don't have sufficient information upon which to base their decisions. How refreshing! Their frustration gets progressively worse as they search for substantive comments in the professional analysis' research reports, as they read contradictory opinions about the future, as they become exposed to concepts of growth, risk, risk-adjusted discount rates, the effects of financial leverage, various portfolio management strategies, and so on. If skillfully handled, many students make heroic attempts to reconcile the reasonable sounding classroom concepts with the reality in which they are involved in order to dissipate their frustration. In short, they think.

As they begin to acquire a feeling for the extreme complexity of investment decisions they do accept the classroom concepts more readily, so long as these concepts are presented as structures which can be used to improve their analytical prowess, as opposed to absolute answers. Further, they begin to develop an intuitive feel for the entrepreneurial life. They

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begin to understand what it is like to make decisions rather than to follow rules. Far too much of the education business students receive is too comfortable for them. This game is not.

Perhaps one of the features that makes this computer 'game' unique is that It is so unlike existing computer gaming situations. Most existing business games essentially require the student to be playing against the computer--i.e., they are preoccupied with trying to figure out the basic underlying model prespecified in the program. This 'game' is merely a bookkeeping device--their opponents are other investors and the model is the real world. In order to succeed at this game the student must have knowledge of the market, the economy, and investment strategies, all of which are real world items.

VII. Summary of Experience at the College Level

The money game has been used in our investment courses since 1971. During this time the students have reacted very favorably to the game and we feel it has made the courses more dynamic. Although we have no measures of some of our suspicions, we have witnessed increased faculty innovation in other courses since we have adopted the game in the investments courses. Also, whereas most other departments at our institution witnessed a decline in enrollment this year, our department has observed an increase in its declared majors.

VIII. Experiment with Local Highschools

Upon receiving positive feedback for several semesters from the university students, the game has been expanded, as a pilot study, to include five high school groups from the local secondary educational system. Since this is the first semester that the high schools have been involved

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In the game, we are still determining exactly how the game will best be used in the secondary curricula. Three of the teachers involved with it are basically utilizing the game as extra curricular activity. This is primarily due to the fact that the teachers are attempting to get a 'feel' for the game and for their students' reaction to it as well as trying to give consideration as to the best way of incorporating the game into their course structure. The other two-teachers re-arranged their courses to include units on the NYSE. The units were supplemented with materials from the exchange. All the teachers have indicated a desire to continue the game in the Fall.

Preliminary considerations indicate that the game is best suited for a Social Studies/Economics or Business Management course where involvement in the stock market can lead to questions such as: What is a company?, What is a balance sheet or income statement?, Why do some companies earn more than others?, Why does the market go down?, What is GNP?, What are the consequences of inflation?, etc.

Another possible use for the game at the high school level is to form Investment clubs--as exist camera clubs, biology clubs, etc. This avenue has not been fully explored as yet but is being given considerable thought by those involved. Hopefully, the establishment of investment clubs in each high school can lead to traditional types of high school rivalry which will increase interest and motivation in the game.

The method of handling the high school transactions was different from that of the college students. An undergraduate student was hired on an hourly basis to handle their transactions. During a pre-arranged two-hour period, the high school students would telephone in their orders. The aide

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would then key punch their transactions (approximately 1/2 hour) and after the reports had been run, she would deliver them to the local department of education for free mail delivery. She reported no problems, whatsoever, in her Involvement with the game.

IX. Summary

Although the experiment with the local high schools is still very new, it is the authors' opinion and the opinion of the high school teachers involved, that introducing the game at this level is interesting and exciting for the students and can potentially result in long-range interests in business and economics.

It is hoped that developing Interests in business and economics at an early level will encourage more students to continue their education. The business world is a complex environment and minute knowledge