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THE IMPACT OF MATH BACKGROUND ON PERFORMANCE IN MANAGERIAL ECONOMICS AND BASIC FINANCE COURSES

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Upper division finance courses require students to have a fundamental background in mathematics. This background is considered important to a student's successful mastering of the material in higher level finance courses. Schaffer and Calkins [1] find that performance in prerequisites are related to performance in introductory business finance. The purpose of this research is to focus on an additional area of students' academic background as a determinant of performance in upper level finance courses - their background in mathematics.

Class instructors perpetually search for the underlying reasons for the failure of students to master finance concepts. The failure to master material because of deficient mathematical skills warrants a very different response than if failure is due to lack of financial intuition. This information has at least two clear applications. As math is employed to teach financial concepts, some amount of class time and textbook space is generally devoted to introducing and reteaching mathematics. Investigating whether the appropriate level of resources is being used is important. Furthermore, students are generally screened by the use of prerequisite course requirements and qualifying examinations before enrollment into a course or program is granted. An additional concern is whether the screening process correctly identifies students with inadequate math skills and prevents their enrollment in courses they are poorly prepared for.

DATA

A survey was used to collect information on a sample of students enrolled in fundamentals of finance in the spring of 1989 and managerial economics in the fall of 1988. Data were gathered about the math courses completed, including (1) the number of years of high-school math, (2) whether an advanced sequence of high-school coursework was taken, (3) whether calculus was taken in high school, and (4) whether college calculus requirements were fulfilled with nonbusiness calculus courses. Because completion of a course need not translate into an understanding and retention of material, students were also asked to rate the adequacy of the math courses

of whether these prerequisites prepare them for later finance material. It is thus a complement to information on actual coursework and ideally measures the amount of information learned and retained. Finally, information was gathered on students' attitude toward math. This is an alternative measure of students' preparation since those with poor math skills are more likely to be frustrated with quantitative material and less likely to view math favorably.

Control variables are also included to account for differences between students. Information on (1) the number of related business courses completed, (2) time employed outside of school, (3) current credit enrollment, (4) average time since business prerequisites were taken, (5) major, and (6) personal computer experience was collected.

RESULTS

Standard regression methods are used to quantify the relationship between students' background and finance class performance. The results for the managerial economics course and the fundamentals of finance course are presented in Table 1 and 2 respectively.

Rather than focusing on individual parameters, four groups of related variables are tested to ascertain if the aspect of math background measured by each group of variables is an important determinant of performance. The appropriate test statistic to test that all coefficients in the group are zero is an F test. This statistic follows an F distribution with m and $n-k$ degrees of freedom where m is the number of parameters hypothesized to equal zero, k is the number of parameters in the full model, and n is the number of observations.

The first two columns of the tables present the full model. The F tests for the variable groups presented in the third column are based on the full model. Based on these F tests and the coefficient t tests, only one of the math variables has significant explanatory power for managerial economics. None of the math variable groups have significant explanatory power for fundamentals of finance.

A series of restricted models were also estimated in which only one of the four math groups is included

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