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**THE IMPACT OF ECONOMIC
EDUCATION ON STUDENT
PERFORMANCE IN BUSINESS
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VARIATION BY AREAS OF
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ABSTRACT

The paper empirically examines the relation between extra normal ability (inability) in economics principles course and students' performance in business courses in the areas of finance, marketing, management and accounting. Extra normal ability (inability) is measured as the part of economics grade that can not be explained by a student's general academic ability. The paper finds the relationship is disparate across various business concentrations. Performance in finance and marketing courses are found to be related to extra normal ability in economics principles, whereas the performance in management and accounting are not. Based on the findings the paper argues that students can benefit if such disparate relation is incorporated in curriculum planning. In particular a dynamic curriculum planning may serve interest of the students better if they are based on institution specific needs rather than using an ad hoc framework.

Keywords: Education, extra normal ability, curriculum planning, core course

JEL classification: A20, A22, M20

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I. INTRODUCTION:

The importance of economic education in the students' learning process and experience is well-documented. A good understanding of economics has constructive influence on our beliefs, attitudes, social and political opinions etc¹. The argument that of economic knowledge can contribute in creating a better informed work force, in promoting productivity, in enhancing society's ability to prosper, and in responding to changing technology lies at the heart of its relevance and value. This point alone provides a strong basis for the heightened interest which translates in the incorporation of economic education in the general studies program at colleges and universities, reflecting in part, its growing importance.

While academic research has focused on various aspects of economic education, little attention has been devoted to its role in sharpening students' learning skills in business areas. This lack of attention perhaps reflects a general acceptance of the proximity of college level economics and business courses. Grimes and Niss (1991) examine the relationship by estimating an educational production function for business majors in which performance in economics (micro and macro) are used as explanatory variable. They find that a student's performance in the introductory economics courses significantly impacts his/her subsequent performance in the core business courses. This implies that knowledge in economics enhances students' skills to succeed in the business programs. Although the findings by Grimes and Niss are assuring, still the lingering question remains whether the results are simply showing the effects of students' general academic ability that is also reflected in the economics grades. Currently wide variation in the contents and methodology among the different business concentrations exists. It is thus quite plausible that economic learning has a disparate impact in promoting success in various areas of business discipline -- an issue the Grimes and Niss study did not address.

The hypothesis to be tested in this paper is: Does a student's economics grade beyond what can be explained by his/her general academic ability affect performance in business courses and does such performance vary across the different concentrations? To make the issue clearer, suppose a

¹ See, for example, the seminal study by Stigler (1961).

student's performance in economics is better (worse) than what can be explained by some measure of his/her academic ability. In that case, s/he perhaps possesses (or lacks) some talent, aptitude or other attributes conducive to learning the subject matter which have contributed to the extra normal performance. The question then is whether or not the extra proficiency (or lack of it) affects subsequent performance in various areas of the business curriculum. If it does, it also confirms that economic ability in general matters. However, the fact that the extra normal proficiency in economics can make a difference in learning a business subject makes a much stronger case for more rigorous economics training for business majors. In that case, perhaps this could be accomplished by holding the students to a much stricter standard or requiring additional economics courses as part of the business curriculum. If not, then it does not suggest irrelevance of economics. Instead it does indicate that for curriculum planning one would have the flexibility to make additional economics courses part of the requirement or advise students to take extra courses in economics as electives as the case may be.

There is a wide variation in economics emphasis in the business curriculums of different institutions. For the majority, economics requirements are limited to the principles course alone, whereas others require various degrees of more advanced economics training as part of the courses for the business curriculum. Neither the American Assembly of Collegiate Schools of Business (AACSB) nor the Association of Collegiate of Business Schools Programs (ACBSP) offer any specific recommendations regarding and appropriate mix of economics and business courses. Some earlier studies², however, proposed that business students should be subjected to more economics courses beyond the principles that most schools require. Specifically, the American Economics Association study (1950) recommended making economics as much as 20 percent of the business curriculum. The Person report (1959) and the Gordon-Howell report (1959) recommended three and two additional courses, respectively, beyond the two principles courses. We disagree with the propositions that economics requirements be uniform for all business majors, and argue that curriculum needs may be better served by varying the economics emphasis across the various business concentrations. Thus, a marketing student may be required to take an extra in course intermediate microeconomics, whereas this requirement may not apply

² The 1980 survey by Jesswein (1983) shows that, micro and macro principles are required in 95.3% and 94.7%, respectively, among the schools surveyed. The requirements for advanced economics courses were as follows: micro theory, 24.3%; macro theory, 18.3%, money and banking, 17.2%; managerial economics, 9.5%; and others such as labor economics, business fluctuations etc., 34.3%.

to an accounting student who may benefit more from an additional course in advanced accounting. Curriculum designing need not be ad hoc or based on general notions (often vague) of what is needed. Instead, we argue that it must be based on rigorous empirical analysis. Admittedly, the significance of economic education in fostering success in a particular business area likely would vary by institution. This makes a strong case for making curriculum design dynamic. To our knowledge, such a study does not exist, and this paper partially fills a gap in knowledge and is thus a contribution to the literature.

The rest of the paper is organized as follows. Section II describes data and methodology. Section III reports the findings. Section IV provides conclusions based on the findings of the paper.

II. DATA AND METHODOLOGY

The institutional setting for the study is Utah Valley State College (UVSC), a relatively large four-year State supported institution in Utah with an enrollment of about 25000 students. The business program here is AACSB accredited. Its graduates have often been recognized for earning distinction not only the local job markets but also in national public and private institutions and in nationally accredited graduate programs. The College as whole is regionally accredited.

Data for the research has been compiled from the transcripts of all business graduates for the for the April graduating classes for 2002 – 2005³. A potential problem with time varying data is lack uniformity because of instructor turnovers as they relate to different graduating classes. The use of one single semester's data does not completely eliminate the problem and bias can still enter due to grading by individual instructors. For UVSC this does not appear to present any serious problem for two reasons First, the turnover rate among business instructors for the study period was not very high. Second, within semesters, variation in grading for the same course taught by different instructors may be considered reasonable because with multiple sections for the same course usually are taught by the same instructor with the possibility of some adjuncts teaching. Although students who transferred sixty or more credit hours from other two year colleges represents a relatively small proportion, to further insure data uniformity, they were excluded to eliminate the effect of the transfer students from our data sample.

³ Majority of the students graduate in April are included but the small number graduating in December but was not.

The empirical methodology involves fitting an educational production function. For our purpose, students' GPA in all upper level courses (3000/ 4000) in a particular concentration⁴ is used as the dependent variable. Generally, data representing composite GPA includes economic principles and some lower division (1000 and 2000 level) business core courses such as marketing principles which are taken at the sophomore level. This implies that some lower division business core courses might have been completed either before or concurrently with one of the economics principles course. That would make it difficult to discern a relationship between GPA in lower division in business courses (thus composite business GPA) and economics knowledge.

Measurement and definition of the independent variables used in the model are provided below. These includes: general academic ability, extra normal ability in economics i.e. proficiency in economics beyond what can be explained by general academic ability, sex, and age. Specific knowledge in the foundation course in business may affect performances the advanced courses in the same area. So, a measure of proficiency needs to be included as explanatory variable. Grades as measure of proficiency reflect two things - students' general academic and any extra normal ability (inability) which can cause grades to deviate from what is warranted by general academic ability. Since a measure of general academic ability (36 credit hours of general education courses) has already been included among the explanatory variables, extra normal performance in the foundation courses⁵ is used as a proxy to capture the remaining effect of foundation level skills on performance in the advanced business courses.

The relationship posited is:

$$\text{HGPA}_i = f(\text{LGPA}, \text{EECON}_j, \text{ELGPA}_i, \text{SEX}, \text{AGE}) \quad \text{Eq. 1}$$

Where,

HGPA_i = GPA in the upper division courses in a particular business concentration, i , where i = accounting, finance, marketing, or management.

LGPA = a student's GPA in the general studies program, a proxy for general academic ability.

⁴ Concentrations are in Marketing, Finance, and Management while Accounting offers its own degree.

EECON_j = extra normal grade (performance) in an economics principles course i.e. portion of the grade unexplained by general academic ability: where j = micro or macroeconomics.

ELGPAC_i = extra normal GPA in the lower division (foundation) courses in a concentration.

SEX = a binary variable: 1 if male; 0 if female.

AGE = a binary variable: 1 if a student's age was less than 26 at graduation; 0 otherwise.

To obtain a measure of the extra normal performances in economics and the foundation courses in business, the following auxiliary regressions were estimated:

$$\text{ECON}_j = a_0 + a_1 \text{LGPA} + u_i \quad \text{Eq. 2}$$

$$\text{LGPAC}_i = b_0 + b_1 \text{LGPA} + v_i \quad \text{Eq. 3}$$

where:

ECON_j = grade in an economics principles course, and LGPAC_i is the lower division GPA in the foundation courses in a particular business concentration. The residuals from these equations are then employed to measure the respective extra normal abilities i.e.

(Estimated) $u_i = \text{EECON}_j$ and

(Estimated) $v_i = \text{ELGPAC}_i$.

A varying number of independent variables have been used in previous studies employing an educational production function. The choice of the variables has usually been constrained by the availability of data. Two variables, popular in other studies and have been considered relevant are; race and effort. For the current purpose race does not seem to be important in the context of UVSC. The vast majority of the students are local and Caucasian so has not been included. With minority students representing less than 1% of the population, their exclusion is well justified. While efforts as a variable is quite attractive a priori, however, studies by Becker and Salemi

⁵ Managerial and Financial Accounting, Business Computer Proficiency, Intro Calculus, Business Communication,

(1977) , Siegfried, and Fels (1979), Allison (1982), Manahan (1983), Grimes Niss and (1991) show that effect of effort on performance is insignificant. Therefore, evidence suggests that econometric problem (due to missing variable, the more serious kind of specification problem) is unlikely to be created by excluding effort as a variable.

III. RESULTS

OLS regression results are presented Table-1 for micro and in Table-2 for macroeconomics course. The results show the impact of extra normal ability in economics on performance in higher business courses varies across the four disciplines. For Finance, the microeconomics variable is significant at the 5% level, whereas macroeconomics variable is significant at the 1% level. This is expected due to interrelationship between finance and economics both in content and methodology. The greater significance of the macroeconomics variable may be puzzling. However, one should not attach much significance to this difference as it reflects the nature of the advanced finance courses. The contents of these courses show that many macroeconomic concepts pertaining to money and capital markets have repeated applications in portfolio investments, financial management, institutions, and bank management; but they apply much less so in the advanced corporate finance and small business finance courses. On the other hand, microeconomics has greater applications in the advanced corporate finance and small business finance courses, and less so in the four other advanced finance courses. Thus, although in general both micro- and macroeconomics are relevant in all advanced courses, the majority offered at UVSC is more macro-oriented, which rationalizes the greater significance of the macro variable.

In marketing, the microeconomics variable is significant, but the macroeconomics component is not. The result is not unexpected because most marketing areas such as marketing management, sales management, marketing research, advertising and sales promotion discuss issues that are rooted in microeconomics. In both accounting management, neither of the economics variables is significant, essentially reflecting that the use of economics in these areas does not go beyond the rudimentary understanding of the basic concepts. For example, in cost accounting, elementary knowledge of cost concepts suffice; sophisticated theories of firm's cost structure contributes little, if any, to the make up for cost accounting. Similar analogy applies to other areas of accounting where simple understanding of the economic concepts rather than its deeper analytic

structure should be the relevant prerequisite. A parallel argument applies for management too. Although the use of economics is somewhat more involved in management (relative to accounting), than other managerial economics, refined understanding in conceptually involved areas such as, utility maximization, consumer's surplus, cost or market structure etc., and macroeconomic analysis as a whole is not generally significant.

VI. CONCLUSIONS

The study aims at identifying whether economic knowledge beyond the level of comprehension expected from a student's general academic ability has a differential impact on subsequent performances in various business areas of the discipline, and to draw some tentative inferences about the level of economic education appropriate for each of the areas. Our dependent variable is the average grade of higher division courses in a given area.

Our results show that there is a clear case for further economics training for those taking finance and marketing beyond the current requirement of two principles courses, typical in most business programs. For accounting and management, limiting to the principles course alone appears adequate at this time.

Our results tend not to support the inferences made in some earlier reports requiring more extensive economics training for all business students. However, given that education is an intricate process, one can not draw definite conclusions based on a single study. Similar research needs be conducted for other institutions, especially the larger ones where a much wider choice of business courses is offered, to add further insights into the issue.

The relation found for this institution may not be general suggesting that curriculum planning should be based on specific needs within a dynamic setting. Perhaps students' can be better served if curriculum planning is evaluated periodically, monitored properly and adjusted to reflect the changing context. One point is clear that such plan need not be ad hoc rather be based on rigorous empirical research. Each institution would help their constituents better if they conducted their own independent research.

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Table 1**Regression Estimates of Student Performances in the Higher Division Courses of Various Business Concentrations (Microeconomics)**

Variable	HGPA Finance	HGPA Marketing	HGPA Accounting	HGPA Management	
Constant	0.554 (0.876)	1.361*** (4.348)	- 0.387 (- 1.141)	1.687*** (4.197)	
LGPA	0.718*** (3.482)	0.746*** (5.245)	1.164*** (11.041)	0.556*** (4.531)	
EECON (Micro)	0.272** (2.145)	0.167* (2.010)	0.011 (0.087)	- 0.018 (- 0.371)	
ELGPAC _i	0.043 (0.324)	0.140 (1.231)	0.429*** (4.398)	0.128 (1.401)	
GENDER	0.067 (0.280)	- 0.096 (-0.335)	0.061 (0.582)	0.013 (0.019)	
AGE	0.419 (1.075)	- 0.058 (- 0.287)	- 0.329** (-2.183)	0.103 (0.678)	
F – Statistic	5.293	17.371	26.776	13.952	
R – Squared	0.381	0.684	0.598	0.301	
N	49	46	96	168	

Notes: t-statistics are given in parentheses, * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level. All F statistics are significant.

Table 2**Regression Estimates of Student Performances in the Higher Division Courses of Various Business Concentrations (Macroeconomics)**

Variable	HGPA Finance	HGPA Marketing	HGPA Accounting	HGPA Management	
Constant	0.769 (1.439)	1.497*** (3.096)	- 0.356 (- 1.127)	1.650*** (4.486)	
LGPA	0.682*** (3.649)	0.704*** (4.388)	1.129*** (10.118)	0.583*** (4.547)	
EECON (Micro)	0.387*** 3.814	0.084 (0.916)	0.059 (1.098)	0.088 (1.297)	
ELGPAC _i	0.022 (0.171)	0.143 (0.985)	0.418*** (4.772)	0.109 (1.265)	
GENDER	0.020 (0.100)	- 0.047 (- 0.288)	0.339 (0.341)	- 0.037 (- 0.316)	
AGE	0.198 (0.713)	- 0.118 (- 1.007)	- 0.297** (- 2.117)	0.141 (1.038)	
F – Statistic	8.362	11.851	24.155	11.862	
R – Squared	0.493	0.597	0.573	0.268	
N	49	46	96	168	

Notes: t-statistics are given in parentheses, * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level. All F statistics are significant.