

TEACHING INTRODUCTORY ECONOMICS TO STUDENTS OF DIFFERENT MAJORS

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ABSTRACT

Introductory economics courses have diverse pool of students with varied objectives. The programs offering introductory economics also have specific objectives in mind. This variation deserves attention to find appropriate content, teaching method and resources. This paper explores (i) the appropriateness of content, breadth and depth of economics concept provided to different disciplines, (ii) mode of delivery and teaching techniques with varying objectives and (iii) the suitability of resource materials. It is concluded that different programs need to adapt the content and teaching technique to satisfy their needs, and collaborative approach led by the economics instructor would be the way to go.

INTRODUCTION

Introductory economics is taught to a wide variety of students seeking various career objectives and educational paths. Although the principal focus of teaching and learning introductory economics is commonly directed to the students majoring in economics, undergraduate students majoring in several liberal arts disciplines, sciences, businesses and engineering take introductory economics as part of their program requirements. Students in many diploma, career and certificate programs also have to take introductory economics. In fact, the number of economics majors taking introductory economics is far outweighed by the number of non-economics majors. Decades ago, Saunders (1980) rightfully pointed out that there are more students enrolled in an introductory economics course than those enrolled in all other economics courses combined. Faculty members also devote more of their class times to introductory courses than they do in other courses. The appropriateness of delivery, content, depth and breadth of introductory economics courses vary according to the learner pool. Students intending to major in economics or other related liberal arts disciplines or sciences typically take a sequence of two introductory courses, introductory microeconomics and introductory macroeconomics. On the other hand, students enrolled in many diploma or certificate programs or some engineering programs receive introductory economics as a single course combining some contents from both microeconomics and macroeconomics, and adding extra content from financial and investment economics. On the other hand, some business programs require more than the two introductory level economics courses, i.e., intermediate microeconomics or managerial economics.

Introductory economics courses are commonly taught as the foundation to Bachelor-degree programs in liberal arts and businesses. In most cases, students take a semester-long introductory microeconomics and a semester-long introductory macroeconomics or a two-semester-long sequence of microeconomics and macroeconomics. The content, depth and breadth vary from institution to institution and from program to program, but they have certain degree of similarity. In many diploma programs in business or engineering, the combined microeconomics and macroeconomics is taught in a one-semester course shredding some of the content, depth and breadth. These courses are designed based on the need and appropriateness of the program. These

are done either by the programs themselves or in consultation with the discipline of economics. A collaborative effort between the program specialists and the subject matter specialists, economist in this case, would result a more appropriate outcome.

Although finding an appropriate method of teaching introductory economics to different majors is an important issue, not much effort has been given to this by researchers on economic education. In this paper, I would like to make an effort to explore (i) the appropriateness of content, breadth and depth of economics concept to different disciplines, (ii) mode of delivery and teaching techniques suitable for different disciplines with varying objectives, (iii) the suitability of textbooks and teaching resources to the appropriate level, and (iv) the benefits of collaborations between economists and the respective disciplines for enhanced learning process. The entire analysis will be done in the context of a small undergraduate university perspective, where introductory economics courses are taught by economics instructors to its own major and minor as well as to several other programs including sciences, businesses and engineering. Existing relevant literature will also be looked at to substantiate the argument made in this paper.

THE DIVERSE STUDENT POOL

Introductory economics receives a diverse pool of students with wide range of objectives. Although an economics instructor may tend to prepare his/her students for making them successful in undergraduate programs, and eventually to go to graduate school, the vast majority of students deviate from that objective. Most students from introductory class do not major in economics. Even those who major in economics, very few go to graduate schools. Only from large universities with strong academic, research and policy analyses components, certain number of student moves forward to graduate studies leading to master or doctoral degrees. In relation to the amount of students taking introductory economics courses, the number of economics graduates going to graduate schools is minor. And any effort focusing only on those students would be a clear disservice to others.

Students enrolled in introductory economics class move to a variety of areas at different levels. A large number of students go to business schools, some to other liberal art disciplines, some to sciences and some to engineering. The figure below presents a summary schematic diagram of such a situation.

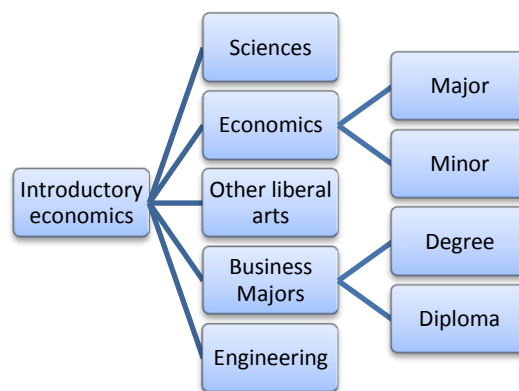


Figure 1. Schematic diagram of servicing introductory economics to different majors.

The knowledge and skills students receive from introductory economics classes get used in several different tracks or may become obsolete with no use except the usual day-to-day use in general citizenship. How much of the knowledge and skills get used and how much become obsolete depend on the content and nature of teaching and the students decision to pick the route

to excel. The commonly known Stigler hypothesis (Stigler, 1963) casted a doubt on the use and retention of information presented in introductory economics courses although later on Saunders (1980) concluded that the hypothesis was unduly pessimistic and introductory economics do have a long lasting effect on students. However, the extent of this effect may not be the same for all as it depends on several factors. Which discipline the student majoring in is certainly an important factor. What kind of a job market the student striding for is another factor. Whether the student's further study is on professional fields or higher studies in a basic social science discipline is another among many others. Among all these, I'll focus on the disciplines students ought to proceed and how those affect teaching and learning desires of introductory economics. In the next few paragraphs, I'll make an effort to find the need and suitability of two such disciplines, business and engineering.

A large number of students enrolled in introductory economics major in different disciplines of business and management studies. Students pursuing a program in business have different expectation from economics courses, both in terms of its content and in terms of delivery of course materials. This apparently requires a separate set of syllabus, a different instructor, a different textbook or may even a different classroom. However, difference in these resources does not guarantee the appropriate delivery of the right content. The content has to fit with the objectives of the program, the level and delivery have to be congenial so that the students can find it interesting, the textbooks and supplementary reading materials have to be relevant and appealing to students. Miller (2000) suggested a curriculum change incorporating a cross-functional integration of economics into the business curriculum as a module. According to Miller (2000), such integration is costly but the cost is easily outweighed by the benefits as it enriches students, economics faculty, other business faculty and the institution as a whole.

TEACHING ECONOMICS TO BUSINESS STUDENTS

Teaching introductory economics to business students is different from teaching the same to economics students. Even within business majors, teaching introductory economics to degree program students would be different from diploma program students. In some cases, especially for diploma programs, there are separate courses on business economics to introduce economics concepts. A business economics course and its adopted textbook are typically geared toward business students. Its coverage composed of both introductory microeconomics and macroeconomics but with a less breadth and depth. Often, it also includes some common business related topics, which are not built-in in traditional introductory textbooks. Since these courses and textbooks are prepared for business students and are not used for students in economics and other majors, a discussion on this not warranted. Rather, courses and texts used for both business and other majors are our focus, which is done in many cases for business degree or applied degree programs.

The course content, teaching techniques and textbooks in introductory economics courses are commonly focused toward students majoring in economics. When the same course materials, teaching techniques and textbooks are used for business students, certain degree of modification / adaptation is necessary. While teaching introductory economics to business students, the instructor should have the freedom to present the appropriate content to the students in a palatable format using a suitable textbook. This does not mean to change or modify the actual content completely but may simply be emphasizing the area more relevant to business students and de-emphasizing the area less relevant to them. This may include choice of vocabulary, use of case studies and examples which are familiar to business students. As a preparation for this course, the instructor may need to have some idea on what other courses the students take in the program so as to bring examples that relate to other courses. As an example, Sawyer and Sprinkle (2002)

suggested a reverse approach to introduce international economics. First, they presented the figures of GDP, population, export and import of different countries and 50 US states, and then they introduced the concept of international trade and comparative advantage. They found this approach useful in increasing students' interest in international economics.

Principles and concepts covered in introductory courses are, in general, broad and few of those may not be completely relevant to businesses. For example, social welfare implications of taxes or subsidies or price controls are of less important to a business manager, and a business student would find studying those redundant. Overly wide coverage of economics principles in introductory courses generates apprehension of business students toward economics courses. Colander and Klamer (1987) found that even graduate students are confused about many principles and concepts they learn in their principles courses. In general, introductory economics covers too many topics with too little depth.

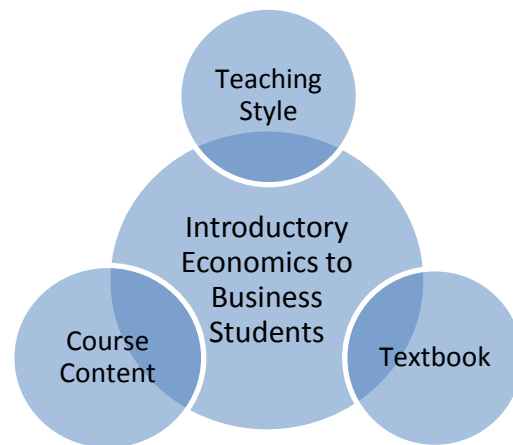


Figure 2. Areas of adaptation needed to make an introductory economics more appropriate to business students.

The second aspect is to offer a teaching technique amiable to business students. Most business students at a particular stage of the program belong to cohorts, and they are well connected among them as they are together in many courses. A teaching method involving some students may make the entire cohort of students interesting. Becker (2001) and Hoyt (2003) emphasized on changing teaching style to make it more appealing to students. This problem was identified even before by economists in teaching first-year university level economics courses (Armento, 1987; Mayhew et al., 1990; Salemi et al., 1996). Economics instructors have been responding to this problem by making concerted efforts through the incorporation of various teaching techniques (Quddus and Bussing-Burks, 1997; Parks, 1999; Smith, 2002; Caviglia-Harris, 2003; Dickie, 2006; Vo and Morris, 2006; Van der Merwe, 2006, 2007). Woodward (2008) elegantly presented the differences in teaching techniques and course content between students of economics major and business major in respect of (i) purpose and objectives, (ii) relevancy and activity, and (iii) abstraction versus application. He listed eight items in his suggestion to improve teaching introductory economics to business students. These are (1) discarding the irrelevant content and explore only those which are relevant to business students, (2) presenting economics principles from the viewpoint of a manager and not from the perspective of a general citizen or policy maker, (3) bringing activities in class and refrain from only chalk and talk, (4) using business acronyms and business terminologies instead of economics terminologies, (5) illustrating relevant examples and cases instead of a hypothesized example, (6) conferring with other relevant topic or subject instead of presenting in isolation, (7) presenting economics ideas in a fun way that students will enjoy and learn, and (8) using media.

Another aspect of teaching introductory economics to business students is to select an appropriate set of teaching resources, textbook for example. There are over a dozen textbooks available in the market among which the instructor selects one of his/her choice. Although the coverage in all these textbooks are more or less same, there are differences in rigor, approach of presentation, depth of discussion of topics, arrangement of topics, use of examples to illustrate principles, etc. Some textbooks are more rigorous in theory but others are more practical oriented. While judging economics textbooks, Dawson (2007) favored textbooks that introduce students conflicting ideas and views as those provide students choices. Although philosophically, this sounds fine for students in economics major, but a business student is better off having succinct and non-controversial information. Pyne (2007) after examining the impact of seven leading introductory economics textbooks on students' performance in higher level courses, he found hard to refute the hypothesis that most textbooks produce more or less identical results in student learning. However, his studies were focused on the impact of higher level economics course, not business courses. Only further studies can shed more light on this.

TEACHING ECONOMICS TO ENGINEERING STUDENTS

Teaching introductory economics to engineers is different from teaching the same to economics or business majors. We all understand that engineering is a technical subject requiring decision making on physical aspects. Such decision requires sufficient information on the process itself as well as on physical resources. One of my graduate school professor once mentioned "An engineer can become an economist but an economist cannot become an engineer." Rashid (2001) provided a comprehensive relational analysis between engineers and economists in historical and evolutionary perspective. Although his analysis was not focused on the teaching introductory economics to beginning (or would be) engineers, but it certainly shed some light in the differences in development of ideas and scientific processes.

Most engineering schools teach introductory economics course to their students by their own instructors. In many ways, the thought process of engineers and economists is similar. Purvinis (2002) examined the similarities and differences in the use of mathematical procedures in economics and engineering. In quantitative terms, engineers are more inclined toward mathematical relations as they deal with physical aspects; whereas, economists are more inclined toward statistical or probabilistic quantification as they have to deal with human component of decision making. What is more though, economics has other non-quantitative and philosophical aspects, which are absent in engineering. The content of introductory economics courses for engineers has to be different from economics and business majors simply because of the nature of the discipline. An engineer may need to do a detailed cost analysis of a physical plant, but will not have to be aware of the social consequence in terms of the reduction of consumer surplus. Plus, often engineering economics includes financial and investment decision analysis what economists often shy away from until at a senior level. A comparative chart of general contents covering in introductory economics, business economics and engineering economics is provided in the Appendix.

In terms of presentation, engineering economics requires more demonstration and exercise simply because of its more numerical content. Dahm (2003) presented a simulated investment example in his class which was well received by students. Similar experiments, demonstrations or simulations have been tried in other introductory courses. In-class experimentations and demonstrations (Dickie, 2006; Hawtrey, 2007; Sawler, 2007; Mitchell, 2008), introducing group learning techniques (Moore, 1998) and incorporating case studies in teaching modules (Smith, 2007) are some of many efforts made in the past by economics instructors. However, discipline

specific examples are certainly more appealing to students, and in that, instructors teaching engineering economics course should find examples within the field of engineering.

As for the textbooks, most engineering economics courses use separate textbooks for engineering students. The rationale is primarily driven by the content. The content between economics and business economics are very close, but that of engineering is quite different.

WHAT CAN AND SHOULD BE DONE

From the previous sections, it is clear that the fundamental principles of economics are universal but the needs of different programs are different. Economics majors desire to learn economics principles to form a solid foundation so as to build on for further development in theory, methodology and application on any field, be that health care, labor, natural resource, environment, etc. Business economics, however, aspires for a foundation that supports business decision making and management, not necessarily only profit seeking business but any business and under the given business environment. Engineering economics intends to make a foundation on the physical decision making based on the real world with some degree of uncertainty.

No matter where the application is, the fundamental basis is the principles of economics and collaboration between economists and the subject matter specialists is a necessary component of successful teaching and learning of introductory economics to the specific discipline. Now the question may come, who should take the lead? Douglas (1979) rightfully pointed out that the initiative lies with the economists as they are ones having expertise on the principles and concepts. Economists have take a pro-active role in making economics courses more relevant and applicable to the receivers, in this case the relevant programs, business, engineering, etc. Economics courses are to be taught by economists. However, economics courses to business students should be taught by instructors who have sufficient background and interest in businesses and business programs. Similarly, economics courses to engineering students should be taught by instructors who have genuine interest and knowledge on engineering programs. Both economists and the relevant programs should conduct extensive research to improve teaching and learning of introductory economics to majors other than economics, without which an appropriate content and method of teaching will not be found.

CONCLUSION

Introductory economics is taught to students who intend to major in a variety of disciplines. The content of introductory economics courses vary depending on the discipline they are offered although the variation is not always extensive. But the magnitude of such variation is large enough to deserve attention for appropriateness of content according to needs and desires of the program. The teaching method should relate economics principles with the discipline or program so that the students are receptive. The selection of textbook is also another aspect to be looked at. The instructor, an expert on economics, and the representative of the respective discipline, maybe the program leader who is an expert on the discipline, should collaborate to find appropriate teaching content, technique or method and textbook. The collaboration is the key and in that the economics instructor should take the lead.

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Appendix: Comparison between overall contents in economics, business economics and engineering economics courses

Economics	Business Economics	Engineering Economics
Basic principles	Economic decisions	Making economic decisions
Economic thought	Markets	Cost and cost estimates
Demand, supply and market	The firm	Interest rates and
Elasticity	Firm's production, cost and	equivalences
Market and government	revenue	Present worth analysis
policies	Firms in competitive,	Cash flow analysis
Consumer, producer and	monopoly, monopolistic	Rate of return analysis
market efficiency	competition & oligopoly	Marginal analysis
Firm's production, cost &	markets	Risk and uncertainty of
revenue	Market power & concentration	events
Firms in competitive,	Investment policy and	Income, depreciation and
monopoly, monopolistic	appraisal	cash flow
competition & oligopoly	Government policies on	Applications of economic
markets	businesses	valuation
Factor markets	Factor markets	Capital budgeting decisions
International trade	Macro-economy – GDP, price	Tax, subsidy and cash flow
Market failure – externalities	levels	Economic analysis of public
and public goods	Unemployment, inflation	sectors
Macro-economy - GDP, price	Economic growth & business	
levels	cycle	
Unemployment, inflation	Fiscal and monetary policy	
Aggregate supply and	International trade	
aggregate demand	Balance of payment &	
Economic growth, fiscal and	exchange rate	
monetary policy	Trans-nationalization &	
Inflation and unemployment	Globalization	
control		
Economy in the long run		