ECONOMICS IN THE INTEGRATED BUSINESS CURRICULUM: IN or OUT?

Ismail H. Genc, University of Idaho
Selahattin Bekmez, Mugla University
Jon R. Miller, University of Idaho

ABSTRACT

We analyze the unique experiment of teaching junior level economics to business students at the University of Idaho within the framework of the Integrated Business Curriculum (IBC). Economics was originally directly embedded in the IBC program, but later became an independent course to be taught in conjunction with the IBC. We look at the costs and benefits of teaching economics within and outside of IBC. We use concepts and criteria borrowed from software engineering, to develop what we call The Three C's of Curriculum Development, Cohesion, Coupling and Cost.

JEL Classification: (Primary) A22, (Secondary) I21

INTRODUCTION

The idea of integrating a common body of business courses has gained wide acceptance within the academic and professional business communities. In recent years, the American Assembly of Collegiate Schools of Business (AACSB) has been actively promoting such integration, noting that without integration the traditional business education could become out of touch with the reality of the business world (Smith, 1995).

The general literature on various innovative teaching methods has grown dramatically as a response to demands for change and is far too large to list all here. (However, interested readers may also refer to Stover et al. (1997), Dangerfield and Bailey (1996), and Cluskey et al. (2001) on issues related to integrated undergraduate education.) We focus here on studies, which concentrate on devising methods in business schools to improve the managerial skills of the graduates (among others, see Pharr and Morris (1997), Byrne (1993), and Lataif (1992)). The

arguments about the improvement usually focus on adapting a system that has "cross-functional" integration or interdisciplinary and team-based approaches to business problems (Miller, 2000).

A common point in this literature is that business students should learn management skills in a team-based environment, not in the traditional textbook way. Many companies are dissatisfied with the education and research coming out of traditional business programs, and thus have turned more to in-house training (Leonard, 1992). Also, as Mintzberg (1992) points out, the graduates of business schools are parachuted into mid-level companies with authority over people who have vast knowledge in on-the-ground business and customer relations, thus creating a two-tier system. A boss has formal education, but not enough experience on one side, and an employee knows the customers, market conditions, and business environment, but has less formal education.

This in no way means that everybody has dropped the so-called traditional teaching models. As a matter of fact Jacobs (1991), Pharr et. al. (1998), Cotton (1982), St. Clair and Hough (1992) and Mason (1996) warn those who rush to integrative programs about problems created by the newly invented methods such as teacher knowledge, assessment, commitment from the faculty members and their institutions.

A few undergraduate business programs listened to the demands of the business world and attempted to develop new integrative programs. However, the scope and content of an integrative program varies from school to school, or even from year to year within the same school. No undergraduate program, however, is more integrated than that of the University of Idaho College of Business and Economics (UI CBE).

Furthermore, many business programs embarked on a curriculum development process to survive in the competitive educational market, and especially to improve employment prospects for their graduates. The College of Business and Economics at the University of Idaho is an example of an institution that has adopted the policy to review the curriculum constantly. Its Integrated Business Curriculum (IBC) is the result of these efforts.

One specific challenge for program designers is to incorporate the relevant disciplines of economics and accounting into the program. In this study, we consider the position of economics vis-à-vis the IBC at the UICBE. In the first format of the IBC, economics was a direct part of the program, spread throughout it. In the latter format, it is a separate course with close cooperation with the IBC.

Miller (2000) analyzes the costs and benefits of fully integrating economics into IBC as in the earlier format. Nevertheless, the later innovation in the structure of the program, which can be attributed partly to the academic aspirations but also to economic constraints, as well, necessitates a fresh look at the pluses and minuses of economics education within the integrated business curriculum framework.

In other words, in this analysis, we try to compare the cost and benefit of two alternative methods of economic education within the integrated business education framework. The first option is the full merger of the economics material within the integrated business curriculum, not necessarily as a distinctively identified module but rather as support material to all business issues being discussed in the modules. The second option is to take economics out of the integrated business curriculum and make it into a semi-independent course under a different title, but in close cooperation with the integrated business curriculum program.

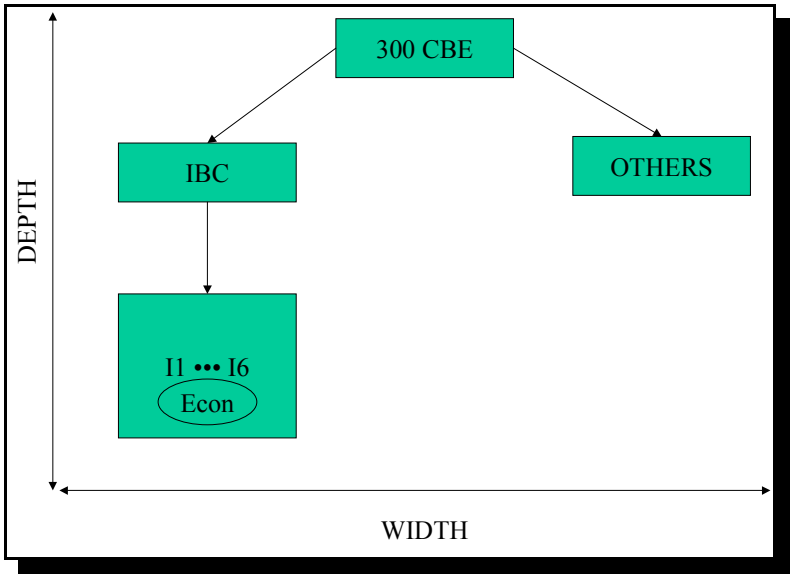
We will try to evaluate the costs and benefits of the two arrangements with the help of criteria borrowed from software engineering and economics.

ECONOMICS IN THE UNIVERSITY OF IDAHO IBC

Faculty in the IBC team-teach six cross functional, interdisciplinary junior-level business modules made up of the content previously found in the stand-alone courses, marketing, finance, production and operations management, information systems, human resource management, quantitative methods, and international business. The whole program is developed on an hour-by-hour basis for the entire year by the faculty team during the summer. It normally is spread over two consecutive semesters

Economics now has a special status in the program. Originally economics was fully integrated into IBC like the standard business disciplines. But in the most recent format, economics is taken out of the main body of IBC, delegating its content to a separate course to be taught in coordination with it. Accounting, too, has been recently incorporated into the system in a manner similar to that of economics.

Figure 1: The Structure of IBC with Integration of Economics

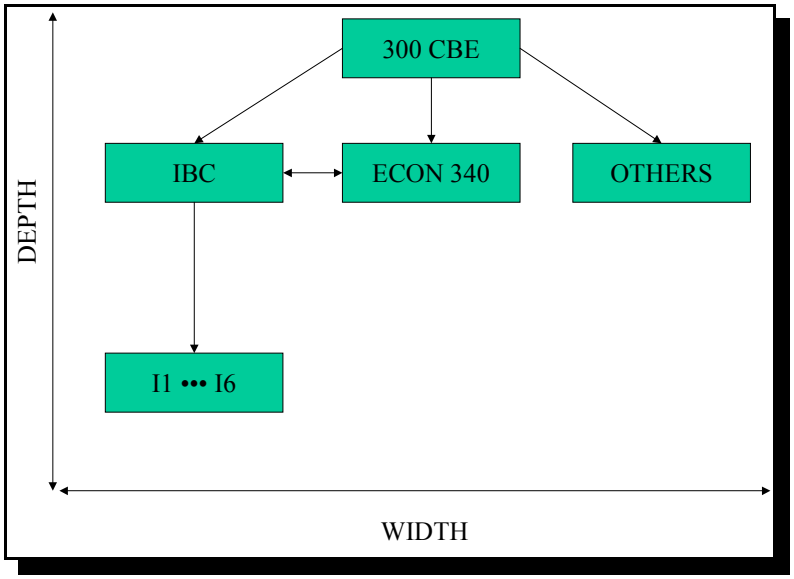


The 300 CBE refers to the junior level courses, which are composed of IBC modules and other courses (OTHERS). There are 6 IBC modules I1 through I6. Economics is spread throughout the IBC modules in this setup. Depth shows the vertical stratification of the junior level courses while Width indicates such an organizational structure in the horizontal sense.

Figures 1 and 2 represent the junior level course structure in the CBE with specific reference to economics. The figures represent the difference in breadth and depth of the junior-level program between the two versions of IBC. Note that the depth of the program remains the same in both versions, but that the program becomes wider in the new version. These diagrams facilitate our use of software engineering concepts in evaluating this curriculum change.

In software engineering, the courses shown at a lower level on the vertical axes of both figures are called "sub-ordinate." Likewise, the courses placed at a higher rank are called "superordinate." Thus, the original format, in which economics is spread among the modules of IBC, economics is subordinate to the main IBC modules, because they are the courses to be taught with a support from economics. The new classification puts economics at the same level with these les.

Figure 2: The Structure of IBC Without Integration of Economics



The notation remains as in the previous picture with the addition of Econ 340, Managerial Economics, as an independent course in the new setup.

Most of the economics content has been kept with the move to the new system, although certain minor adjustments have been made to the topic coverage in the new structure. Error! Reference source not found. shows the contents of the new economics course.

Table 1: Managerial Economics Contents		
Topic	Hours	Module
Introduction	1	
Free Riders and Team Production	1	Team Building
Game Theory and Team production	1	Team Building
Voting and Social Choice	1	Team Building
Price Discrimination	1	Business Systems-Business Operation Decision
Exchange Rate Determination	2	Business Systems
International Economics	2	Business Systems
Balance of Payments	2	Business Systems
Demand Estimation	2	Product Process Planning
Data Analysis and Graphs	1	Planning & Decision Making
Multivariate Linear Regression	5	Planning & Decision Making
Sources & Interpretation of Economic Forecasts	1	Planning & Decision Making
Business Cycles	1	Planning & Decision Making
Economics of Information	2	Management Firm Resource
Productivity and Cost	1	Management Firm Resource
Productivity and the Service Sector	1	Management Firm Resource
Pricing	1	Business Operation Decision
Auctions	2	Business Operation Decision
First Day	1	
Last Day Wrap-up	1	
Midterm	1	
Final Examination	0	
Total	30	

THE THREE Cs OF CURRICULUM EVALUATION

The biggest hurdle in analysis of curriculum change is surely the yardstick with which the cost-benefit analysis is carried out. Though we recognize the near-impossibility of creating a universally acceptable quantitative criterion, we employ a qualitative analysis, based on concepts borrowed from software engineering. These concepts suggest the characteristics of "good" software, and we believe they can apply to innovations in the education field as well. More specifically, we will make use of the software engineering concepts cohesion and coupling. By adding a third concept, namely cost, we have what we call the *Three Cs of Curriculum Evaluation.* To our knowledge, this is a novel method of interdisciplinary program evaluation.

In software engineering, Stevens et al (1974) were the first to introduce the notion of cohesion, an ordinal scale of seven levels that describes the degree to which the actions performed by a module contribute to a unified function. That is, "cohesion is a measure of one-ness of a module" (Rinker, 2002). Cohesion shows the functional strength of a module.

According to Stevens et al. (1974) and Yourdan and Constantine (1979) the idea of coupling was introduced about the same time as cohesion. Coupling is "a measure of interconnection among modules" (Rinker, 2002). In computer science jargon high cohesion and low coupling are desirable characteristics of good software. Nevertheless, empirical research has shown that most of the time the two concepts are inversely correlated for any software program. These concepts, cohesion and coupling, have found their places in standard computer science textbooks. (See for example, Friedman and Friedman (2000).) Cost, on the other hand, is the economic opportunity cost as explained further below.

In applying these criteria to the question at hand, we try to analyze "quality improvements" obtained as a result of a policy change, Q, from one mode of economics instruction to another. Q is assumed to be directly proportional to the variables, cohesion, coupling, and cost, to yield a relationship that can be expressed as

$$1. \qquad Q=f(\text{Cohesion, Coupling, Cost}) \tag{1}$$

where f stands for any functional form. The exact specification of f turns out to be immaterial here. The question, we have to analyze is the partial impact of the right hand side variables on the dependent variable.

Slightly drifting away from software engineering methods of evaluation, we concentrate on the cost and benefit of policy changes on the subjects affected from these changes. Thus, in the rest of the paper, we define the 3C concepts within the framework of economics, and carry out a cost-benefit analysis for several categories of individuals such as students, economics faculty, the UI CBE faculty, etc., who are directly or indirectly affected by the reorganization. The categories are based on the list identified by Miller (2000).

EVALUATION OF THE ECONOMICS/IBC CURRICULUM CHANGE

As in software engineering, we define cohesion as a measure of "one-ness" of the contents of the IBC program. In other words, if all the courses which are part of IBC serve one purpose only then is IBC highly cohesive. Any divergence from that phenomeonon contributes to dilution in the cohesiveness. The more cohesive a structure is, the more specialized it is in its job. Because economics is not a core business topic, and IBC is mainly a regrouping of the several business disciplines as mentioned above, taking economics out makes IBC more cohesive in this sense.

Coupling measures how each part within IBC connects to other parts. Although IBC becomes more cohesive with the exclusion of economics, it is a fact that all current modules of IBC need economics support in one way or another. Economics perhaps is the most common denominator of all modules. By taking economics out, it is more difficult to see the theoretical connection among topics considered within IBC. Thus, there is less coupling within IBC after the departure of economics. In fairness to software engineering, let us acknowledge that we are interpreting coupling in a totally different way here, which in a sense contradicts the measure of "good" software. We see more coupling to be better as opposed to worse as is the interpretation in software engineering.

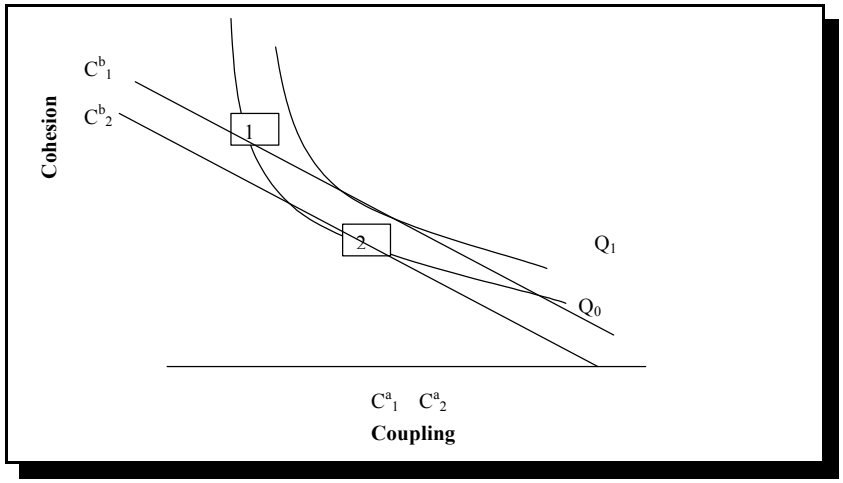
Cost is probably the most economically familiar concept of the Cs. We consider cost to be the opportunity cost of not having economics as part of IBC.

Our strategy is to look at the two scenarios, one with economics in IBC and other outside it, and consider the cohesion and coupling involved. We then relate this to the consideration of cost for the parties involved. This allows us to rewrite equation 1 for cost. Assume that for a given level of quality, Q0, the cost function can be expressed as

$$2. \qquad C=g(Cohesion, Coupling, Q0)$$

where g represents a functional form. Equation 2 is graphed in Figure 3. Graphically speaking, the cost of adopting coupling~cohesion combinations indicated by points 1 and 2 in the figure is given by the position of the isocost line running through each coupling~cohesion combination. The slope of the isocost line represents the subjective weights attached to each component. Needles to say, the cost weighting by students, faculty and administrators is an issue of conflict. (This may necessitate the consideration of yet another C, that is Conflict. Given the vast variety of users of a specific software program, this may very well apply to software engineering. We believe this is our give-back to Software Engineering!) This point is illustrated by the two sets of the isocost curves C^j_k where j=a, b and k=1, 2. Thus, the equilibrium point is obtained at the equality between the isocost and isoquant curves.

Figure 3: The Isoquant Isocost Map



Q_i refers to the levels of quality where Q_2 is higher quality than Q_1. The cost relativity is represented by the loci of the cost curves C^j_1 vs. C^j_2 where j=a and b. The rank of the cost schemes is $C^a_2 \geq C^a_1$ and $C^b_1 \geq C^b_2$.

We will next analyze the costs and benefits of the two alternative modes of teaching economics within the construction of IBC with the tools explained above.

ANALYSIS OF COSTS-BENEFITS OF ECONOMICS IN OR OUT OF IBC

Students

With economics out of IBC, the increased cohesiveness makes it easier for students to follow the material, because it is more closely connected. However, the relatively weaker coupling obtained in IBC following the departure of economics makes it more difficult for students to see the background of the discussions, and the links among business topics which are more often than not explainable with the help of the economic theory. The universal applicability of marginal analysis is just one example

Miller (2000) suggests that, the direct inclusion of economics into the IBC program was not questioned by students, who saw the economics in action. Student interest in economics topics within IBC was further apparent from the content of student presentations. The new format of IBC obviously makes that opportunity more difficult. In that sense, this is a disservice to students' learning experience. Even though most of the economics topics of the IBC program are carried over to the newly created IBC economics course, Managerial Economics, the new course is a one semester course, and the presentation of topics sometimes precedes, while sometimes comes quite later than the related IBC material.

From a students view point the opportunity cost of not having economics within IBC, but rather in the form of a separate course, means an additional class to register for, take exams in, etc. The testing in the separate course is unsurprisingly more detailed than the testing of economics concepts within the IBC program itself. Furthermore, even though it does not increase the upper level economics credit hour requirements, withdrawal of economics from IBC led to a 17 credit hour newly designed IBC plus a two credit hour managerial economics course in lieu of the previous 18 credit hour IBC program in total credit hours. The faculty made this choice, however, it increased required courses for the students.

IBC Economics Faculty

The economics faculty teaching the newly created IBC course, Managerial Economics, has the grand task of designing a more cohesive course out of the topics which were originally chosen to conveniently accommodate IBC needs. Topics ranging from microeconomics to macroeconomics, to international economics, to social choice theory, are difficult to justify teaching one after another unless a good connector is found. From experience in experimental versions of this course, we find that students most of the time seem to be wondering "why this topic now" unless a good explanation is provided. However, once the new course is developed and good connectors between topics are established, it seems to work more smoothly. We would advise that faculty make frequent references to IBC modules in justifying the content of such a course material. Nevertheless, as related IBC topics to be presented, it is still quite difficult to present a cohesive framework, especially in connection with the IBC material to which Managerial Economics is supposed to be a support.

Topics chosen from a wide scope of economics presented independently of IBC has low coupling. That is another challenge, which is in close proximity of the cohesion problem as identified above.

The biggest gain an IBC economics faculty gets from teaching outside of IBC can be stated in terms of the opportunity cost. The teaching load is much less in the newer format since economics faculty members are no longer involved with time-consuming student mentoring activities of IBC along with class attendance and faculty team meetings. The economics faculty members also gain full control of the tests and teaching style even though, the contents are not exclusively determined by him or her.

Non-IBC Economics Faculty and Economics Program

Of the 3Cs, cost seems to be the only relevant point of discussion for the non-IBC economics faculty. Miller (2000) states that although the involvement of economics faculty in IBC brought an extra burden on the economics faculty, which necessitated hiring temporary instructors to solve the teacher problem, it brought a better visibility of the economics field to the colleagues in the college.

College of Business and Economics Administration

Here, too, considering the cost side is the most relevant issue. The creation of managerial economics has extended the width of the junior level course offerings, as mentioned above while discussing Figure 1. This necessarily brings a heavier coordination task onto the shoulders of the college administrators, which is increased cost. Nevertheless, the original format would have required hiring more economics faulty to cover other economics classes since IBC has grown so much that assigning one economics faculty to each section was prohibitive in terms of cost.

CONCLUDING COMMENTS

In this paper, we analyzed the unique experiment of teaching junior level economics to business students at the University of Idaho within the framework of Integrated Business Curriculum (IBC). Economics was originally directly embedded in the IBC program, but later became an independent course to be taught in conjunction with the IBC. We looked at the costs and benefits of teaching economics within and outside of IBC. Such a policy change definitely affected several constituencies such as students, faculty and administrators. We developed what we call the Three C's of Curriculum Evaluation, that is, "Cohesion, Coupling and Cost," to analyze the impact of taking economics out of IBC on the affected parties. We benefited greatly from software engineering in computer science in developing the criteria. It is clear that these criteria can be applied to other educational policy consideration, as well. We hope such an analysis can help other schools better evaluate their curriculum change decisions.

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