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# **Proceedings of the Academy for Economics and Economic Education**

**October 12-15, 1999  
Las Vegas, Nevada**

**Jo Ann and Jim Carland  
Co-Editors  
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## **TRENDS IN INDUSTRY STRUCTURE IN THE RETAIL SECTOR**

**Louis H. Amato, University of North Carolina at Charlotte**  
**ltamato@email.uncc.edu**

**Christie H. Amato, University of North Carolina at Charlotte**  
**chamato@email.uncc.edu**

### **ABSTRACT**

*This paper offers descriptive evidence regarding the trend toward increasing concentration in U.S. retailing industries. The data are for the period 1977 to 1987 and cover many prominent retail industries including general merchandise stores, grocery stores, and drug stores. Concentration is measured by conventional four firm concentration ratios and by the percentage of total industry receipts and total assets contributed by firms from the largest asset size class contained in the Internal Revenue Service: Corporate Statistics of Income data. The descriptive findings presented in this paper are relevant to the teaching of economics and potentially for antitrust policy. From a teaching perspective, a trend toward increasing concentration in retailing suggests that retail examples should be included along side examples drawn from manufacturing when presenting oligopoly models. The findings are relevant from an antitrust perspective because increasing retail concentration suggests the need for antitrust enforcement agencies to more carefully scrutinize proposed mergers between large retail firms.*

### **INTRODUCTION**

Coverage of imperfectly competitive output markets in principles of economics texts has traditionally treated retail markets as monopolistically competitive, while confining the discussion of structure measures and oligopoly models to manufacturing. Colander (1995) and Parkin (1998) exemplify authors who offer only manufacturing examples to illustrate structure measures. Both provide Hirschman-Herfindahl index measures for selected manufacturing industries; Colander also includes four firm concentration ratios. On the other hand, authors of leading texts such as McConnell and Brue (1999), Boyes and Melvin (1999), and Hall and Lieberman (1998) present retail industries that contain large national firms as examples of monopolistically competitive industries. Specifically, McConnell and Brue cite dining out, Boyes and Melvin consider retail clothing stores including The Gap, The Limited and Limited Express, while Hall and Lieberman identify food markets among the industries that fit the structural conditions of monopolistic competition. The implicit assumption of these and most other economics texts is that retailing industries are too atomistic for coordinated pricing to occur and that relevant pricing models for retailing should posit independent behavior.

While a dichotomy that describes retailing as monopolistic competition and manufacturing as oligopoly was appropriate for most of the last forty years, recent changes have made it more difficult to sell students on the notion that retail markets are the province of small independent firms. Students who routinely shop in the Gap and the Limited for clothing, eat regularly at McDonalds, Burger King and Pizza Hut, and accompany their parents on weekend excursions to Home Depot find it difficult to square their perception of the retail landscape with the theoretical models being taught in economics class. Moreover, by ignoring retail industries in our discussions of market concentration and large firm dominance, we deny students the opportunity to relate structure measures to the very markets that they find most familiar. The purpose of this paper is to provide descriptive evidence regarding recent trends in retailing industries. By incorporating these descriptive data into textbooks and the discussion of market structure, faculty teaching economic principles can build a foundation for structure measures and the extent of large firm market domination using industries that are relevant for college students. Moreover, by demonstrating that many retail markets are highly concentrated, the data can be used as a foundation for analyzing portions of the retail sector using models of oligopoly rivalry instead of the more traditional analysis of retailing as monopolistically competitive.

## DISCUSSION

Considerable empirical evidence supports the notion that retail markets are becoming more concentrated and that retailing, once dominated by local and regional players, has witnessed a gradual evolution toward national firms. Successful retail firms tend to evolve from players in local and regional markets to national chains (Miller, 1981). Research by Cotterill and Mueller provides empirical evidence of the trend for the grocery business. Cotterill and Mueller (1980) find that the market share of the twenty leading grocery chains increased from 26.9% in 1958 to 37% in 1975. Finally, Thomas Rauh, director of retail consulting for Ernst and Young, argues in a 1989 *Fortune* article that in the future each retail category will have no more than half a dozen and perhaps as few as two merchants accounting for as much as 60% of retail sales.

An examination of some basic descriptive structure measures suggests that there is a trend toward increasing concentration in at least some retail industries. Moreover, several industries have reached concentration levels that would suggest a market structure that is beginning to resemble loose knit oligopoly rather than monopolistic competition. Table 1 contains four-firm concentration ratios for thirteen Enterprise Statistic industries for the period 1977 to 1987. The industries include all retail industries whose industry definitions remained constant over the sample period.

Seven of the thirteen industries saw concentration increase for both the 1977-1982 and 1982 to 1987 time periods. Two industries, Apparel and Accessory Stores and Drug Store and Proprietary stores experienced significant increases in concentration over the full 1977 to 1987 time period. For apparel, the concentration ratio increased from 9.1% to 20.7% over the 1977 to 1987 time period, while in the drug store and proprietary stores industry, concentration increased from 9.8% to 23.4% over the 1977 to 1987 period.

Four industries had concentration levels that exceeded 15% in 1987: General Merchandise (37.4%), Drug and Proprietary Stores (23.4%), Apparel and Accessory Stores (20.7%), and Grocery Stores (17.4%). It is important to note that these concentration levels are the percentage of national

sales for the four largest firms; concentration was undoubtedly higher in some regional markets. Concentration in the General Merchandise industry is of particular interest. Although concentration in the General Merchandise industry remained stable over the 1977 to 1987 period, the four firm concentration ratio at 37% is clearly indicative of an oligopoly industry. A four-firm concentration ratio of 37% would place the General Merchandise retailing industry above the median concentration ratio for the 505 manufacturing industries listed by the Census of Manufacturers for 1987 (Martin, 1994).

<i>Industry</i>	<i>CR4</i>		
	<i>77</i>	<i>82</i>	<i>87</i>
General Merchandise (Department) Stores	37.7	35.6	37.4
Grocery Stores	17.4	16.4	17.4
Eating and Drinking Establishments	3.9	5.0	7.6
Motor Vehicle Dealers	1.4	0.9	1.0
Other Automotive Dealers	0.9	1.3	2.0
Apparel and Accessory Stores	9.1	13.0	20.7
Furniture and Home Furnishing Stores	4.5	5.7	7.4
Drug Stores and Proprietary Stores	9.8	18.7	23.4
Hardware Stores	6.7	7.9	8.3
Building Materials Stores	5.1	6.4	7.1
Other Food Stores	11.4	12.9	9.7
Gasoline and Service Stations	5.1	6.4	7.1
Liquor Stores	9.8	8.6	8.5
Data Source: Census of Retail Trade, 1987			

While concentration data provide some insights into recent trends, it is impossible to assess the full impact of large firm dominance in retail industries by limiting the analysis to the four largest firms. Table 2 shows the percentage of total industry sales and assets contributed by firms in the largest IRS size class, a grouping consisting of firms with \$250 million or more in total assets. Examination of Table 2 reveals that of the eight industries that had firms with \$250 million or more in total assets, five of those industries had at least 35% of total industry assets contained in the largest size class for the 1987 sample year. Similarly, the largest size class in those five industries accounted for at least 25% of total industry receipts. For two industries (Grocery Stores and Drug and Proprietary Stores), the largest size class accounted for more than 65% of assets and more than 50%

of receipts. From the IRS data, it is clear that the extent of large firm dominance in retailing is far greater than the picture painted by concentration ratios.

<i>Industry</i>	<i>% of Total Industry Assets</i>			<i>% of Total Industry Receipts</i>		
	<i>77</i>	<i>82</i>	<i>87</i>	<i>77</i>	<i>82</i>	<i>87</i>
General Merchandise (Department) Stores	NA	15.7	45.3	NA	19	30.5
Grocery Stores	47.5	49.4	65.7	41.8	40	50
Eating and Drinking Establishments	7.9	32.6	53.7	5.3	16.2	26.2
Motor Vehicle Dealers	NA	NA	1.8	NA	NA	.6
Other Automotive Dealers	NA	NA	9.74	NA	NA	6.7
Apparel and Accessory Stores	NA	30.31	38.8	NA	24.4	34.2
Furniture and Home Furnishing Stores	NA	NA	21.8	NA	NA	15.9
Drug Stores and Proprietary Stores	17	52	66.7	16.6	55	60.1

Percentages are the percentage of total industry values contributed by firms from the largest asset firm size class, firms with \$250 million or more in total assets.  
Data Source: Internal Revenue Service: Sourcebook of the Corporate Statistics of Income, years 1977, 1982 and 1987, NA = Not applicable

It is important to emphasize that all of the data presented here are aggregated at the national level. While these data cannot directly measure concentration or large firm dominance for individual metropolitan areas, it is inconceivable that data such as these could occur without substantial corporate level dominance of retailing industries in a number of metropolitan areas. While it is undoubtedly true that individual establishments continue to control a small percentage of industry sales in metropolitan markets, it is difficult to make a case that the numerous retail outlets of the same retail chain exhibit the independent pricing required by models of monopolistic competition.

## CONCLUSION

The purpose of this paper is to provide empirical evidence that documents the emergence of large firms in portions of retailing. Although textbook authors have generally recognized that retail firms may behave as oligopolists in small towns (e.g. McEachern, 1997), retail markets in large metropolitan areas have been treated as monopolistically competitive. The four firm concentration ratios along with the data measuring proportions of assets and receipts contributed by firms in the

largest IRS size class suggest that retail industries increasingly resemble oligopoly in some metropolitan areas. In light of these data, textbook writers may wish to update their presentations of imperfect competition to recognize the changing landscape of retail industries. It is obvious that large national firms are playing an increasingly important role in a number of retailing industries; the time has come to incorporate this reality in our principles of economics texts and courses. Including these data not only reveals an interesting evolution in the retail industry, they provide a useful vehicle for matching classroom discussions of industry structure with students' experience. Students who are familiar with retail giants such as Wal-Mart, the Gap, and the Limited and category killers such as Circuit City will question whether these retail players are representative of monopolistic competition or oligopoly. The descriptive analysis in this paper provides a vehicle for structuring this discussion.

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# A CRITIQUE OF SCHOOL-TO-WORK (STW) INTEGRATION INTO TRADITIONAL EDUCATION SUBJECTS

Fred M. Carr, University of Akron  
fmcl@uakron.edu

## ABSTRACT

*STW could have been a much more effective educational effort had its proponents better understood the necessary curriculum development and implementation procedures to integrate a non-traditional subject into traditional educational subjects. STW evidently thought it was taking the best socio-political approach for accomplishing effective education integration. It did not envision the need for a comprehensive content body of knowledge or scope and sequence. It also underestimated the need for a more comprehensive inclusion of educational administrators and teachers through unique uniform professional development and involvement programs. Lastly SYV lost a valuable accountability instrument by not developing a normalized evaluation instrument, which could give important feedback to teachers of traditional educational subjects.*

*School to work has been successful in reinforcing educational school to work and career education programs. It has also developed business education partnerships where none existed before. This falls far short of its stated goals of creating systemic change within education but it has raised the level of dialogue necessary to promote further understanding in this important societal goal of creating a productive and educated workforce. Future federal educational efforts should be able to improve from the STW shortfalls and create a more effective design and implementation methodology.*

## INTRODUCTION

The need for integration between the world of work and the world of education is not a new or a unique idea. From a theoretical perspective, John Dewey believed that school and work were vitally interconnected. (Dewey & Dewey, 1962; Dewey, 1990). The need for a skilled workforce seems to have been heightened in the 1990's due to the difficulty businesses have had filling employment needs due to technological stimulated economic expansion. Recent Bureau of Labor Statistics show that 17% of adults over 25 did not finish high school and only 39.6%, of those who did not complete high school were employed in the first quarter of 1998. (School and Work, 1998). This translates into millions of adults who are not able to contribute to the nations productive capacity. The Executive Director of the nonprofit Jumpstart Coalition for Personal Financial Literacy is quoted as saying "our young adults are leaving schools without the ability to make critical decisions affecting their lives." (Brenner, 1999)

In 1991, the U.S. Department of Labor released the Secretary's Commission on Achieving Necessary Skills (SCANS) report. SCANS was a synthesis of views of business owners, business managers, union officials, and workers on the skills needed in today's changing workplace. ("What work," 1991). The Department Of Labor continued its involvement in wanting to influence the educational community through its development, promotion, and involvement in STW. Two pieces of legislation assisted the Department of Labor in promoting its agenda. The first was Goals 2000: Educate America Act (1994) which called for every citizen to be ready for productive employment by the year 2000. (103'd Congress, 1994, March). Then in May 1994, The President of the United States signed into law the School-to-Work Opportunities Act. (103'd Congress, 1994, May) While this new law could be viewed as recognition of Dewey's vision and a reaction to today's business needs, it has fallen short of its integration into traditional educational subject areas from a formative and therefore an evaluative effectiveness perspective.

### **THE OHIO EXPERIENCE**

Ohio is divided into twelve regional funding districts, each with an Executive Committee with the main functions of overseeing fiscal, administrative, and program responsibilities. As a member of the Region 9 Executive Committee of the Ohio School to Work effort and as a representative of Higher Education on that committee, the author has participated in the development of the STW for five county areas in Northeast Ohio. As Chairman of the Grants Committee, the author has also overseen the development, awarding and conduct of STW grants since 1996.

The Region 9 Executive Committee has representatives from designated "stakeholder" groups. These represented groups are business, labor, education, community based organizations, higher education, parents and, for the formation period, one student. The Region 9 Executive Committee was faced with a hurried timeline to define our mission, develop our structure, procure a fiscal agent, discover what was already being done in activities, which could complement STW, advertise and hire a Region 9 Director, and develop a request for proposals to dispense several hundred thousands of dollars in school district grants, all in a matter of several months. These details are not to imply that the granted programs were not effective in introducing teachers to STW or that the grant participants did not obtain good information to impart to their students. There have been documented successes in STW within vocational/technical education and career education areas. (Filipczak, 1993; Owens, 1995; Hershey, Silverberg & Haimson, 1999). These successes are however are not concept attainment measured. As one strong supporter, the Director of the National Center on Education and the Economy Workforce Development Program based in Washington D. C. stated in defending STW, "We sometimes failed to make the case for contextual learning that maintains a high academic standard. Too many schools got caught up in developing projects and activities without connecting those activities to rigorous academic standards". (Bamicle, 1999) STW has hedged its accountability by claiming that it was not a program but was an approach to education that involved preparing students to enter an ever-changing high skilled work force. This is to be done by combining academic learning with work-based/career education experiences in partnership with the above mentioned stakeholder groups. (Partnership Resource Directory, 1996)

STW was designed to create systemic change within the educational system, however, who was ultimately responsible for STW was never clearly explained. Most traditional subject teachers

believed STW was a vocational education program trying to infiltrate their subject areas, while many vocational educators thought STW was an attempt to do away with their program. There was also wide spread mistrust of STW from parents, who saw STW as federal/state intrusion into local education in an effort to put work based education over subject based learning and micromanage the education of their children. (Steinberg, 1998)

### **STW EVALUATION**

STW, from its outset did not contain the necessary development patterns to insure its complete acceptance by traditional educational subject teachers and administrators or parent/teacher associations. (Vannatta et al. 1998; Mason & Thom, 1997) The nationally contracted evaluator of STW, in its 1999 evaluation report, found that job shadowing, work site visitations, and career awareness have been given the most common educational emphasis. It also found that STW could not be evaluated in terms of these job shadowing and work site visitation activities to cause a change in student outcomes. (Hershey et al. 1999)

A comprehensive state level evaluation in Wisconsin spoke to the lack of accountability and the difficulty of the ascertaining costs associated with STW as well as citing major problems with the integration of STW in traditional subject areas. Among its findings among school district curriculum directors were that over seventy percent thought STW had no impact on the curriculum, a lack of interest among traditional subject teachers in STW, and an inequitable emphasis of STW for teachers in vocational, technical, and business education. There was a one hundred percent agreement, among school curriculum directors, that STW could not provide reliable data concerning student change in achievement, attendance, or school completion rates. (Schug & Western, 1999)

### **RECOMMENDATIONS FOR FUTURE FEDERAL EFFORTS IN EDUCATION**

STW tried to create an educational intervention that would be defined by each regional location chosen to implement the STW idea. It is obvious by the data that the federal designers of STW did not fully understand the process by which to implement change in traditional subject areas, nor does their project contain the necessary elements for creating systemic curriculum change within education. All informal indications are that STW will be phased out by 2001. For future federal/state involvement in a new academic educational effort, the following suggestions may prove to be more effective in promoting change with the educational community.

#### **Develop a concentrated effort to impact preservice teacher education programs within higher education.**

This need was recognized for STW in Ohio. C'A Framework for," 1999) Such an effort would be proactive in assimilating new educational instructional material in traditional subject areas by making all new teacher graduates knowledgeable about the new material content and how it applies to the subject they will be teaching. Integrating new subject material in teacher preservice programs can only be accomplished by making professors in teacher education programs knowledgeable in the new content and instructional methodology. STW placed a person to represent

higher education on the regional executive committee. This representation, and subsequent state grants to implement STW, within teacher education programs, has been inadequate in engendering faculty implementation support. New federal/state efforts need to make allowance for greater professorial inclusion and knowledge building within the professorial ranks.

### **Develop a definitive body of knowledge.**

Traditional subject teachers instruct from an outline of concepts and principles within their various disciplines. Without a defined concept base, it is extremely difficult for educators to identify concept instruction methodology that creates integration between subjects. It is unrealistic to think that teachers have the time and ability to integrate a new subject with the one they are teaching without a body of knowledge being provided. In the case of STW, job shadowing and business visitations may be a good introduction, but more detailed concept instruction and methodological development is required. A body of knowledge would provide any new federal/state effort with a needed base of reference for dialogue, instruction, and methodology integration.

### **Provide a scope and sequence for the new educational material.**

A scope and sequence divides the subject into age and subject appropriate concepts. This allows the program to develop a K-12 approach to integration with traditional educational subjects. The scope and sequence approach also allows for more comprehensive student concept attainment due to the process itself. The student receives new integrated subject material during each school year. Yearly concept instruction provides content repetition and cognitive reinforcement from a variety of traditional subject areas. The scope and sequence also allows teachers to see the progression of content area development from simple, in the early educational years, to increasingly complex in the later learning years.

### **Develop professional development prototypes to stimulate teacher participation.**

STW depended mainly on business visitations and job shadowing to promote teacher understanding of the world of work. Teacher business visitations and job shadowing have been used for decades by vocational/career and economic educators. In these instances, STW has only reinforced ongoing professional development programs, it has not created systemic change either in the vocational/career/technical fields or within traditional subject areas. Since STW had no innovative prototype for professional development, it was bound to be used by ongoing programs to further what they were already doing. Any new federal/state educational effort would be wise to design and implement a unique and a creative professional development plan.

### **Develop and implement an educational administration involvement plan.**

Any educational initiative needs to involve central administration from the school board through the curriculum coordinator positions. STW was derived and administered from outside the states' departments of education. This resulted in administrative confusion as to who was responsible

for the effort and what authority the regional executive committees possessed to implement STW instructional efforts. Any new federal effort will have to more professionally involve school administrations and see that they are empowered strategically within the new initiative. Curriculum directors and traditional subject area coordinators need to receive specific content and methodology instruction to insure effective subject integration into ongoing instruction. Administrators need to see any educational effort as supplemental and supportive of their current instructional design.

**Develop a definitive concept evaluation plan through the use of subject normalized tests.**

Traditional subject teachers are used to concept testing to ascertain their instructional effectiveness. Any program that does not contain a specific content evaluation instrument is viewed, in many cases, as inferior and looked upon skeptically by teachers and administrators alike. The development of a body of knowledge and scope and sequence will naturally lead to the development of a concept evaluation instrument. The evaluation instrument should be correlated with any student state proficiency exams, for which administrators and teachers are responsible. STW did not envision such an instrument and therefore gave up a valuable accountability instrument to justify its inclusion in academic subject areas. Any new federal/state educational effort should have such an instrument.

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# THE EFFECT OF THE ASIAN FINANCIAL CRISIS ON THE UNITED STATES' ECONOMY

**Balasundram Maniam, Sam Houston State University**  
gba\_bxm@shsu.edu

## ABSTRACT

*The economic impact of the Asian Crisis on the U.S. economy is the central theme of this research. The objective of this study is to examine the effect that the economic crisis in Asia has had on the U.S. economy. The selected U.S. economic indicators used in this study are: U.S. exports and imports, U.S. stock market, the U.S. GDP, the U.S. Consumer Price Index, and the U.S. unemployment rates. It is hypothesized that the Asian Crisis has had very little negative effect on the U.S. economy.*

## INTRODUCTION

The Asian Crisis began in 1997 and was caused primarily by a weak banking sector, too much leverage, and too much short-term money being used for long-term purposes. Another large contributing factor was that too much capital was being directed by governments into certain sectors without regard to market forces. The first country to feel the pending crisis was Thailand in which a chain of events eventually led to the devaluation of the baht which is Thailand's currency. The crisis began to spread to other Asian countries like Korea, Indonesia, Malaysia, and Taiwan all of which experienced currency devaluations and stock market declines which would rob them of their wealth.

As the crisis started to unfold in Asia many people in the U.S. began to get concerned about how the crisis would affect the U.S. economy. Because exports to the Asian region in 1997 comprised roughly twenty two percent of the U.S. total exports one can see how concerns could rise as to how a severe economic crisis in this region would affect future exports. Another cause for concern has to do with the investments made in these Asian countries by United States Investors. As the dollar grew stronger in relation to the Asian currencies the United States also had to be concerned about a large increase in flow of imports at lower prices, compared to domestic prices, from these countries. These factors could force companies in the U.S. to decrease prices or cut production in order to compete with cheaper foreign products. This could produce cheaper prices for consumers, which may lead to layoffs and increases in unemployment which could cause a general slow down of the U.S. economy.

This paper will look at how the concerns above have affected the U.S. economy from the onset of the crisis in 1997 through the first quarter of 1999. The indicators that will be used to evaluate the overall impact of the Asian Crisis on the U.S. are: the U.S. real GDP, the inflation trend in the U.S. as measured by the CPI, U.S. imports and exports to the Asian region, the trade deficit

of the U.S., the U.S. stock market, and unemployment trend for the U.S. as a whole and also on a regional basis.

### **LITERATURE REVIEW**

Since the onset of the Asian Crisis many articles and speeches have been written that forecast and give woe to the threat and concerns over the economic impact that the Asian crisis will have on the U.S.. In the U.S. House of Representatives after his opening statement describing how global financial systems have evolved and how information is transmitted almost instantaneously around the world Chairman Alan Greenspan said: "This burgeoning global system has been demonstrated to be a highly efficient structure that has significantly facilitated cross-border trade in goods and services and, accordingly, has made a substantial contribution to standards of living worldwide. Its efficiency exposes and punishes underlying economic weakness swiftly and decisively. Regrettably, it also appears to have facilitated the transmission of financial disturbances far more effectively than ever before." (Greenspan, 1998) During his presentation Mr. Greenspan discussed how U.S. investors had already lost more than \$30 billion due to Asian equity losses. He then continues to discuss the crisis and give a cautious prelude as to how the Asian Crisis could affect the U.S..

In early January 1998 as people began "digesting" what had happened in the Asian economy during 1997 the *Wall Street Journal* did a survey of distinguished analyst and business leaders to answer two questions. How will the current Asian economic turmoil affect the U.S.? And what should American leaders do in response. Although their responses to these questions are varied the majority of the respondents feel that the Asian Crisis could indeed impact the U.S. in a negative way although the severity was generally uncertain.

### **DATA**

Data has been gathered from the *U.S. Census Bureau Foreign Trade Statistics* database and the online database of *Economagic*. The study uses data set from the first quarter 1995 to the first quarter 1999.

### **EFFECT OF THE CRISIS ON THE U.S. ECONOMY**

The effects of previous economic crises on the U.S. prior to the 1997 Asian Crisis has been well documented and studied. But because the Asian Crisis is relatively new and still ongoing it is hoped that this study will help give a better understanding of the true economic impact this crisis has had on the U.S. to date.

The objective of this study is to examine the key U.S. economic indicators from before the crisis to present day, where data is available, and see if there have been any negative economic effects. There are two major points of entry that global problems can enter and affect the United States' economy. The first is through foreign trade and the second is through the U.S. financial market. The foreign trade sector will be examined first.

During the time period of (1996-1998) the overall exports to this region have been declining with an exceptional fall from (1997-1998) which marked the height of the Asian crisis. During the

period (1996-1998) the flow of imports from this region has been on the rise however not as large as the decline in exports. For the country of Indonesia the exports to the region declined by 49% while the imports from Indonesia has only increased by 1.8%. The exports to Korea for the same (1997-1998) period have declined by 34%, while imports from this region grew by a modest 3.3%. The exports to Malaysia also fell by 17.3% while imports to the U.S. from Malaysia rose only 5% for the (1997-1998) period. The exports to Taiwan fell by 11% while imports to the U.S. rose by 1.5%. Exports to Thailand declined by 29% while import from Thailand rose by 6.6% from (1997-1998).

Because imports from these five Asian countries have increased by a small percentage while exports to the same countries have fallen by a substantially larger percentage the trade deficit between the U.S. and these five countries has grown by astronomical proportions. For the period (1997-1998) the United States' trade deficit increased by 52% to Indonesia, 488% with Korea, 28% with Malaysia, 18% with Taiwan, and a 36% increase with Thailand. This large decline seems reasonable because do to the severity of the five countries currency devaluation goods and services from the U.S. which are priced in dollars have become substantially more expensive to this region. When you look at the loss in exports to this region from (1997-1998) how does it compare to the total exports of the U.S. as a whole? The total imports and exports of the U.S. from first quarter 1997 to the first quarter 1999 have changed very little as compared to the imports and exports of the five Asian countries that were examined earlier. Looking closer the level of total exports of the U.S. has not changed very much from 1997 to 1999 in fact the largest change is a 4.34% increase from the third quarter of 1998 to the fourth quarter. The largest change in total imports is also for the same period, which is a 2.84% increase from the third quarter of 1998 to the fourth quarter. Both total exports and imports move together and that they both decreased slightly from the first quarter of 1998 to the third quarter however they did increase for the fourth quarter of 1998. Another trend that is evident is that the gap between exports and imports is widening which has caused the U.S. trade deficit to continue to grow.

The analysis also shows that the five Asian countries that have been hit hardest by the economic crisis have large trade surpluses. One of the main reasons these countries have large trade surpluses is because the devaluation of their currencies has made it to expensive to import and more profitable to export their goods and services. It has been said that the U.S. is the largest global economy, and that the U.S. has been experiencing the best economic conditions of the 1990s. Because the U.S. economy has been doing so well and the U.S. dollar has been relatively strong consumers in the U.S. have had more disposable income and more confidence in the future of the U.S. economy, therefore they are more willing to and can afford to buy more imports.

The U.S. has had an increasing trade deficit since 1992. However, judging from other indicators such as GDP and the CPI, the overall economy has not show any signs of weakening. This is impart because the increase in imports has been in goods that have been out-sourced to Asian countries because the cost of production is much lower and the reduced cost is passed on to U.S. consumers. Another reason this large trade deficit has not had a negative effect on the economy due to increased awareness and anticipation as to how activities in other countries affect the global economy and especially the U.S. economy. This in part because of technological advances and also due to a better understanding of the new global trade economy Americans businesses in particular have been able to "hedge" against future conditions. Using the steel industry as an example, we can elaborate on this idea.

GDP has long been used as a key indicator as to the overall healthiness of the U.S. economy. GDP is equal to the personal consumption, plus the change of inventories, plus fixed investments, minus imports, and plus exports. It is the last two terms of this equation that lead many to think that imports are negative and exports are positive to GDP. However, those people are forgetting about the effects of imports and exports on personal consumption. When these effects are included, imports contribute positively and exports contribute negatively on GDP. It is only when the currency of the excessive importer collapses, its economy will sink into a recession and the trade pattern will be reversed (Chen, 1998).

When an import enters a country it is only logical to think about the domestic item that is displaced and the labor that is associated with the domestic unit. The assumption is the labor that has been displaced by the imported unit will eventually find its way into another sector that is not in competition with the imported unit. A good example of this is the manufacturing of textiles and electronics. For both of these industries the amount of products that are imported is quite large. The main reason these products are produced overseas is because the labor associated with the production of these items is much cheaper in other countries. Part of this loss in labor capital can be offset by the reduced cost of the imported unit and therefore a reduced price for United States consumers and the rest must be reallocated to other sectors. This reallocation of labor must occur. But as the amounts of imports rise the amount of unemployment in the U.S. has been on the decline. Much of the labor that has been lost due to imports has found its way into other sectors such as the construction industry, which is experiencing a large boom right now. Although GDP, imports, and unemployment react to one another, the labor allocation is not a perfect and instantaneous process. Because it takes time to change resources from one sector to another there is a time delay involved.

This time delay could be related to work forces having to be retrained or people having to relocate to find employment. The U.S. is a large and diverse country and changes that occur on one side of the country are not indicative of changes to the other side. Because the Asian countries are closer to the West Coast of the U.S. it is only logical that is where most of the Asian imports will enter the U.S. (Economagic, 1999).

As mentioned at the beginning there are two main points of entry that global economic problems can affect the U.S. economy. The first is foreign trade and the second is the U.S. financial market. Due to technological advances over the past two decades, and also because American investors and consumers have chosen to invest more in the markets and less in assets like real-estate the U.S. stock markets have experienced an explosion of growth and returns. Since the early 1990s the U.S. stock market has experienced an overall growth with most major stock markets setting record highs in the past years. If the S&P 500 index is used to evaluate overall market performance for this period it is safe to say that the market, which is also an indicator of the U.S. economy, is doing very well.

## **SUMMARY AND CONCLUSION**

To say that the U.S. is completely immune to the impacts and influences of the Asian crisis would be very foolish and also untrue. The crisis in Asia has reached every country around the globe in one form or another. The fall of Asian equity markets has cost investors billions including investors from the U.S. The IMF has given billions of dollars to the Asian region to help stabilize and pull the Asian countries out of their slump. The U.S. has lost billions of dollars in exports to this

region. This loss of exports has caused the U.S. trade deficit to increase substantially. Although worries about the economic conditions in Asia have caused the U.S. stock markets to take periodic stumbles, but the market has performed well during this period. Overall, there were some loss of exports to the region which for the most part been allocated and absorbed by other economies. The increase in imports to the U.S. from this region have been put to good use and absorbed by the present booming U.S. economy. The real GDP of the U.S. is still on the rise, unemployment is at an all time low, and the stock markets are continuing to offer exceptional growth and returns. All indications are that the stock market in the U.S. is still going to continue to grow. Inflation has been increasing and Federal Reserve has taken steps to control it. As of right now if the U.S. maintains a strong fiscal policy and monetary policy, keeps a watchful eye on the Asian crisis and other global factors closely, the U.S. has weathered the Asian Flu quite well so far and will probably do so in the near future.

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# VIRTUAL LEARNING IN ECONOMICS

Neil Terry, West Texas A&M University  
nterry@mail.wtamu.edu

## ABSTRACT

*This paper presents empirical results concerning the effectiveness of Internet instruction in economics. The sample consists of MBA students enrolled in either a campus or Internet-based macroeconomic theory courses at a regional university. Holding constant ability, effort, and demographic considerations, students enrolled in the Internet course scored over nine percent lower on the final exam. The results provide evidence supporting the inferior quality criticism of Internet-based learning. The results are tempered by the observation that Internet education is still in its infancy stage.*

## INTRODUCTION

The Internet and the World Wide Web (WWW) have become pervasive in the academic realm, particularly in the coursework required to achieve success in higher education. The Internet has been extended far beyond its original scope as a highly specialized scientific communications network for the defense establishment and major research universities possessing high capacity computers (Strong & Harmon, 1997). Distance and independent education available on the Internet are the current buzz-words of higher education, and the hottest topic on many campuses is the "Virtual University." Colleges all over the country are targeting the geographically, professionally, and personally constrained for the time flexibility of online courses. Despite the growth of online courses, skeptics question whether the Internet instruction mode can offer the same quality of education that students receive in traditional classroom courses. Supporters of online instruction counter with evidence that distance learners retain information better than students in the traditional classroom setting. The purpose of this paper is to assess the effectiveness of online instruction in economics by comparing student performance in the virtual versus traditional classroom. The results are based on an MBA course in macroeconomic theory at a regional college, West Texas A&M University.

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# FINANCE IN THE HIGH SCHOOL CURRICULUM

Anne Macy, West Texas A&M University

aterry@mail.wtamu.edu

Jean Walker, West Texas Economic Education Center

jwalker@mail.wtamu.edu

## ABSTRACT

*Money, credit, interest rates, and inflation are concepts basic to any financial decision. While high school teachers recognize the importance of financial economics, actual instruction in the area is lacking. The subject matter is considered uninteresting and the teachers may be ill prepared to teach it. The ideas can be presented in a non-threatening manner by incorporating financial economic concepts into a historical and political framework.*

*This paper presents ideas for integrating these financial concepts into a time period typically short-changed in the high school curriculum, 1890-1915, but -which is a fertile time for financial markets. Using Hugh Rockoff's 1990 article "The 'Wizard of Oz as a Monetary Allegory, " the debate over the free coinage of silver, and the creation of the Federal Reserve System, the concepts can be engagingly presented to the students. The lesson stresses critical thinking in an outcome-based format. Materials incorporated are from the National Council on Economic Education, the Federal Reserve System, and the Internet.*

## INTRODUCTION

The increasing complexity of today's working environment warrants a renewed look at integrating financial economics into the high school curriculum. Introducing students to basic economic ideas and providing the tools to comprehend and analyze the policies and problems of our society are basic to economic sensibility. The interest rate is an important price that confronts every individual who invests or borrows. Activities in financial markets directly affect personal wealth, the behavior of businesses and consumers, and the overall economy. When teachers do incorporate economics into history or government classes, they tend to stay away from topics in financial economics. Likewise, many teachers who teach economics in the high schools are more accurately described as history or government teachers. They do not have the background or inclination to rigorously expose their students to economic concepts. By introducing teachers to how economic factors and situations affected political and historical decisions, economics can then be introduced to students.

## ECONOMIC EDUCATION REQUIREMENTS

While thirty-eight states have guidelines for teaching economics in high school, only sixteen states require that schools offer an economics class and only thirteen states require students take an

economics class for graduation (NCEE, 1999). Texas has guidelines for economics and requires students to complete a course for graduation. While this is applaudable, two problems exist. The first is that most schools offer a one-semester economics class where both micro and macro topics are covered. The time limitation hints that the course only provides cursory overviews of ideas (Buckles & Watts, 1998). The second and more important concern is that the teachers may not be adequately trained to teach economics (Walstad, 1992).

In Texas, all new teachers who receive certification in the social studies composite must have at least six hours of economics credit, the two principles courses. However, teachers who entered the profession before the regulation may not have had an economics class. The social studies certification program is being redesigned with two tracks, history and social studies composite. The new history track requires no economics. A concern is that teachers may receive an emergency certification, which allows them to teach economics while completing the course requirements. However, if a teacher instructs just one class outside of her certification fields, the teacher is not required to have had a class in that area. For many teachers, the field is economics.

The National Council on Economic Education (NCEE) constructed voluntary content standards for teaching economics in the primary and secondary schools. The goal of the standards is to guide the teaching of economics and the concepts to which students should be exposed. In 1998, Texas replaced its guidelines for instruction, called the Essential Elements, with revised standards, called the Texas Essential Knowledge and Skills (TEKS). The TEKS are similar to the essential elements but stress outcomes instead of facts for defining successful instruction. The revisions come at a time when Americans are apparently not competent in basic economics. The National Council on Economic Education's *The Standards in Economics Survey* results show that both adults and students fail miserably at the most basic concepts (NCEE, 1999). The section of the survey examining financial economic concepts show that a majority of adults and students have inadequate knowledge on money, interest rates, and inflation. The respondents did not know the basic relationships among interest rates, banks, and household behavior and among inflation and borrowing/lending decisions. The American Savings Education Council's 1999 survey of young people support the result that students do not know as much as they should on financial matters (ASED, 1999).

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# STUDENT PERFORMANCE FACTORS IN ECONOMICS AND ECONOMIC EDUCATION

**Larry R. Dale, Arkansas State University**  
dalex@cherokee.astate.edu  
**Jerry Crawford, Arkansas State University**  
crawford@cherokee.astate.edu

## ABSTRACT

*As professional college educators we are constantly concerned about the factors that influence student performance in the classroom. Utilizing a standard regression analysis and a loglinear model we examined the role of six factors including; sex, days absent during the semester, number of hours completed, age and hours taken in economics. The study was first conducted in 1991 and repeated again in 1998. The conclusions of the 1991 study are not significantly different from those indicated in 1998. The significant factors were sex, with males outperforming females in economics, and number of days absent. There was one important exception that was both alarming and challenging and that is the fact that students receiving a grade of C or less are missing significantly more class than in 1991. The importance of attendance seems to be lost on many students as the number of absences continues to climb. We need to encourage regular attendance since we know that is reflected in final grades and overall performance.*

## INTRODUCTION

As professional college educators we are constantly concerned about the factors that influence student performance in the classroom. In 1991 three professors at two Arkansas Universities, Dr. Larry R. Dale and Dr. Jerry Crawford from Arkansas State University and Mrs. Betty Jones from Henderson State University conducted some research into a variety of factors that we though might influence student behavior. We used two different techniques, a standard regression analysis and a loglinear model to learn the significance of five factors. The characteristics examined included; sex, days absent during the semester, hours accumulated, age, additional courses taken in economics.

We decided to use the same models to retest students in similar situations nearly a decade later to learn if the results would prove different.

## RESEARCH DESIGN

In the second study we used all of the original five independent variables and added a sixth - major. The second study included several attitudinal factors such as; enjoyment of the course, usability of the information and grade expected with randomly selected test subjects.

All of the attitude factors were rated on a five-point scale from strongly agree to strongly disagree with three representing no opinion. These factors were correlated to the dependent variable of a final grade. The students completed the questionnaire one week before the final exam was administered. An analysis of all equation variables is expressed in the functional relationship;

$$y = a + x1 + x2 + x3 + x4 + x5 + x6 + x7 + x8 + x9 + x10)$$

For the purposes of this study we deliberately left out the factors of current GPA and ACT scores, which were not readily available to all instructors. Instead, the final grade was chosen as the critical dependent variable against which the independent variables would be measured.

In the 1991 study nine different class in seven varied areas of economics from two different Universities in Arkansas and three different instructors were the subjects of this study. A total of 256 students were included in the study conducted in the Spring semester of 1990. Forty-three students came from Henderson State University in two Economics for Teachers classes taught by Mrs. Betty Jones. Dr. Jerry Crawford, at Arkansas State University, taught: Microeconomics (Principles) 30 students; Intermediate Microeconomics with 13 students and Economics for Teachers with 18 students. Dr. Larry R. Dale taught two courses in Economics for Teachers, with 115 students and Comparative Economics, an upper division course for Economics and Business Administration majors, with 41 students.

In the second study ten different class in four varied areas of economics, from two different instructors were the subjects of this study involving a total of 428 students. Dr. Jerry Crawford, at Arkansas State University, taught: Microeconomics (Principles) 181 students; Macroeconomics with 62 students and Economics for Teachers with 22 students. Dr. Larry R. Dale taught two courses in Economics for Teachers, with 95 students and Comparative Economics with 46 students.

The researchers were interested in exploring the values and characteristics that contribute to the success of students under these widely varied circumstances. Conclusions drawn from that study proved interesting. First we needed to make sure that there was no difference in student performance related to the different instructors or institutions. A chi square test of means proved that there was no significant difference between the instructors at the .01 level. There was a significant difference between classes taught, even by the same instructors. Students enrolled in the Economics for Teachers group performed significantly better than students in the basic principles course. All three of the instructors received relatively high ratings with no significant difference by individual instructor.

In the 1991 study the only significant factors proved to be the grade expected, sex, and the number of days absent. The more recent study determined that sex and the number of days absent were still significant. In addition, hours accumulated also proved significant.

In the first study the expected grade near the end of class was a relatively good indicator of the student's evaluation of their performance in the course and of the course itself (Seiver 1983,33). Students who perform better should have a more positive attitude toward the course and instructor. A high correlation between expected grade and grade received is also an indication that the instructor has done a good job of informing students about their performance. Although students had not taken the comprehensive final, which is a significant part of their aggregate grade, their mean grade ranking was only .31, about one third of the grade, higher than the grades actually

received. We decide to leave this factor out of the 1998 study because of its proven track record in predicting performance.

The more important figure was the days absent from class, which proved to be significant at the .01 level in both the 1991 and 1998 study. This factor was significant despite a wide range of teacher and institutional attitudes toward absenteeism. Arkansas State University has adopted a strict policy that does not permit instructors to include attendance as a direct factor in determining grades. Henderson permits attendance to be considered. The instructors also had very different policies. Instructor one included attendance as a factor in grading, instructor two takes roll in all classes; while instructor three took roll expressly for the purposes of this study and did not place as great an emphasis on its importance. Despite the variations in instructor attitude toward attendance from very important to casual, there was no significant difference in student attendance among the three instructors. Attendance in class was highly significant (see table 2). Students in the 1991 study receiving a grade of A missed an average of 1.31 days, students receiving the grade of B missed an average of 2.58 days, the grade of C students missed 3.14 days, and the grade of D students missed 3.50 days, while students receiving an F missed an average of 9.67 days. Students in 1998 receiving a grade of A missed an average of 1.32 days, students receiving the grade of B students missed 1.25 days, the grade of C students missed 4.08 days, and the grade of D students missed 4.13 days, while students receiving an F missed an average of 10.81 days. One factor that tested to be significant between the 1990 and 1998-group was the increase in the average number of days missed by students earning a grade of C, D and F. This is a disturbing trend if it holds nationwide. Class attendance is important in predicting classroom performance. The Park-Kerr study found absences significant but less important than other factors, particularly GPA and ACT Scores. Of particular interest is the fact that attendance seems important regardless of instructor style or expectations about attendance. Students tended to miss an average of nearly one day more than in 1990. The one exception was that student receiving the grade of B actually had a better attendance record in 1998.

Sex also was a significant factor, although less important than the other two, at the .01 level, with males outperforming females in economics. Conventional wisdom and statistical studies have indicated that males tend to outperform females in mathematically oriented subject areas for a variety of cultural reasons. The subjects in this study were overwhelmingly female making up 74.53% of the subjects, primarily because of the Economics for Elementary Teachers courses, with a large female contingent. Interestingly though males outperformed females regardless of which course they were taking. This trend was still significant although the difference between the scores of males and females had fallen between 1991 and 1998. This is a sign that women are displaying an increasing aptitude in dealing with economic subject matter.

These students were significantly older than average with a mean age of 24.6 years. While this may be a general trend in higher education, part of the explanation is found in the number of older students enrolling in elementary education programs, since that course had an average age of 27.12 years as compared with 21.43 for the other economics courses. Age alone was not a significant determinant of grade achievement in contradiction to the conventional wisdom that would suggest that older students earn higher grades. This may be explained by the fact that many

students were older than would be expected. There may be little difference in performance of students aged 25 as compared with those aged 30. Age may prove more important in comparison with survey courses that enroll younger students, which were not a significant part of this study.

The average student in the survey was a junior with an average of 68.45 hours. Since both upper division economics and Economics for Teachers require a minimum of 60 hours as a prerequisite, this is not surprising.

A two-sample t test comparing age and absences did yield a value of 39.78 in the 1991 study and 46.11 in the 1998 study, which proved to be significant. Older students were absent more frequently than younger students. This may be explained in terms of additional work and/or homemaking responsibilities on the part of the older female student. While the two correlated, the level of significance was not great enough to be reflected in the final grade. Older students can make up days missed and achieve similar grades.

Overall demographic features were not significant predictors of success in the course as measured by the final grade, which is consistent with other studies on these same factors (Park and Kerr 1990, 110). The previous number of courses in economics was also not relevant to a final grade received, which surprised the investigators but supports other recent studies (Park and Kerr 1990, 110). A partial explanation for this is that 68% of the students did not have any previous courses in economics making that factor insignificant in their performance. This was particularly true in the Economics for Teachers course, where 87% of the students had no previous experience in formal economics training. We did not investigate these phenomena in the 1998 study.

The attitudinal factors were not significant in relationship to student grades. Students seemed to enjoy the economics class regardless of the grade they expected to receive or did receive. Student rating on the usefulness or applicability of the course is also not significant, again because of the high rating that factor received. It was interesting that the students enrolled in the Economics for Teachers courses were significantly more likely to rate that course highly relevant [4.78 as compared to 3.89 on a five-point scale] or applicable than were students in more traditional economics courses. This is consistent with the fact that such courses are supposed to contain some instruction in teaching methodology and basic cognitive content. This supports similar findings at other institutions (Dale 1983).

Several studies have examined the qualitative analysis of affective measures related to classroom performance in economics classes. A multinomial logit model was applied to factors determining performance in a money and banking class using attendance records, overall valuing of the course, commuting distance, age, sex, prior courses, hours spent at outside work, GPA and ACT scores as the dependent variables (Park and Kerr 1990). A second study (Mehdizadeh 1990) uses loglinear analysis of categorical data to examine the significance of factors in determining student ratings of professors. Several have examined additional factors that influence instructor ratings (Kelly 1972; Mirus 1973; Spector and Mazzeo 1980 and Seiver 1983) using a variety of statistical techniques. The consensus seems to be that some variation of loglinear modeling is the most effective method of examining correlations of such qualitative measures. This was used in our testing procedures since loglinear models do not require distinguishing between response variables and independent variables as with logit models, both of which are considered in this study.

Interestingly enough there appeared to be no significant difference between the results produced using the loglinear model and a standard regression analysis, F and T tests regression analysis for this study.

### **CONCLUSIONS**

The conclusions of the 1991 study are not significantly different from those indicated in 1998, with one important exception. Class attendance is still a significant predictor of success in economics. The one element of the study that was both alarming and challenging is the fact that students are missing more class than in 1991, particularly at the lower levels. The importance of attendance seems to be lost on many students as the number of absences continues to climb. We need to encourage regular attendance since we know that is reflected in final grades. Students who come to class regularly simply out perform those who do not. The pressure on students to attend college is always a challenge for those who must work in order to pay the fees. When jobs affect attendance they have a devastating effect on performance.

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**TABLES AND REFERENCES AVAILABLE FROM THE AUTHORS**

# A CRITICAL EXAMINATION OF THE ROLE OF BUSINESS ETHICS IN BUSINESS SCHOOL CURRICULA

**R. Cayce Lawrence, Christian Brothers University**  
**Rob H. Kamery, Christian Brothers University**

## ABSTRACT

*The underlying premise of free-market capitalism is that business firms exist to provide a mechanism for voluntary exchange and provide maximum profits to ownership. Under a capitalist economy rational economic behavior is defined as that which maximizes self-interest for the parties involved in a voluntary exchange. According to classical economists such as Milton Friedman, ethical principles have no direct role in determining behavior by under the capitalist model.*

*The classical position of ethics and business as represented by Friedman is challenged in today's society from a variety of sources, usually referred to as "stakeholders." These various groups include: government at all levels, religious organizations, local community organizations, customers, employees, and business organizations related up and down the firm's supply chain. Various theories and/or philosophies suggest ways in which these stakeholders can (and should) influence firms to behave in pro-social ways that may be independent of the profit motive.*

*While firms are expected to engage in pro-social behavior, Colleges and Schools of Business are held by both firms and their stakeholders to be responsible for developing individuals with strong ethical principles. Unfortunately, the principles underlying free-market capitalism place that system at odds with any attempt by stakeholders to force firms to engage in behavior that does not directly support the profit motive. Hence, faculties in departments of Economics face special challenges in incorporating ethics in the classroom.*

*The paper described herein reviews the four approaches to the role of ethics in the free-market system: the stakeholder model, the stockholder model, the "invisible handshake" model, and the institutional investment model. Each model is discussed for its social relevance and its relevance to classical economic assumptions. Of the four approaches, the institutional investment model will be shown as the most promising for inclusion in classical economics models.*

*Following the review the paper will look at strategies for pricing investment in ethical practices and for measuring both the cost and the return on that investment. A discussion of the proper role of ethical practices in the economics curriculum follows and concludes that either the discussion of ethics should take place in the context of non-economics courses (management,*

*marketing, etc.) or a provision for including ethical practices within classical models must be developed.*

*The paper concludes that the response to the various social pressures outside academia (business and the general public) and within the academy (e.g. accrediting bodies such as AACSB) must be to enhance the teaching of ethics in economics curricula. An argument is presented for the inclusion of "social goodwill" as a factor of production in the free market systems of advanced countries (particularly the United States) where sufficient wealth allows that consideration of motives other than profit can be rational.*

## **SHINING THE LIGHT ON CAPITAL BUDGETING: A PRACTICAL APPLICATION**

**William F. Kennedy, University of North Carolina at Charlotte**  
wfkenned@email.uncc.edu

**Reinhold P. Lamb, University of North Carolina at Charlotte**  
rplamb@email.uncc.edu

### **ABSTRACT**

*This paper offers a capital budgeting exercise designed around a simple financial decision that most students face frequently. A framework for the purchase choice of a fluorescent light bulb versus an incandescent bulb is presented through a detailed assignment which requires students to visit a hardware store to collect data, estimate cash flows and a discount rate, and calculate the payback period, net present value, and internal rate of return. We find that this simple problem enables students to better understand the relevance of capital budgeting in their personal financial decisions.*

### **INTRODUCTION**

To many students, the finance discipline appears to involve abstract concepts and complicated mathematical derivations. Their assessment of the quantitative emphasis of the discipline is accurate. Finance does involve extensive problem solving; however, their perception that finance is not practical is incorrect. Finance is a very applied discipline that offers applications to most personal and professional decision-making situations. As a consequence of finance being rooted in mathematics and, thus, intimidating to many students, the finance instructor faces a tremendous challenge to present the material in a way that convinces students that the concepts are indeed useful and interesting.

Perhaps one of the most challenging areas for finance students is capital budgeting. Projects are identified, cash flows and discount rates are estimated, and then all the data is entered into a series of mathematical models. While most basic financial management texts are quite good at presenting the basic techniques of capital budgeting, they tend to be weak in providing examples that have relevance to most college students and, as a result, many students never fully grasp the complete process and justification for decision-making. We suppose that we should not be surprised that capital budgeting fails to ignite in our students a passion for finance since it is unlikely that they will ever encounter decisions involving the massive corporate projects that are represented in the homework of most textbooks. Several published articles show that student learning is enhanced by providing personal finance situations that students may face in real life [Vihtelic, 1996, 1991;

D'Ambrosia, 1980; Daigler, 1979; Petrello, 1975; Horton, 1972]. If we could present capital budgeting in a way that illustrates the practical usage of the method to real decisions, students may obtain an additional incentive to learn the material and they will better understand the role of finance in their lives.

In this paper, we suggest a capital budgeting exercise that involves a personal financial decision that most students make frequently. By applying capital budgeting techniques to this decision, students are better able to understand the process of capital budgeting, from the accumulation of data to the accept-reject decision, while seeing how these techniques can be applied to their own personal financial decisions. The exercise involves the decision on which type of light bulb to purchase and is illustrated in the following sections.

### **THE ASSIGNMENT**

Students are instructed to do the following:

1. Visit a hardware or discount store and find the cheapest price on a 60 watt incandescent light bulb as well as a 22 watt fluorescent bulb that should provide the same light output. The number of *lumens*, printed on the package, measures output. The fluorescent bulb price should include an adapter making it usable in a table lamp. Determine, from the package, the expected (rated) life of each type of bulb. The purchase price of the fluorescent bulb will be much greater than the incandescent bulb; however, the fluorescent bulb offers various incremental savings over the incandescent bulb over the life of the decision. The cost and savings differentials emphasize to students that the decision should not be limited to the project with the least initial cost. Rather, all cash flows need to be incorporated in the decision.
2. Determine the marginal cost of a kilowatt-hour of electricity (this information is available from the local electric power company or from a recent electric bill).
3. Select a table lamp in which the bulb would be installed. Choose one that is used extensively.
4. Estimate the number of hours that the lamp is on each year.
5. Determine a minimum rate of return which must be earned on any investment undertaken and explain why this rate is chosen.

### THE EXERCISE

Using the above information and the capital budgeting techniques to which they have been introduced, students are instructed to perform the following calculations in order to determine which type of bulb to purchase:

1. Determine the incremental cost of purchasing a fluorescent bulb as opposed to the incandescent bulb.
2. Determine the cash savings of using the fluorescent bulb versus the incandescent bulb. Savings consist of both reduced electricity costs and savings on bulb replacement. Based on the cash flows estimated above, calculate the following:

The payback period.

The net present value.

The internal rate of return.

### A POSSIBLE SOLUTION

The following represents an example of the information a student might come up with and the solution on which it is based:

	Flourescent	Incandescent
Cost	\$7.00	\$ 0.25
Wattage	22	60
Annual Usage	1500 hrs	1500 hrs
Bulb Life	10,000 hrs	750 hrs
Kilowatt Hour	\$ 0.07	\$ 0.07
Required return on investment = 22%		

The incremental investment required to purchase the fluorescent bulb:

$$\$7.00 - 0.25 = \$6.75$$

Cash savings resulting from use of the fluorescent bulb:

Annual electricity costs:

Incandescent bulb: 60 watts x 1500 hours = 90,000 watt hours

90,000 watt hours / 1000 = 90 kilowatt hours used annually

Flourescent bulb: 22 watts x 1500 hours = 33,000 watt hours  
 33,000 watt hours / 1000 = 33 kilowatt hours used annually

Annual electricity savings = 90 kwh – 33 kwh = 57 kwh  
 Annual cash savings = 57 x \$0.07 = \$3.99.

Savings on bulb replacement costs: [The rated life of each bulb is provided on the package.]

Incandescent bulb:

Annual usage / life = 1500 hours / 750 hours =  
 2 bulbs purchased per year at \$0.25 each

Flourescent bulb:

Life / annual usage = 10,000 hours / 1500 hours = 6.67 year expected life

The initial incremental investment will provide savings in bulb replacement of \$ 0.25 every six months for six years, with the first savings occurring 6 months (0.5 years) after the purchase.

Total savings over the life of the flourescent bulb:

Electricity savings = \$3.99 per year x 6.67 years = \$26.61

Replacement savings = (6.67 - 0.5) x 2 x \$ 0.25 = \$ 3.09

Total savings = \$ 29.30

Calculate the following: (For exposition purposes, all cash flows are shown as mid-year cash flows)

Time(years)	Outflow	Inflows	Cumulative Inflows
0	(\$6.75)	\$0.00	\$0.00
0.5		$\$3.99/2 + .25 = \$2.245$	\$2.245
1.0		\$2.245	\$4.49
1.5		\$2.245	\$6.735
2.0		\$2.245	\$8.98

Payback period = \$6.75/\$2.245 = 3 six month periods or 1 years

Net Present Value

Since the cash flows are assumed to come in every six months, the NPV is computed at the required return of 22% compounded semiannually. This figure is chosen simply for illustrative purposes.

$$\begin{aligned} \text{NPV} &= -\$6.75 + \$2.245/(1.11)^1 + \$2.245/(1.11)^2 + \dots + \$2.245/(1.11)^{13} \\ &= -\$6.75 + \$15.15 = \$8.40 \end{aligned}$$

The calculator solutions are:

Hewlett Packard 10B	Texas Instruments BAII Plus
P/YR	P/Y 2 ENTER
6.75+/-CFj	CF -6.75 ENTER
2.245 CFj	CF 2.245 ENTER
Nj	F1 13 ENTER
I/YR	NPV 11 ENTER
NPV = \$8.4035	CPT NPV = \$8.4035

Internal Rate of Return

The calculator solution is:

Hewlett Packard 10B	Texas Instruments BAII Plus
2 P/YR	P/Y 2 ENTER
6.75 +/-CFj	CF -6.75 ENTER
2.245 CFj	CF 2.245 ENTER
13 Nj	F1 13 ENTER
IRR/YR = 64.7859%	IRR CPT 64.7859%

With a Payback period of 18 months, NPV of \$8.40, and IRR of 64.8%, the fluorescent bulb is the correct choice from a financial standpoint. It has the added advantage of being more environmentally friendly. As an additional input, students could incorporate the additional heat generated by incandescent bulbs as another cost. For example, students in southern states may see an increased use of the air conditioner due to the extra heat produced by these less efficient bulbs. A simple adjustment to include this inefficiency penalty could be for Florida (southern-most) students to multiply the number of watts by 0.15 and then proceed with the rest of the calculations. For students living farther north, the penalty could be reduced the farther north the location.

## CONCLUSION

This paper offers a capital budgeting exercise to demonstrate the entire process of capital budgeting, from data gathering to analysis to decision. A particular advantage of the exercise is the involvement of students in the estimation of cash flows for a decision that they will face in real life. In addition, it clearly shows how textbook techniques can be applied to personal financial decisions. We find that the light bulb assignment is very effective in bridging the gap between theory and practice, and in enlightening students to the value of studying finance.

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**LIST OF AUTHORS**

Amato, C . . . . . 1  
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