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USING AUTO RACING AS A MODEL TO TEACH ECONOMICS FOR GRADES 7-8

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ABSTRACT

The auto racing industry has grown to be one of the most popular forms of sports entertainment. In fact, NASCAR's Nextel Cup racing series is the fastest-growing spectator sport in the nation. Its television ratings are the second highest in major sports, with network coverage that attracts fans from all states and all walks of life. Economists have been researching the economic impact of sports, such as auto racing, on society for many decades (Leeds, 2002; Fort, 2003). However, while many college-levels books and journal articles available on sports economics have been published (Downward, 2000; Alexander, 2000), there is no definitive curriculum available to teach sports economics to grades K-12. This article presents a model that uses auto racing to increase student interest in, and knowledge of, economics for grades 7-8. The goal of auto racing economics is to give the students insight into the world of economics through the medium of professional racing.

This article explores the process of introducing a new sports economics curriculum that uses auto racing as a model. This model links student activities to both state and national economics standards. The authors suggest that additional research should be conducted in the form of pre- and post-test to determine the effectiveness of auto racing as a model to teach economics.

DEVELOPING ECONOMIC AND ENTREPRENEURIAL KNOWLEDGE AND DISPOSITIONS IN ELEMENTARY STUDENTS

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ABSTRACT

Entrepreneurship education has received increased attention at all levels of education. National content standards for entrepreneurship education have been developed that address content knowledge and attitudinal dispositions at elementary, middle, high school, and university levels. In conjunction with this increased focus, one initiative that addressed the need for entrepreneurial and economic education at the elementary level was the Kentucky Council on Economic Education's Entrepreneurs in Kentucky curriculum program. This initiative aimed to develop economic and entrepreneurial knowledge and positive dispositions in elementary students.

This paper presents the dispositional and content knowledge results of students from 13 elementary schools, a total of 300 students, who participated in the initial Entrepreneurs in Kentucky curriculum initiative. Student responses to the project's pretest and posttest instrument were analyzed to examine if there was a significant difference between the mean pretest and posttest scores for student dispositions toward, and knowledge of, economic and entrepreneurial content. Results from the study indicated that there was a significant increase in elementary student knowledge and attitudinal dispositions related to economic and entrepreneurial concepts as a result of their participation in the program.

INTRODUCTION

The importance of the entrepreneur in our economy cannot be overestimated. Schumpeter defined entrepreneurship as the primary engine of economic development (McGraw, 1991). Samuelson and Nordhaus stated, "a country cannot thrive without [a group of entrepreneurs] willing to undertake risks, open new businesses, adopt new technologies, and import new ways of doing business" (2001). Finally, Clayton defined the entrepreneur's role as "an agent of change [that] qualifies him or her as being a key to economic growth" (2005). Each year Americans start 600,000 to 800,000 businesses with employees and about 2 million Americans start their own self-employment ventures. These business starts are the foundation of an entrepreneurial economy (National Commission on Entrepreneurship, 2006).

A review of the literature shows that entrepreneurs—risk takers who undertake new business ventures in search of a profit—are an important component of the modern economy. Consequently, entrepreneurship education has become increasingly important for students at the elementary, middle, and high school levels. This importance has led to the infusion of economic and entrepreneurship education at the K-12 level—a development recognized by educators, business leaders, and politicians alike. Entrepreneurial education has grown from its original roots as a "start your own business" activity, to an understanding of economic concepts and the entrepreneur's role in the broader context of the overall economic system.

THE *ENTREPRENEURS IN KENTUCKY* INITIATIVE

The *Entrepreneurs in Kentucky* curricular initiative was developed in a collaborative tradition to develop and implement an effective entrepreneurial and economic education program. As a result, there was the expectation that students would benefit by having a richer understanding of the importance of the entrepreneur in our economy. The evaluation phase of the program, and the focus of this paper, was intended to determine the success of the program, especially with respect to the attitudinal dispositions and knowledge of students, which is a fundamental ingredient to a successful entrepreneurial and economic education program.

The philosophy driving the *Entrepreneurs in Kentucky* initiative was to teach about economics, entrepreneurs, and entrepreneurship through the study of Kentucky entrepreneurs. The core of the elementary curriculum consisted of 10 lessons focusing on various aspects of entrepreneurial activity. Each of these 10 lessons contained links to national and state curriculum standards, teaching activities, community connections, curricular connections, teacher resources, and related web sites. Reproducible black-line activity sheets were available for each lesson. The elementary curriculum also contained written profiles of Kentucky entrepreneurs, a video developed by Kentucky Education Television, and a pretest and posttest for student assessment. The lessons developed student content knowledge and attitudinal dispositions focused on entrepreneurial characteristics such as innovation, risk, profit motives, problem solving, vision, adaptability, competitiveness, perseverance, and honesty. Specific economic concepts related to entrepreneurs included competition, the profit motive, innovation, opportunity cost, and the forms of business organization.

After receiving the training and implementing the curriculum in their individual classrooms, participating teachers were asked to administer copies of the 20-question pretest and posttest to their students for assessment purposes. The tests contained questions that measured student attitudinal dispositions pertaining to their own entrepreneurial abilities, as well as the students' content knowledge about the role and importance of the entrepreneur in our economy. The pretest was administered before any of the lessons in the curriculum were taught, and then re-administered after the lessons were conducted. Participating teachers submitted the student tests along with a cover sheet that identified the grade level, school district and school name, lessons taught, and students' prior exposure to economic and entrepreneurial concepts.

METHODOLOGY

Approximately 300 students from 13 Kentucky elementary schools participated in this initial assessment of the *Entrepreneurs in Kentucky* curricular initiative. The research questions treat the mean student scores for each of the seven bi-polar adjective attitudinal disposition questions, as well as the scores for the 10 multiple-choice knowledge/content questions on the student assessment instrument, as dependent variables.

The data was analyzed using a t-test with a pooled estimate of population standard deviation to determine the significance of the difference between the mean pretest and posttest scores. The t-test was used to determine if the difference in the sample means for knowledge as well as dispositions (pretest scores and posttest scores) can be attributed to the influence of student participation in the *Entrepreneurs in Kentucky* initiative, or if the difference could have happened by chance. In addition, a single factor ANOVA was also used to determine the influence of the independent variables on the students' posttest scores.

STATISTICAL RESULTS AND INTERPRETATION

Change in Elementary Student Dispositions

The results of the t-test analyses presented in Table 1 shows that, at the elementary curriculum level, students had significant changes in attitudinal dispositions on four of the eight questions. At the 95% significance level, student scores were significantly different on question five with the mean of posttest scores moving toward the "hard work" end of the semantic response scale. At the 99% significance level, mean student scores were significantly different on question three, with posttest scores moving toward the "like to be" end of the response scale; on question six, with posttest scores moving toward the "good" end of the response scale; and on question eight, with posttest scores moving toward the "more" end of the response scale. Responses for questions four, seven, nine, and 10 showed no significant changes in student dispositions.

Table 1: Change in Dispositions

Dispositional Questions and Responses		Elementary
3. I would _____ an entrepreneur. like to be ……never want to be	*Pretest*	4.29
	Posttest	3.36
	Sig. Level	⇦⇦
4. I think that it would be _____ to study about entrepreneurs. fun …… boring	*Pretest*	4.02
	Posttest	3.26
	Sig. Level	
5. Being an entrepreneur would be _____. hard work …… easy	*Pretest*	3.14
	Posttest	2.42
	Sig. Level	⇦
6. I think that entrepreneurs are _____ for our state and community. bad …… good	*Pretest*	4.89
	Posttest	6.32
	Sig. Level	⇨⇨
7. Personally, I know _____ entrepreneurs. many …… few	*Pretest*	5.81
	Posttest	5.64
	Sig. Level	
8. Entrepreneurs ought to be appreciated _____ in our community. less …… more	*Pretest*	4.62
	Posttest	5.73
	Sig. Level	⇨⇨
9. I would like to know ____ about entrepreneurs. more …… less	*Pretest*	2.84
	Posttest	2.87
	Sig. Level	
10. I would _____ and entrepreneur in my town. Like to meet/talk to ….. prefer to avoid	*Pretest*	3.31
	Posttest	2.66
	Sig. Level	
⇦ or ⇨ indicates t-test significance the 95% confidence level and the *direction* of change. ⇦⇦ or ⇨⇨ indicates significance at the 99% confidence level and the *direction* of change.		

Change in Elementary Student Economic and Entrepreneurial Knowledge

t-test statistic. The results of the t-test analyses presented in Table 2 show that the elementary students scored significantly higher on all questions related to knowledge of entrepreneurial and economic concepts. All scores were statistically significant at the 99% level. The assessed content included concepts such as the forms of business organization (proprietorship, partnership, and corporation), a general description of the entrepreneur and the entrepreneurial work

environment, the entrepreneur's profit motive, the nature and role of productive resources, and the role and importance of the entrepreneur in the community.

Table 2: Change in Knowledge

Content Questions		Mean Student Scores
	Pretest	0.35
11	Posttest	0.82
	Sig. Level	⇧⇧
	Pretest	0.37
12	Posttest	0.91
	Sig. Level	⇧⇧
	Pretest	0.26
13	Posttest	0.46
	Sig. Level	⇧⇧
	Pretest	0.28
14	Posttest	0.76
	Sig. Level	⇧⇧
	Pretest	0.42
15	Posttest	0.87
	Sig. Level	⇧⇧
	Pretest	0.41
16	Posttest	0.69
	Sig. Level	⇧⇧
	Pretest	0.40
17	Posttest	0.66
	Sig. Level	⇧⇧
	Pretest	0.51
18	Posttest	0.85
	Sig. Level	⇧⇧
	Pretest	0.50
19	Posttest	0.76
	Sig. Level	⇧⇧
	Pretest	0.39
20	Posttest	0.72
	Sig. Level	⇧⇧
	Pretest	3.57
Mean 11-20	Posttest	7.31
	Sig. Level	⇧⇧

Double arrows indicate t-test outcomes significant at the 99% confidence level.

SUMMARY

The purpose of this study was to determine if there was a significant change in elementary student dispositions toward, and knowledge of, entrepreneurs and economic content as a result of their participation in the Kentucky Council on Economic Education's *Entrepreneurs in Kentucky* program. Specifically, the study examined the difference in the mean pretest and posttest scores for both dispositions toward, and knowledge of, entrepreneurial and economic concepts using the evaluation instrument developed and administered by the Kentucky Council on Economic Education's *Entrepreneurs in Kentucky* initiative.

At the elementary curriculum level, research questions were posed for statistical analysis. These research questions treat the mean student scores for each of the seven bi-polar adjective dispositional questions, as well as the scores for the 10 multiple-choice knowledge/content questions

on the student assessment instrument, as dependent variables. The data was analyzed using a t-test to determine the significance of the difference between the mean pretest and posttest scores.

The results of the analyses indicated that there was a significant increase in elementary student knowledge of economic and entrepreneurial concepts as a result of their participation in the *Entrepreneurs in Kentucky* initiative. In addition, the results indicated that there was also a significant change in student attitudinal dispositions toward economics and entrepreneurship as a result of their participation. This supports earlier research in the field of economic and entrepreneurial education that demonstrated the successful integration of economic and entrepreneurial content and development of positive attitudinal dispositions in elementary classrooms. The Kentucky Council on Economic Education's elementary *Entrepreneurs in Kentucky* results bode well for the program in terms of eliciting positive student attitudinal dispositions and promotion of economic and entrepreneurial understanding.

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A COMPARATIVE STUDY OF ECONOMIC AND BUSINESS EDUCATION IN AMERICA, ESTONIA, LATVIA, RUSSIA, LITHUANIA, DENMARK, AND UKRAINE

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INTRODUCTION

The material for this study came as a result of contacts with 212 teachers from Estonia. Latvia, Russia, Lithuania and Denmark in an economic education workshop held in Helsinki, Finland July, 16 -29th. The teachers agreed to participate in a study to evaluate the status of their schools with respect to a basic knowledge of business and economics terms. We provide them with scantron sheets and a copy of the 50 question Test of Economic Knowledge published by the National Council on Economic Education in their native language. They agreed to provide a pretest [form A] and post testing [form B] score for students. In most cases the educator was a representative of the entire school. The student participants represent a wide cross section of students from many parts of each country. The number of schools and students represented by the survey is explained in table 1.

Each of these nations has a slightly different way of organizing their pre-college curriculum. I will begin with an overview of pre-college education in each country.

Russia

The educational system developed in the Soviet Union is the model for the Russian system and many of the former satellite and former republics. It begins with a primary education grades 1-9 in which students learn the basics. A secondary education is split into the vocational schools [called Gymnasiums] and higher education preparatory schools, called Lyceums. Most of these are subject oriented, like a magnate school in the USA, where children attend based on their abilities and interest. The regular school day ends at 2 pm. With most students staying for optional instruction until 6 pm. Russian children start taking English in the fifth grade, by then they already had instruction in one or two other foreign languages, usually German or French.

Russia has established the Economics Education and Research Consortium (EERC) to promote economic literacy in the nation through the production of classroom literature and training programs for teachers. Today most school children in the academic Lyceum based schools have at least three hours of instruction in market economics. Business oriented magnate schools have up to four courses in economics. Students receive some limited instruction in market economics in the general education program.

Ukraine

The Ukraine has a three-tiered educational system modeled after the soviet educational system used in many of the former Soviet Union Nations. Each nation has some modifications to that system. In the Ukraine there is the "inferior" state run schools, which at least two-thirds of the students avoid, and then there are private licensed Lyceums for college bound students and the Gymnasium schools for vocational education. Both of the private systems receive some support from the state and then are certified and monitored by the state. The private schools seem similar to the charter school system active in US Education. The Ukraine has a distinct advantage over the less organized fifty state efforts in the US. In the Ukraine in order to teach any subject teachers must

pass a test and then be retested every five years to be certified to teach that subject. In the Ukraine they have a graduation test in which students can prove their ability in several major study areas of which economics and business is one of the test. Students receive some instruction in market economics in the general education program.

Estonia

In Estonia education is under the direct control of the local and state government with the two tiered lyceum and gymnasium system. While private schools do exist they are not as popular as in the Ukraine. In Estonia 44 percent of the adult population has graduated from a secondary public school, with 16% having completed a degree in higher education. Education is compulsory through the basic and primary level.

Primary education is based on a set of national standards but each school decides its own specific curriculum. Secondary education is free and voluntary and consists of grades 10-12. In 1997, 95.2% of students who completed a primary education went on to the secondary level. Graduation is based on passing a series of exams, including an essay in the Estonia language. About 70% of the students went to the lyceums to prepare for college and 25% went on to get a vocational education at the gymnasiums. Entrance into a university requires passing a national exam on the completion of high school. A high school graduate receives a diploma and certification in the exams passed, of which economics is one. Private schools in Estonia emphasize business and economics along with other studies. Only about 2% of Estonia students attend these institutions. Students receive some instruction in market economics in the general education program.

Latvia

The educational system is similar to the Russian system. Students have a nine year basic or primary education. They may then chose to go to one of four different types of lyceums 1) General Program (no emphasis), natural science emphasis, humanities or vocational emphasis There are 7 courses that are compulsory for all students: Latvian Language and literature, Mathematics, History, one foreign language, Physical education, Applied information and basic business. In order to be certified one must complete all courses plus pass at least five, including two exams in compulsory subjects, at the end of the twelfth grade. Latvia is now part of the European Union. Students receive some instruction in market economics in the general education program.

Lithuania

Has a system similar to that of the old Soviet Union, with twelve grades and academic {lyceums] as well as vocational training [Gymnasiums] in grades 10-12. As of last year Lithuania is now part of the European Union. Students receive some instruction in market economics in the general education program.

Denmark

Denmark is an independent country with a market economy that was never under the influence of the Soviet Union. It has a system similar to that of many of its European neighbors. Education is compulsory for ages 7 – 16, with 94% completing secondary school. There are two types of secondary schools, called gymnasiums, Vocational and academic. The academic program is a three year program qualifying students for entrance into the University system. Students must pass at least ten special exams to complete high school at the end of the 12th year. Economics and business is one of the exams. Denmark is part of the European Union. Students receive some instruction in market economics in the general education program.

Finland

Finland is an independent country with a market economy that has been under the influence, but not control of the Soviet Union. It has a system similar to that of many of tits European neighbors. Education is compulsory; there are two types of secondary schools, called gymnasiums,

Vocational and academic. The academic program is a three year program qualifying students for entrance into the University system. Students must pass at least ten special exams to complete high school at the end of the 12th year, one of which is business. Most schools require foreign language study in English, French and German. Students receive some instruction in market economics in the general education program.

From the outset of transition in the early 1990s, the task of educational reform in the transitional economies has been immense. Relative to the needs of a market economy, the educational systems required substantial change. Courses never before offered during Soviet days had to be created and added to the curriculum. Further, all of this required developing a core of economics and social studies teachers who understood and could effectively teach market economic content, in a nation where no educators had any positive background in that field. Finally, the economic freedom and entrepreneurial spirit fundamental to a capitalist market economy required progress toward developing an independence of thought and a greater skill in applying knowledge in new and creative ways in school students. Strengthening this aspect of education required an entirely new style of teaching that would accommodate active learning methods and greater student freedom of expression. These changes began in 1991.

. In classrooms of the former republics and satellites nations of the Soviet Union teachers were trained through the cooperative efforts of NCEE and the various national Councils on Economic Education. The programs emphasized activity-based lessons with skill and great enthusiasm. From the Ministry of Education to the committees developing economics standards, the influence of NCEE is clear – lessons are being designed with an underlying active-learning paradigm and standards are being developed with significant reliance on NCEE guidance and assistance.

It is evident from both discussions with educational administrators and observations of classroom economics lessons that the active learning paradigm has been accredited by a core group of educators in Ukraine, Estonia, Latvia, and Lithuania. It is clear that in time the economic education within the various school systems will fully adapt to the needs of a market-based economy.

All of the other countries have a business and economics study as one of the options in the academic schools. Most provide for testing in their exit examinations. Latvia requires it as part of the general education requirements for all students. Most of the others make it optional.

RESEARCH DESIGN

In this study I compared three independent treatment groups in each of the seven countries. The performance of these treatment groups were first tested using the Chi-square test of significance then correlated using the dependent variable of a final score on the High School Test of Economic Literacy developed by the National Council on Economic Educations and tested in a variety of different sized schools across the United States with 4,235 students participating. Most of the students completed the test as an exit exam at the end of their senior year in school in both the United States and the other six countries.. Pretests were administered in all countries, for this study. The data from the American schools included: group 1-3 United States population; Group 1 [Y] national data accumulated in the process of norming the test in 1986 and available as a test bank from the National Council on Economic Education. Group 2 [x1] data from two Advanced Placement-Economics high schools [one in a medium sized town in Arkansas and one in Memphis, Tennessee]. These are schools that are teaching the AP course in advance Economics, this group included 293 subjects over a three-year period [2001-2003]. Group 3 [x2] a group of 326 students from a variety of randomly selected schools from all over the midsouth in Missouri, Tennessee, Mississippi and Arkansas.

The other national groups included: The Ukraine group 4 [x3] the exit exams from the population of 2,032 students in academic lyceums. Group 5 [x4] included results from student who

had some economics in their vocational studies at gymnasiums, Group 6 [x5] students from the general education programs. An analysis of all equation variables is expressed in the functional relationship. Similar groups were examined in the other five nations.

These were conducted for each country to determine if there was a difference among the groups and if it was significant at the .01 levels.

CONCLUSIONS

Our study examined 3 different groups of students in each of the eight countries, including the USA. Three of these groups included 4,854 American High School students near the end of their senior year. Three of the groups included 7,098 Ukrainian students in their senior year. A total of 23,660 students were tested in all eight nations as noted in table 1. These students were all given the Test of Economic Literacy, developed by the National Council; on Economic Education and nationally normed in 1986, as an exit exam. This exam was translated into the various languages for use an exit survey exam in economics on a voluntary basis. The mean scores were tested using the Chi Square test of significance and a regression analysis using the two-tailed test at the .01 level of significance. Amazingly after only 12 years of independence from the Soviet Union the general student population in Estonia and Latvia were doing better than American students. Russia, and Ukraine lagged behind but the level was not significant between their students and the American population. The rank order of means from highest to lowest was Estonia, Denmark, Latvia, Finland, USA, Russia, Ukraine, and Lithuania. America came in fifth with a lower mean than two former communist nations with only a 10 year record of free markets. The mean score for all students was 24.13 or 52%.

An examination of the subgroups was even more revealing. First there was no significant difference between the means of the groups tested in 2001 and 2002 so that data was combined. As would be expected the two groups that performed the best on the test were American students taking the Advanced Placement tests in economics after completing a high school course in AP Economics that would count for college credit. Their mean score was 25.89 [2001] and 26.03 {2001], which were not significantly different from each other but were significant when compared to the other sub groups. Their mean score was 25.71 [2001] and 25.09 {2001], which were not significantly different from each other but were significant when compared to the other sub groups. There was no significant difference between the AP American group and the Ukrainians who were using the economics test as one of their Olympiad exams. Ukrainian Students have three basic tests, which everyone must take in Ukraine language and culture, math and History. The students must select up to 5 exams from a broad range of subjects, as their specialties to form an exit text series from High School if they pass the test they will be certified as scholars in that area, one of these tests is the Test of Economic Literacy, which has been translated into Ukraine. There was no significant difference between the performance of these top groups on the test, since both of these students groups had strong incentive and the class background required to be successful. These students mean score was at the 91st percentile among students taking the exam.

These top groups were followed closely by the college bound Lyceum students who also performed significantly better on the test than any of the other groups, with a mean score of 20.71 [2001] and 19.92 [2002]. There was however a significant difference between the top groups and the Lyceum group who had no formal training in economics, with a mean score of 15.27 in 2001 and 14.73 in 2002. Since 73% of the College bound students had at least a three credit hour course in business and economics during their high school experience they were then performing well in economics relative to the specialized students. These groups performed at the 61 percentile among students taking the exam.

The vocational oriented Gymnasium students were well behind the brighter groups (mean score with economics 18.92 without 12.21 performing as a group at the 51 percentile and the 15th

percentile respectively. I do not believe that difference reflects a regional difference, but that students are receiving less information about economics today than they were in 1986. Overall it is sad to note that Nation that perfected the market economy has students that perform only as well as a nation of students that have only had 13 years of experience with a market economy in transition. One explanation may be that the newness factor has a halo effect on the transitional system students enhancing their interest in market economics and thus their performance, similar to the effect that computer tutorials had on American students when they were exciting and new in the 1980's. This study clearly demonstrates two important findings. First the educational systems with all of its problems has done a miraculous job of improving both interest in and more economically informed students, particularly among the elite group of learners. This may also relate to the greater discipline found in schools in the Ukraine as much as the perfected teaching methods, their was no way to test for that difference since it varied from school to school.

A second important finding is that all eight countries have some need for improvement in the process of teaching and learning business and economics into their curriculum in Pre college education if they are to reach the majority of students in either country, since most will not attend College or post secondary education.

Table 1: SCHOOL PARTICIPATION AND RAW SCORE REULTS

NATION	SCHOOLS REPRESENTED	STUDENT PARTICIPANTS	PRE TEST MEAN	POST TEST MEAN	RANG POST TEST	DIFFERENCE BETWEEN PRTM AND POST M SCORE	RANK
LATVIA	27	2,215	19.01	25.39	10-44	+6.38	3
ESTONIA	18	1,811	17.06	29.90	9-46	+12.84	1
LITHUANIA	23	2,037	17.13	20.17	8-46	+ 3.04	8
RUSSIA	49	3,207	16.45	23.88	7-45	+ 7.43	6
DEMARK	15	2,735	18.34	26.79	11-46	+ 8.45	2
UKRAINE	89	5,737	19.48	22.19	10-46	+ 2.71	7
USA	93	4,557	16.66	24.53	9-46	+ 5.87	5
FINLAND	314	1,361	15.81	26.30	7-46	+10.49	4
TOTAL	314	23,660	17.02	24.13		+ 7.11	

Table 2: SUBGROUP SCORES

COUNTRY/GROUP	LYCIEUM/AP ECON. GROUP 1 POSTTEST MEAN	VOCATONAL GROUP 2 POSTTEST MEAN	GENERAL POPULATION GROUP 3 POSTTEST MEAN
ESTONIA	N=523 34.81	N=331 25.38	N=957 19.79
DENMARK	N=820 32.11	N=550 24.22	N=1365 18,44
LATVIA	N=637 33.28	N=477 19.13	N=1,101 20.21
FINLAND	N=408 34.33	N=230 24.11	N=722 14.41
USA	N=1,376 37.31	N=910 22.21	N=2271 16.23
RUSSIA	N=968 35.41	N=640 21.38	N=1599 13.39
UKRAINE	N=551 34.92	N=3299 19.02	N=1887 12.17
LITHUANIA	N=132 33.11	N=1004 21.31	N=901 14.28
AVERAGE	N=5415 34.14	N=7408 22.09	N=10797 14.08

THE PUZZLE OF REGIONAL PRICE DIFFERENCES (OR THE LACK THEREOF)

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ABSTRACT

Prices of many goods and services exhibit great variation dependent on the locale. One of the reasons for such price variations is where a seller is located. For example, the price of gasoline (in addition to taxes, infrastructure, brand, etc.) depends on the proximity to refineries. Similarly, services such as haircuts or professional consulting show great differences in pricing based on the location. However, there are numerous examples in which a different pricing scheme can be observed. One familiar example is the flat rate that is charged by the United States Postal Service. Postage charged is the same whether a letter gets delivered across town or across the country (even including locales such as Alaska, Hawaii, or Puerto Rico). Another example of the same issue is the destination charge that automobile manufacturers charge their dealers (who, in turn, pass it on to the buyer of the vehicle). The destination charge is the average, not the actual, cost of delivering a vehicle of a certain type to the dealership. Between the two extremes of charging prices based on actual cost (gasoline, haircuts) and charging a flat fee (postage, destination charge) are other pricing schemes. Prices of retailers such as Sears, Roebuck and Co., for example, are close to being "flat." They often have the same price for a certain item for the 48 contiguous states, but different prices apply for Alaska and Hawaii. One step farther away from a "flat" pricing scheme are companies like FedEx that have certain origination and destination areas within which the rate is the same while rates differ across those areas.

The puzzling question is why many companies do not adjust their prices to reflect the associated cost more closely. In the case of the U.S. Postal Service, it can be argued that the provided service (at least to remote areas) is a public good that must be subsidized by other individuals (that mail letters to close-by locations, such generating a profit for the USPS on those transactions). In the case of the destination charge for automobiles, the reason may be that it is easier and thus less expensive for the manufacturer to charge one rate for all destinations. The dealers accept such an arrangement because they can deflect possible criticism from potential buyers onto the manufacturer. (Additionally, the way destination charges are handled does not vary greatly between manufacturers.) Companies such as Sears, Roebuck and Co. may want to avoid that customers purchase an item in one store rather than in a different location to avoid arbitrage between the locations. This may be due to the possibility of complaints from their individual stores if a loss in sales is perceived. In the case of FedEx, differentiating the fee based on the associated cost even more finely than the current practice presumably does not justify the additional cost of doing so.

EXAMINATION OF A SELECTIVE GRADING SCHEME WITH STUDENT INPUT

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ABSTRACT

Selective grading refers to a grading scheme in which an instructor grades only parts of an assignment. Contrary to the typical case in the literature which examines a grading scheme in which it is the instructor's decision which parts of the assignment are graded, I examine the effects of selective grading when that decision is made by the individual students. In my analysis, I control for a student's GPA, math grades, gender, class, and number of absences during the semester. I find that, on average, students under a selective grading scheme perform better, ceteris paribus, than their peers in a class with full grading. This is true for performance on homework assignments alone as well as for overall semester performance.

INTRODUCTION

Selective grading refers to a grading scheme in which an instructor grades part, but not all, of an assignment. There is one rather obvious advantage to instructors: The grading requires less time. However, there may also be benefits for students. For example, the time that is freed up for the instructor can be spent on additional class preparation. Also, if only some, but not all, of the questions on an assignment are graded, the instructor can put more questions on an assignment, thus testing a larger number of concepts.

The typical case in the literature examines the effects of a selective grading scheme, which is recommended, for example, by Davis (1993) and Austin (1979): The instructor picks—after the students submitted the assignment—which parts of the assignment will be graded. While Paschal, Weinstein, and Walberg (1984) have found graded homework to be more effective than non-graded work, other studies (Austin and Austin, 1974) suggest that feedback on homework has little impact on test performance. In terms of homework performance, Miller and Westmoreland (1998) found that selective grading has no effect. However, students may feel that the instructor selects the most difficult problems or the ones that many students did not hand in. In order to avoid this potential problem, I examine whether selective grading still "works" if it is the individual students' decision which parts of the assignment will be graded.

DATA

The data used in this study were collected during the Spring 2002 semester when I taught two sections of the same undergraduate statistics course as part of the core curriculum for business and accounting majors at William Paterson University of New Jersey (WPU). I made every effort to teach the two sections in an identical fashion: textbook (Lind, Marchal, and Mason, 2001), coverage of material, handouts, homework assignments, and exams, for example, all were the same in the two sections. The only material difference between the two sections was the way homework assignments were graded. In one course section, all questions on the homework assignments were graded. In the other section, students selected two out of four questions on every assignment that they wanted to be graded. Additionally, I gave oral reminders to my students in the selective grading class about the grading scheme when I distributed the homework assignments.

In my data set, I have information on a student's performance in class, GPA after the previous semester, grade in the math prerequisite, gender, class standing (sophomore, junior, or senior), and the number of absences. Enrollment in the two sections was 33 and 35, respectively. The useable number of observations is 49 rather than the sum of 33 + 35 = 68 values. This is due to one of two reasons (or both of them). WPU has articulation agreements with several community colleges that make it relatively easy to transfer classes taken at a community college to WPU. Students who take advantage of this system often have taken a finite math course at the community college in which case the credit hours, but not the grade get transferred to WPU. In this case, I do not have knowledge of the math grade. Similarly, students with the math prerequisite from a community college can take the statistics class in their first semester at WPU. If they do so, no GPA after the previous semester exists. Table 1 shows the arithmetic means and standard deviations of all variables included in my analysis for the two course sections.

Table 1A
Means and Standard Deviations of Dependent and Independent Variables

Variable	Mean (Full)	Std. Dev. (Full)	Mean (Selective)	Std. Dev. (Selective)
Overall score	74.33	15.71	75.79	11.23
Homework score	18.79	5.61	20.08	3.52
GPA	2.77	0.56	2.49	0.51
MATH120	2.85	0.95	2.60	1.10
Male	0.56	0.51	0.50	0.51
Junior	0.48	0.51	0.67	0.48
Senior	0	0	0.17	0.38
No. of absences	2.80	2.53	3.79	3.05
No. of observations	25		24	

As can be seen, the grades in MATH120 (the prerequisite for the statistics course) and the overall GPA are lower in the selective grading section. However, the overall score is higher in this section, which is mainly, but not exclusively, due to the higher homework score.

ESTIMATION

To examine whether and how selective grading affects the scores on homework assignments, I estimate the following equation:

$$HWscore_i = \alpha + \beta_{SG} SG_i + \sum_k \beta_k x_{k,i} + \varepsilon_i$$

$HWscore_i$: sum of student's scores on the three homework assignments

SG_i : dummy variable indicating whether student i was in class with selective grading scheme

$x_{k,i}$: vector of control variables

The dependent variable is the sum of points earned on three homework assignments (each worth 8 points) for a total possible value of 24. The independent variable of main interest is a dummy variable for selective grading. As control variable in my estimation, I include a student's GPA before the semester during which the statistics course was taken as a measure of overall academic performance. I also include a student's grade in a finite math course (MATH120), the

prerequisite. I suspect, *a priori*, that performance in math and statistics courses may not be as strongly correlated with overall performance as many other courses of a student's curriculum are. In order to examine whether there is a gender difference, a dummy variable for male students is included. To account for the possibility that performance is affected by a student's class, I include a dummy variable for junior standing and one for senior standing. In both sections, I took attendance in every class period. The number of absences over the course of the semester is included since it may have a twofold effect: First, a student's grasp of the material tested on homework assignments and exams may be worse the more class periods that student missed. Second, the number of absences may also be an indicator of a student's attitude towards the course. I subsequently estimate a second equation, which has the student's overall score in the course as the dependent variable. The independent variables are the same as in the first estimation. The maximum number of points for the dependent variable in equation (2) is 100.

RESULTS

Table 2
Regression of Homework Score on Selective Grading Dummy and Control Variables (*t*-Statistics in Parentheses)

Independent Variable	Total Homework Score (out of 24)
GPA	2.69 (1.77)
MATH120	-0.15 (-0.19)
Male	-0.06 (-0.05)
Junior	0.35 (0.26)
Senior	1.57 (0.60)
No. of absences	-0.62 (-2.53)
Selective grading	2.28 (1.66)
Constant	13.37 (3.33)
No. of observations	49
R-Squared	0.34
Adjusted R-Squared	0.22

As can be seen from Table 2, the R-squareds are reasonably high. I find that, on average, a one-unit increase in a student's GPA (i.e., an increase of one letter grade) increases the total score on all three homework assignments by 2.69 points, *ceteris paribus*. Since the highest possible combined score on homework assignments is 24, this would be equivalent to an increase of approximately one letter grade (if grades were based on homework assignments exclusively). This result is statistically significant at the 10-percent, but not the 5-percent level. The coefficient estimate of MATH120 is both small and statistically insignificant. Similarly, the estimated coefficient on the male dummy is neither statistically, nor economically significant. Students with junior and especially senior standing do better on homework assignments than their sophomore counterparts, ceteris paribus. One possible explanation for that is that by the time students become juniors or seniors, they understand the importance of academic work and take school work more seriously than the typical sophomore. An alternative explanation is based on selection: The students who "make it" to junior and especially senior standing are the ones who were successful enough to still be in the program. In other words, some of the sophomores in my data set will probably—voluntarily or involuntarily—leave the program before they become juniors or seniors. Note, however, that the estimates for both class standings are statistically insignificant at conventional levels. Contrary to that, the number of absences is estimated with high precision (p-value = 0.015). On average, each absence reduces the cumulative homework score by approximately 0.6 points, *ceteris paribus*. Given that the highest possible cumulative homework score is 24 (and

thus 0.6 points represent 2.5 percent of all total points), I consider this estimate to be of rather substantial magnitude.

Finally, the estimate on the selective grading variable shows that, on average, students in the class section with the selective grading scheme have a total homework score that is approximately 2.3 points higher than the respective value for their peers in the section with the "traditional" (i.e., full) grading scheme. This coefficient is estimated with relatively high precision (p-value = 0.105) and is rather sizable, considering that 2.3 points represent almost 10 percent of all possible points for homework assignments. That is, if grades were assigned on the basis of homework scores alone, this would correspond with a difference of approximately one letter grade. At first glance, it may be tempting to interpret this finding by claiming that students in a section with selective grading perform better academically than students in a section with full grading. More specifically, one could think of an explanation that claims that students under a selective grading scheme can spend more time on each problem on a homework assignment since they have to answer only two rather than four questions. An alternative—and, in my opinion, rather appealing—explanation, however, may be that students choose to turn in the answers to the questions that they perceive to be the easiest ones. While I made every effort to make all questions on an assignment equally difficult, I may not have succeeded at this task. For example, on the first of the three homework assignments 12 of the 24 students in the section with selective grading chose to have the first question graded. The second question was chosen by 19 of the students, 21 out of 24 chose the third question, and only 9 students chose the fourth question to be graded (and 15 did not).

In order to investigate this matter more thoroughly, I run a second regression. By regressing the students' overall score at the end of the semester on the same set of regressors, I examine whether a selective grading scheme has an impact on overall class performance (i.e., homework assignments together with exams) rather than just performance on homework assignments alone. Estimation results are shown in Table 3.

Table 3
Regression of Overall Score on Selective Grading Dummy and Control Variables (*t*-Statistics in Parentheses)

Independent Variable	Overall Score (out of 100)
GPA	10.85 (2.63)
MATH120	0.56 (0.27)
Male	0.36 (0.10)
Junior	-2.95 (-0.80)
Senior	-4.99 (-0.71)
No. of absences	-1.48 (-2.24)
Selective grading	7.50 (2.01)
Constant	48.07 (4.41)
No. of observations	49
R-Squared	0.41
Adjusted R-Squared	0.31

Again, the R-squareds are quite high. I find that a student's GPA is highly statistically significant and still strongly associated with overall performance. A one-unit (i.e., letter grade), increase in GPA corresponds with an increase in the overall score of approximately 10.8 points, i.e., also almost one letter grade. While both MATH120 and MALE change signs relative to the first regression, they are still statistically insignificant and small in magnitude. The negative sign for the JUNIOR and SENIOR dummies suggest that juniors and seniors fare worse overall than sophomores. While this may seem counterintuitive, a plausible explanation may be the following: While the statistics course is not a prerequisite for most of the upper-level business courses, it is

meant to be taken relatively early on in the students' careers. If a junior or senior has not taken this course yet, it may indicate that they either have taken the course before and had to retake it, or that they kept putting it off. Class absences again have a strong statistically significant association with student performance: Each absence, on average, lowers the overall class score by approximately 1 ½ points, *ceteris paribus*, so that two absences approximately correspond with a decrease of one step of the letter scale (e.g., from B+ to B or from C- to D+).

The coefficient estimate of the variable of main interest in this study, the dummy for selective grading (SG), in this regression is statistically significant. Moreover, it is positive, i.e., all else equal, students in the class with selective grading do *better* overall than students in the class with full grading. The magnitude of the estimate is also remarkable: The average difference between the two classes is approximately 7.5 points, i.e., three quarters of a letter grade.

CONCLUSIONS

A priori, one might think that if selective grading has an impact on student performance at all, it might be a negative one. That is, it may seem plausible that students do not work the problems they do not intend to turn in, which does not prepare them adequately for the exams. As it turns out, however, the opposite is the case: Students under a selective grading scheme do better than their pees in a "traditional" course, even after controlling for a number of other possible factors. Since four of the control variables exhibit large p-values in both of the estimations, however, there may be other relevant factors, which are not included in the model and which may be hard to capture because it is a rather abstract concept (e.g., student's motivation or drive) or because this information is typically not available (e.g., hours spent on exam preparation). However, while I am reluctant to advertise selective grading as a way to improve student performance, it seems as if this study provides reasonably strong evidence that the utilized selective grading scheme at least has no negative effect on student performance.

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HAS DEREGULATION AND FINANCIAL INNOVATIONS CAUSED A STRUCTURAL BREAK IN THE HOUSING MARKET?

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ABSTRACT

Financial deregulation in 1980 has potentially altered residential investment and the housing industry. In this study we use Chow Breakpoint Tests and Cusum-of-squares tests to examine if there has been a structural break in interest rates and residential housing investment due to deregulation and financial innovations. Results indicate that there has been a structural break in both interest rates and the housing market, which corresponds with the deregulation and financial innovations of the 1980s.

INTRODUCTION

While the residential investment sector comprises a small share of GDP, it accounts for a disproportionate share of fluctuations in GDP. For example, residential fixed investment (RFI) comprises about five percent of real gross domestic product. However, fluctuations in RFI account for a disproportionate 14 percent of a change in GDP. The housing or residential investment sector displays more fluctuation than consumption and GDP. Movements in RFI appear to be an important feature of business cycles in the overall economy. Thus, a better understanding of RFI fluctuations may contribute to a better understanding of cycles in the overall economy.

In an evaluation of residential investment, impacts from major financial deregulations of the 1980s warrant attention. Prior to 1980, regulation of depository institutions placed ceilings on interest rates at depository institutions and prohibited nationwide offering of a number of newly-innovated financial assets. In 1980, widespread changes occurred in the regulation of depository institutions. This deregulation potentially alters the relationship between residential investment and interest rates.

Studies prior to the early eighties found that investment, especially RFI, was very sensitive to interest rates. However, this may arise from constraints on housing credit availability, prior to deregulation. Since deregulation had a particular impact on Savings and Loans (S&Ls), a re-evaluation of key relationships is warranted. This study examines whether the relationship between interest rates and housing have changed since the financial innovation and deregulation of the early 1980s using a Chow Breakpoint and Cusum-of-squares test.

DEREGULATION AND FINANCIAL INNOVATION

Deregulation and financial innovations in the early 1980s offered many benefits to individuals, via competitive interest rates on savings assets, new savings options and expanded borrowing options in some economic environments. Across the broader economy, the 1980s deregulation potentially altered the relationship between interest rates and residential investment. Prior to 1980, during eras of high market interest rates, Regulation Q created constraints within the housing sector. Regulation Q placed a ceiling on deposit interest rates paid by Savings and Loans.

When a shock (such as a monetary tightening) caused short-term interest rates to rise above the regulated ceiling rate, savers shifted funds away from S&Ls (towards other financial assets such as U.S. Treasury bills). Since Savings and Loans were an important source for mortgage borrowing (supplying nearly 90% of home mortgage loans), this reduced funds available for mortgage lending. Thus, when savers responded to unregulated short term interest rates above ceiling rates, this process called "disintermediation" was triggered. As a result, shocks to short term interest rates affected mortgage fund availability and housing investment.

Most states imposed usury laws during Regulation Q, prohibiting S&Ls from freely adjusting their interest rates in times of excess demand for mortgage credit. These long-term mortgage interest rates showed minimal fluctuation during regulation. In an era of disintermediation and credit availability constraints, non-interest rate mechanisms were used to ration the supply of mortgage credit, rather than movements in the long-term FHA interest rate. According to Kent (1980), credit rationing allocated credit based on non-price alternatives, such as lending fees, collateral requirements, and larger down-payments, lowering the amount some borrowers received, and eliminating potential borrowers who required low down payment loans.

The problems from the era's constraining interest rate regulations and associated financial innovation were evident to participants in financial markets during the 1970s. By 1979 and 1980, the extreme problems affecting depository institutions and the monetary sector were recognized more generally. In 1980, Congress passed the Depository Institutions Deregulation and Monetary Control Act (DIDMCA), aimed at addressing a spectrum of issues related to regulation, Federal Reserve supervision, and financial innovation. Among the various measures, the 1980 law deregulated interest rates, allowing savings and borrowing rates to respond more fully to market forces. The law also authorized nationwide a variety of financial assets at depository institutions. Among the various provisions of DIDMCA, in the early 1980s, interest rate ceilings on deposits at banks and thrifts were phased out. The Act also authorized nationwide offering of interest-bearing transactions accounts. In 1981, the Federal Home Loan Bank Board established adjustable federally-insured FHA mortgage loans. In 1982, the Garn-St Germain Depository Institutions Act authorized money market deposit accounts with unregulated deposit rates. The law also extended the set of financial institutions reporting to the Federal Reserve.

Several reforms helped “complete” the mortgage loan market, by better matching the needs of lenders and borrowers. First, deregulation of deposit rates removed the primary cause of financial disintermediation. By allowing S&Ls to price their deposits more competitively, deregulation removed the incentive for depositors to shift funds out of financial intermediaries during periods of high market interest rates. Further, the development of secondary markets made the industry more complete by expanding the lending funds in the housing market, via "securitization" in the mortgage market. In addition, adjustable mortgage rates commonly became available. The lower initial rates on variable rate loans encouraged some borrowers into the residential housing market. Thus, a number of notable changes occurred in the housing finance market, with potential consequences for relationships between the housing sector and interest rates.

EMPIRICAL PROCEDURES

Housing investment and interest rate impacts warrant evaluation, including assessment of whether key relationships have changed since the 1980s deregulation. A Chow test is employed to examine whether there is a significant structural difference in the housing market due to deregulation and financial innovations. This Chow test is similar to that of Pozdena (1990) and tests for a structural change in the FHA mortgage rate and RFI between the two sample time-periods. A significant difference indicates a structural change in the housing market. To estimate this an F test is constructed as:

$$F = [(RSS1 - RSS2 - RSS3)/k]/[(RSS2+RSS3)/(N1+N2-2K)]$$

where the residual sum of squares *(RSS)* information from regressions spanning the entire data sample is *(RSS1)*, the first sub-period *is (RSS2)*, and the second sub-period is *(RSS3)*. This F test has degrees of freedom of: *{k,N1+N2-2k}* where *N1* is the sample size of the first sub-period, *N2* is the sample size of the second sub-period, and *k* is the number of estimated parameters.

Table1
Chow Breakpoint Test Results

Variable	RFI				FHA Rate			
Time	F-stat	Prob.	LLR	Prob.	F-stat	Prob.	LLR	Prob.
1980.1	1.45	0.229	6.01	0.199	3.36	0.069	3.37	0.066
1980.2	1.35	0.254	5.59	0.232	3.60	0.060	3.61	0.058
1980.3	1.82	0.128	7.48	0.112	2.76	0.099	2.77	0.096
1980.4	4.90	0.028	4.89	0.027	4.90	0.028	4.89	0.027
1981.1	6.70	0.011	6.64	0.010	6.70	0.011	6.64	0.010
1981.2	2.13	0.080	8.71	0.069	7.40	0.007	7.32	0.006
1981.3	2.98	0.021	12.10	0.017	10.75	0.001	10.53	0.001
1981.4	6.36	0.0001	24.77	0.0001	18.20	0.0000	17.44	0.0000
1982.1	1.38	0.244	5.71	0.222	9.78	0.002	9.61	0.002
1982.2	1.39	0.238	5.77	0.217	13.62	0.0003	13.23	0.0003
1982.3	1.40	0.236	5.79	0.215	2.77	0.029	11.25	0.024
1982.4	1.41	0.232	5.84	0.211	3.09	0.018	12.51	0.014

F-stat = F statistic
Prob. = p-value (for statistical significance)
LLR = Log Likelihood Ratio values.

Table 1 displays Chow Test results for various possible breakpoints associated with the time period around deregulation of Regulation Q. RFI results show a significant F-value for the quarters from 1980.Q4 to 1981.Q4. Similarly, to test if the housing industry is affected by changes in mortgage rates a chow test is estimated for FHA mortgage rates and displays a significant F-value for the quarters from 1980.Q4 to 1981.Q4. Results using the FHA rates are re-estimated using the long-term AAA rate and the conventional 30-year mortgage rate, because FHA rates only make up a small percentage of all home loans and are provided to a small segment of the home loan mortgage market. They show results similar to the ones for RFI. The structural change reported by the Chow test for RFI and FHA rates is mostly due to deregulation of Regulation Q and financial innovations in the early eighties.

To examine the robustness of the Chow test results, cusum-of-squares tests (which stands for cumulative sum of the least squares recursive residuals) are estimated. Green (1997) argues that a cusum-of-squares test is appropriate if uncertainty exists regarding when a structural change might exist. According to Greene (2000), one advantage of this test is that it does not require a prior specification of when the structural change takes place as a Chow test does. However, the power of the cusum-of-squares test is limited compared with that of the Chow test.

In general, this test plots the variable over time and its 5-percent critical values. Any movement outside the critical lines suggests the parameter or its variance is no longer stable. This test, developed by Brown, Durbin, and Evans (see Hamilton, 1994), has a null hypothesis that the coefficient vector β is the same in every period, while the alternative is that β (or the disturbance variance) is not the same in every time period. Specifically, the CUSUM Squares test is based on the test statistic:

$$S_t = \frac{\sum_{r=t}^{r=K+1} w_r^2}{\sum_{r=k+1}^{r=T} w_r^2},$$

where w_r is represented by

$$w_r = \frac{e_r}{\sqrt{1 + x_r^{/}(X_{r-1}^{/} X_{r-1})^{-1} x_r}}$$

which goes from zero at $t = k$ to unity at $t = T$. Assuming that T equals all observations and t equals the ex post prediction error for y_t, the regression is estimated using only the first t-1 observations such a where x_t is the vector of regressors associated with observation y_t and b_{t-1} is the least squares coefficients computed using the first t-1 observations. The forecast variance of the residual is:
$\sigma_{ft}^2 = \sigma^2 \left[1 + s_t^{/}(X_{t-1}^{/} X_{t-1})^{-1} x_t\right]$

where the expected value of S under the hypothesis of parameter constancy is:

$$E|S_t = \frac{(t - k)}{(T - k)}.$$

Cusum-of-squares results in Figures 1 and 2 further support this breakpoint after the 1980 deregulation. The overall sample period was divided into the sub-periods: period one, 1959.Q1 - 1979.Q4 (pre-deregulation) and period two, 1982.Q1-1999.Q4 (post-deregulation). Excluding the years 1979-1982 helps avoid incorporating lags from the regulated time period into the deregulation analysis and allows for behavioral time adjustments. This procedure is consistent with Pozdena (1990). The 1999 end date is based upon data availability, as it is the last full year that FHA rates are available.

Both cusum-of-squares exhibit a steep increase in the graph in the early 1980s, indicating a structural break in FHA and RFI during that time period. (Since the log likelihood ratio test results suggest that four lags of RFI is the proper lag length, cusum-of-squares test results are based on four lags of RFI.) This break coincides with deregulation and financial innovations during the same period. Consequently, these test results imply that deregulation and financial innovations of the early eighties have had a major statistical impact upon housing investment. Reinforcing Chow test results, cusum-of-squares results find that the behavior of FHA mortgage rates was altered after 1982's deregulation. This is most likely due to Regulation Q, which created potential price ceilings on deposit rates at S&Ls and likely caused sticky FHA rates prior to 1982. Deregulation eliminated these potential price ceilings which possibly allowed for more flexible FHA mortgage rates.

Combined, these results suggest a structural break did occur in both RFI and FHA mortgage interest rates during the year 1981, which coincides with deregulation. Thus, it appears as if deregulation has increased the flexibility of FHA rates and altered the relationship between interest rates and residential investment. These results are consistent with a major shift in the residential housing market. During regulation, disintermediation reduced the explanatory power of FHA rates for RFI. Short-term rates carried higher predictive power, potentially because high short-term market rates could induce disintermediation and credit rationing in the housing market. Here and in other studies, short-term rate shocks explain RFI movements better than long term rates prior to deregulation. After deregulation, disintermediation and credit rationing problems diminished; short-term rate shocks have corresponding diminished predictive power. In period two, the larger issue for residential investment is long-term rate shocks.

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INFLATION EXPECTATIONS: DOES THE MEASURE MATTER?

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ABSTRACT

In this paper we compare the different measures of inflation expectations, rational expectations, adaptive expectations using an ARIMA (1,1,1) model of past inflation and an adaptive expectations model using an ARIMA (1,1,1) model of the three-month T-bill rate. All three measures appear to behave very differently, with actual inflation being much higher than adaptive expectations.

INTRODUCTION

In recent years there has been growing talk about increases in inflation expectations. This is most clearly seen in the Federal Reserve Bank's aggressive increase in the Federal Reserve Funds rate as a preemptive strike against feared future inflation. Inflation expectations can be formed in a variety of ways, but they must always be taken with caution because future inflation expectations are necessarily intertwined with future monetary policy.

While it is unclear which measure of inflation expectations the Federal Reserve Bank is currently using, there are several ways that these expectations can be formed. Van Order and Dougherty (1991) suggest that using either a rational expectations approach or an adaptive expectations approach is the most accurate. The rational expectations approach outlined in Lucas (1973) uses actual inflation as a proxy for inflation expectations. In comparison, Lahiri and Zaporowshki (1988), Carlson and Parkin (1975), and Madsen (1996) conclude that the best measure of inflation expectations is an adaptive expectations approach. More specifically, they suggest using an ARIMA (1,1,1) model of forecasted inflation for past periods of inflation as a proxy for inflation expectations. While their adaptive approach uses an autoregressive integrated moving average (ARIMA) model of actual inflation, Fama (1975) and Van Order and Dougherty (1982 and 1991) suggest using the three-month Treasury bill rate in a first order autoregressive scheme.

In this paper, we obtain a measure of actual inflation and compare it to two different adaptive expectations models of inflation. Results show that there are considerable differences between the three measures.

ESTIMATION TECHNIQUE AND RESULTS

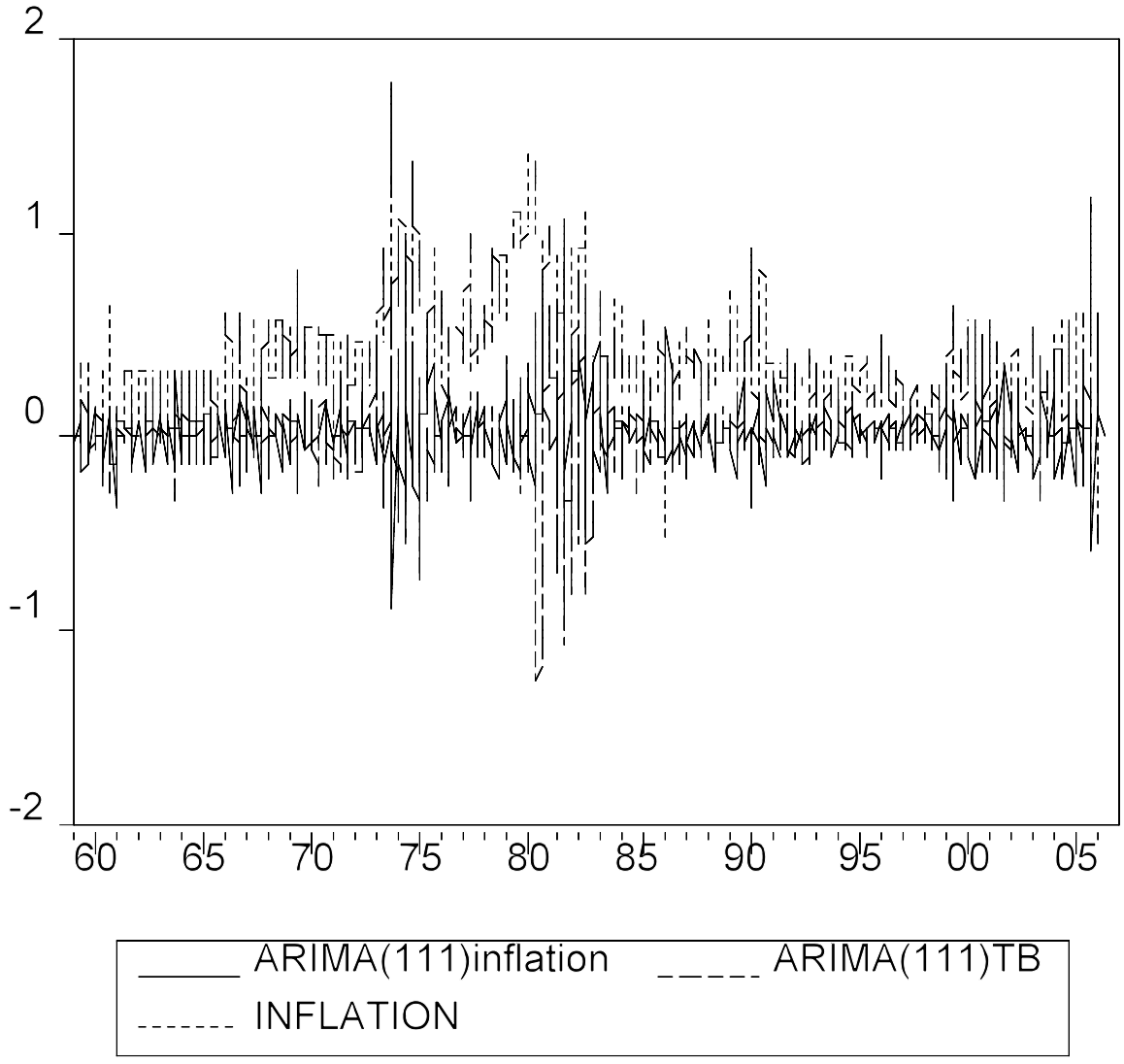
In this paper, we compare all three measure of inflation using the annualized consumer price index (CPI). Monthly CPI Urban All Items data is found on the St. Louis Federal Reserve Web site and is annualized from 1959.01-2005.12. First, we will examine inflation expectations using a rational expectations approach. Second, we will estimate inflation expectations using an adaptive approach with a three-month ahead forecast of an ARIMA (1,1,1) model using the past values of inflation and the three-month T-Bill rate.

An ARIMA model is an autoregressive, moving average model that has been integrated. In general, the autoregressive and moving average component can be combined and written as:

$$u_t = \rho_1 \upsilon_{t-1} + \rho_2 \upsilon_{t-2} + ... + \rho_p \upsilon_{t-p} + \varepsilon_t + \theta_1 \varepsilon_{t-1} + \theta_2 \varepsilon_{t-2} + ... + \theta_q \varepsilon_{t-q}$$

To determine the appropriate model, we performed a visual inspection of the sample autocorrelation and partial autocorrelation functions. We then identified the lag lengths using the Akaike Information Criterion and Schwartz Bayesian Criterion. All results suggested that the appropriate model was an ARIMA (1,1,1) model.

Graph 1



Graph 1 shows how rational inflation expectations (measured as the actual current inflation) compare to the adaptive inflation expectations of ARIMA (1,1,1) of inflation and the 3 month T-Bill. It is quite visible that the actual inflation rate has been much higher then the adaptive inflation expectations. While both adaptive expectation models appear to move together, it does show a very different picture than what really happens.

Table 1
Correlation Matrix

Variables	ARIMA(1,1,1) Inflation	ARIMA(1,1,1) T-Bills	Inflation
ARIMA(1,1,1) Inflation	1.000000	-0.080944	-0.194531
ARIMA(1,1,1) T-Bills	-0.080944	1.000000	0.060286
Inflation	-0.194531	0.060286	1.000000

Results in Table 1 show a similar story, with very little correlation between actual and adaptive expectations of inflation. In fact, the correlation between the actual inflation rate and the forecast inflation rate is quite small and negative. This suggests that the two do not move together. Therefore, the measure of inflation expectations does appear to matter and change one's perspective greatly. This could have a large impact on how the Federal Reserve projects inflation expectations and thus alters monetary policy.

While one might expect the measures of inflation to move closely together and be highly correlated, it appears that the chosen measure of inflation expectations does matter and potentially influence one's interpretation of future inflation expectations. While this research is just preliminary it does suggest that there should be further investigations into inflation expectations. One area that should be explored is whether inflation expectations have changed significantly before and after 1980, as Chairman Volcker potentially altered the targeting and execution of monetary policy.

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PLAYING GAMES WITH JUSTICE: A CASE STUDY OF A SEQUENTIAL GAME

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ABSTRACT

We model the interplay among prosecutors and judges in a small city court as a repeated play sequential game. In this game, the prosecutor is the first mover and a judge the second mover. Prosecutors have the discretion to dismiss a case, amend the original charge to a lesser charge, or prosecute the original charge. When a case comes before them, judges can be lenient or strict. Strict judges will assess fines or rarely jail time and require immediate compliance. Lenient judges also impose fines but grant stays. These stays give defendants more time to comply with the judgment. However, in a practical sense, stays can be the equivalent to no penalty since many fines are never paid and there is little or no follow-up. Each case represents one play of this sequential game, yet the game is repeated in thousands of cases per year. The large number of cases allows for reputations among judges to be formed. These reputations, in turn, may motivate different behavior on the part of prosecutors.

We analyze data on misdemeanor offenses in Monroe, LA for the years 2002-2005. The data allows for comparisons to be made among three judges that preside over cases in the Monroe City Court. There is a disparity in the practical penalties assessed among the judges. We find that when cases are going before a strict judge prosecutors are less willing to amend to a lesser charge. Confronted with a lenient judge, prosecutors will be more likely to allow defendants to plead guilty to lesser charges. We find further that the data are consistent with learning taking place by the prosecutor. Prosecutorial behavior changes as judicial reputations are learned.

Our results are interesting in that despite differences in judicial behavior responses by others to a partial extent counter balance these disparities. Hence, while the players might behave differently, the judicial system acts in a more consistent manner.

DOES ATTRACTIVENESS MATTER?

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ABSTRACT

Across both economics and the social sciences, researchers have found robust evidence to suggest that "attractive" workers enjoy greater benefits relative to "non-attractive" workers. For example, Hamermesh (2005) found that handsome male faculty enjoyed higher student evaluations, ceteris paribus, than their less attractive counterparts. While a number of explanations have been put forth to explain these findings, they all hinge on firm and consumer preferences for attractiveness. What has not been explored is the possibility that "attractive" workers may possess characteristics not found in the data which may be positively correlated with their wages. For example, it could be that attractive workers are more conscientious about their health or are more motivated when compared to the less attractive workers. It may very well be that the results obtained in the presence of this unobserved heterogeneity may be upwardly biasing the economic returns attached to attractiveness.

Using data from both the 1979 and 1997 cohorts of the National Longitudinal Survey of Youth, we adopt a number of specifications to disentangle the implications that unobserved heterogeneity and attractiveness hold for a worker's earnings. We adopt both a fixed-effects, as well as an instrumental variables fixed-effects, linear regression to control for worker ability and motivation. We use a worker's body mass index (BMI) as our proxy for attractiveness. In the cross-section, we find that there is an inverse relationship between earnings and a worker's BMI. However, the preliminary findings suggest that this relationship dissipates once we take into consideration the correlation between attractiveness and worker motivation.

REASSESSING THE CASE OF ECUADOR'S DOLLARIZATION

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ABSTRACT

The purpose of this paper is to conduct a cost/benefit analysis of Ecuador's decision to dollarize its economy in 2000. The study begins with a review of the literature pertinent to dollarization. The following section discusses the factors that led Ecuador to dollarize its economy. The study next discusses the benefits of dollarization through comparisons of economic theory with empirical data and select competitiveness rankings for the period 1997-2002. The study further continues the assessment of dollarization by comparing the costs with the empirical data available for the same period. The final section summarizes the study.

STUDENT PERFORMANCE IN ECONOMICS AND ACCOUNTING A COMPARATIVE STUDY

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ABSTRACT

The conventional wisdom is that many students have a perception of economics and accounting as both difficult to understand and biased in its predictions. To the extent that this opinion holds true it would translate into a negative attitude toward these subjects. The purpose of this study is to determine precisely what student attitudes toward economics and accounting are and if those attitudes are changed by formal exposure to the discipline. Further, were there any differences in attitude toward the teaching of economics and where economics belongs in the overall curriculum? Three very different groups of students were examined for this study.

The first group consisted of in-service classroom teachers in grades Kindergarten through Junior College. These experienced educators were earning graduate credit for advanced studies in economic education. Group II consists of elementary education majors enrolled in a required course called Economics for Elementary Teachers. The purpose of this course is to provide pre-service elementary education majors with some basic background in Economics and instruction in teaching materials and methods relative to economics in the Kindergarten through grade six curriculum. The majority, 87%, had some previous course work in economics or economics for teachers. A sub-group included in-service teachers attending a seminar or noncredit workshop in either Texas or Arkansas was included it the study. These workshops are sponsored by their respective state councils on economic education and by a center for economic education at either Arkansas State University in Jonesboro or Lamar University in Beaumont, Texas. Group III includes accounting students enrolled in Accounting I and Cost Accounting I. The group included a total of one hundred eleven (111) accounting students.

Group III primarily served students pursuing a business major along with accounting. It would seem that the attitudes toward economics and accounting could vary dramatically among the three groups of students. All participants had a significantly positive attitude toward both subjects in the curriculum, although the teacher groups were more positive about economics inclusion than accounting into the elementary level curriculum.