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JOURNAL OF ECONOMICS AND ECONOMIC EDUCATION RESEARCH

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The Editorial Board considers two types of manuscripts for publication. First is empirical research related to the discipline of economics. The other is research oriented toward effective teaching methods and technologies in economics designed for grades kindergarten through twelve. These manuscripts are blind reviewed by the Editorial Board members with only the top programs in each category selected for publication, with an acceptance rate of less than 25%.

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ECONOMICS EDUCATION ARTICLES

THE TEXAS LOTTERY: A PEDAGOGICAL EXAMPLE INTEGRATING CONCEPTS OF INCOME TAXATION, TIME VALUE OF MONEY, AND IRR

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ABSTRACT

This study presents a teaching exercise for a basic economics or finance class. The question posed to students is whether it is better as a lottery winner to receive a lump-sum settlement or the annuity. The exercise is designed to teach students how to integrate multiple considerations into the economically proper choice. These considerations are the implications of the progressive income tax system, the time value of money, and the implicit rate of return associated with the two alternative payment mechanisms.

INTRODUCTION

If you are purchasing a lottery ticket, is it better to receive your winnings as a lump-sum cash payment or as a series of payments over a number of years? There are two choices on a lottery that the State of Texas advertises as a $4,000,000 lottery jackpot. With option number one you receive the $4,000,000 as an annuity due spread across 25 annual payments. These payments will equal $160,000 each, for a total of $4,000,000. With option number two you receive a lump-sum cash payment of $2,000,000, 50 percent of the lottery's advertised value, which is the approximate present value of the annuity due. Remember that you are required to choose your option at the time you purchase the ticket. Also remember that taxes are involved. Now, which option is the best choice?

This lottery question is a review exercise we pose to our introductory business finance students shortly before the course's mid-term exam. This point in the class has introduced students to the time value of money, the personal income tax brackets, and internal rate of return. This "personal finance" problem requires them to integrate their knowledge of both topics to make an analytical decision in choosing one of the options. This problem will also give them additional practice in using a financial calculator or the financial tools in a computer spreadsheet. By working through the examples discussed below, students learn to include tax considerations into what initially seems to be a relatively simple time value of money problem.

Without endorsing or opposing the lottery concept itself, we recognized that the Texas lottery presents us an opportunity for a "real world" application to which many students can quickly relate. Most of our students have some familiarity with the lottery in Texas-either from the personal purchase of tickets or from being exposed to the lottery's extensive advertising campaign. For those who have purchased a ticket, they know personally that the sales clerk always asks at the time of purchase whether the purchaser wants the "cash option" or the annuity. The choice made at the time of purchase of a lottery ticket is a binding decision that determines the payment schedule to be followed if the purchaser of the ticket wins the lottery. Therefore, this is a decision that many students have made before, but perhaps without any solid financial basis for their decision. The students are immediately intrigued with this puzzle, wondering "did I do the right thing" with previous purchases.

We quickly have to put a couple of constraints on the problem, the primary one being that the students are to ignore all non-financial considerations. This is purely a wealth maximization problem. The current desire for a new sports car or a month-long vacation in Paris is to be set aside. Likewise, students are asked to ignore extreme cases such as the 97 year-old purchaser of lottery tickets who probably will not live to see 25 annual payments. The second constraint is that we must assign the pre-lottery levels of taxable income, to ensure that the students are all working on the same problem. The final constraint is that to simplify the analysis we allow the students to assume that the pre-lottery taxable income of the lottery winner will be constant for the next 25 years. This is somewhat unrealistic, but it does no harm to the pedagogy of the lesson. Factoring in a growth rate for pre-lottery income would complicate the problem without substantially increasing learning.

It should be noted that we are using the definition of "taxable income" used by the Internal Revenue Service. An individual completing a 1040 income tax form reports income and makes certain adjustments, then subtracts allowable exemptions and deductions (whether standard or itemized). The income that remains is "taxable income" and is reported on Line 39 of the Form 1040. It is "taxable income" that is taxed. In this problem we do not concern ourselves with total income, the amount of adjustments, exemptions or deductions. We start the analysis with taxable income.

Students are told to assume six specific levels of taxable income, and to determine if the family in each case is better off with the cash settlement or the annuity due. Regardless of the level of income, in this study each dollar of additional income results in an additional dollar of taxable income.

For the year 2000 our students are being told to assume six different pre-lottery taxable incomes. The first level is zero taxable income. The next four income levels are $21,925, $74,900, $133,700, and $224,900. These income levels are, respectively, the midpoints of the 15 percent, 28 percent, 31 percent and 36 percent income tax brackets. Finally $288,350 is the last income level. This is the start of the 39.6 percent bracket, so any income received from the lottery will be taxed exclusively at 39.6 percent. Table 1 presents the year 2000 personal income tax tables for a married couple filing jointly, and is the table we are using in our classes.

Table 1
2000 personal income tax table for persons married and filing jointly

Income Over	But not over	Tax of excess over	
$0	$43,850	15%	--$0
$43,850	$105,950	$6,577.50 plus 28%	--$43,850
$105,950	$161,450	$23,965.50 plus 31 %	--$105,950
$161,450	$288,350	$41,170.50 plus 36%	--$161,450
$288,350	---	$86,854.50 plus 39.6%	--$288,350

THE ANALYSIS

Regardless of which of the six levels of income the student is analyzing, the student quickly discovers that certain steps must be followed in the analysis. First the student must analyze the pre-lottery case and calculate the taxes due and the after-tax income. (Since we assign taxable income, issues of exemptions, deductions, and other confounding variables are swept aside as irrelevant to the lesson.) Then the student analyzes the implications for the change in after-tax income that results from winning the lottery, assuming they receive the annual payments. Next the student must determine the impact on taxable income if the couple wins the lottery and receives the lump-sum payment. Finally the student must find the rate of interest that equates the after-tax cash flows from the two means of payment.

As an example of the calculations, we demonstrate below the case of a married couple with a pre-lottery taxable income of $21,925. Utilizing the information from Table 1, the student determines that the couple with $21,925 in taxable income is in the 15 percent marginal tax bracket. The student then calculates taxes due to be $3,288.75 and after-tax income to $18,636.25.

Tax due = $21,925*0.15 = $3,288.75
After-tax income = $21,925-$3,288.75 = $18,636.25

With this step completed the student is ready to adjust lottery winnings to after-tax income. Since we have given the student the "pre-lottery" taxable income, the student must determine taxable income post-lottery for both an annuity due and a cash settlement.

In the second step the student is ready to address the annuity due option. Students determine that the annual annuity due payment from the lottery is $160,000 per year for 25 years. This amount is added directly to pre-lottery taxable income, then the revised values for taxes and after-tax income are determined. (This after-tax income will be important in the next step.) For the family with $21,925 in pre-lottery taxable income, the $160,000 annuity increases taxable income to $181,925. Utilizing the information from Table 1, the student finds the new marginal tax bracket to be 36 percent. The student calculates tax due to be $48,541.50, and after-tax income to be $133,383.50. The increase in after-tax income resulting from the annuity payment is $114,747.25.

Tax due = $41,170.50 + ($181,925-$161,450) *0.36 = $48,541.50
After-tax income = $181,925-$48,541.50 = $133,383.50
Increase in after-tax income = $133,383.50-$18,636.25 = $114,747.25

A major difficulty many students have is realizing that this is a marginal analysis, since they need to use marginal values later when they solve for the rate of return that will equate the annuity due and the lump-sum payment. Unless guided by the instructor, many students fail to calculate the increase in taxable income, which is crucial to analyzing the problem.

In the third step of the analysis the student adds the $2,000,000 lump-sum payment to the pre-lottery taxable income of $21,925, and increases taxable income to $2,021,925. Utilizing the information from Table 1, the student finds the new marginal tax bracket to be 39.6 percent. The student calculates tax due to be $773,350.20 and after-tax income to be $1,248,574.80. The increase in after-tax income resulting from the lump-sum lottery payment is $1,229,938.55.

Tax due = $86,854.50+(2,021,925-$288,350)*0.396 = $ 773,350.20
After-tax income = $2,021,925-$773,350.20 = $1,248,574.80
Increase in after-tax income = $1,248,574.80-$18,636.25 = $1,229,938.55

Once the student has completed the determination of the after-tax cash flows, the time value of money may finally be included in the analysis. To solve this problem the student must compare the *increase* in after-tax income that results from each option-not just simply after-tax income. The relevant values, when the student solves for the internal rate of returns in the last step, are the values of $1,229,938.55 for the lump-sum payment and $1 14,747.25 for the annuity due.

Using a financial calculator (or the financial functions in a spreadsheet as in the Appendix), the student solves for the interest rate that equates the after-tax increase in income that results from the lump-sum payment and the annuity due:

PV = -1,229,938.55
FV = 0
PMT = 114,747.25

N = 25
I = ?
The internal rate of return solution (I) for this particular problem is found to be 8.9843 percent.

The final challenge for students is to interpret the meaning of the value of 8.9843 percent. For some students interpretation of the results is more difficult than the actual analysis. The solution in this particular example tells the student that 8.9843 percent is the after-tax rate of return the imaginary lottery winner must earn from the lump-sum payment to make it equal to the annuity due. Table 2 presents the internal rate of return solution for all six of the income levels used in this class exercise. The internal rates of return range from 9.4688 percent to 6.9696 percent.

Table 2
The $4,000,000 lottery

Pre-lottery taxable income	Pre-lottery marginal tax bracket	Amount of lottery payment	Method of lottery payment	Post- lottery marginal tax bracket	Internal rate of return
$0	0.00	$160,000	annuity	31.0	9.4688
$2,000,000			lump-sum	39.6	
$21,925	15.0	$160,000	annuity	36.0	8.9843
	$2,000,000		lump-sum	39.6	
$74,900	28.0	$160,000	annuity	36.0	8.2172
	$2,000,000		lump-sum	39.6	
$133,700	31.0	$160,000	annuity	39.6	7.7766
		$2,000,000	lump-sum	39.6	
$224,900	36.0	$160,000	annuity	39.6	7.2372
		$2,000,000	lump-sum		39.6
$288,350	39.6	$160,000	annuity	39.6	6.9696
		$2,000,000	lump-sum	39.6	

This value of 8.9843 is an after-tax rate of return. The before-tax rate of return must be even higher. The instructor queries the students on the likelihood of being able to earn this required rate of return. This allows the instructor to bring in a special set of data and extend the discussion. We bring in the Ibbotson (1997) financial market data that reports long-run rates of return on stocks and other assets classes. The Ibbotson data for the period 1926-1996 reports the following long-run geometric mean rates of return and standard deviations for these six asset classes:

	Rate of Return	Standard Deviation
Large company stocks	10.7%	20.3%
Small company stocks	12.6	34.1
Long-term corporate bonds	5.6	8.7
Long-term government bonds	5.1	9.2
Intermediate-term government	5.2	5.8
U.S. Treasury bills	3.7	3.3

At this point the instructor demonstrates that even with 100 percent of the return in the form of long-term capital gains which are taxed at only 10 percent, the investor would require a pre-tax return of 9.9826 percent to earn the 8.9843 percent after-tax return:

$$8.9843\% = 0.9 = 9.9826\%.$$

In light of the Ibbotson data we ask the students in the class what they believe is the probability of an investor earning 9.9826 percent on a pre-tax basis (or 8.9843 percent on an after-tax basis). Most students feel that this goal is beyond the abilities of the average investor. Putting the question differently we then ask the students to assume they put 100 percent of the lump-sum value into the stock market. Still making the over-simplifying assumption that all returns are long-term capital gains taxed at 10 percent, the expected long-run after-tax returns on stocks (based on the historical data) are

Large company stocks	10.7% * 0.9 = 9.63%
Small company stocks	12.6% * 0.9 = 1 1.34%.

Given the Ibbotson data (and despite recent stock market performance), most students recognize by this point in the class that the lump-sum payment is not nearly as attractive as they may have once thought. From the perspective of wealth maximization, most students decide that the annuity is the superior choice for this couple.

Additional observations can be made in the class once the students have performed similar analyses for the other assigned income levels, and completed Table 2. They quickly note that the annuity/lump-sum choice has different implications for persons in different marginal income brackets. Students see that the lower an individual's pre-lottery marginal tax bracket, the less attractive is the lump-sum payment. Yet the consensus opinion of our students is that as a rule of thumb, less wealthy persons are more likely to want the instant wealth of the lump-sum payment. They believe it is the upper income individuals who may really have a chance of making the lumpsum payment an attractive option.

Table 3
IRRs for various size lotteries and various pre-lottery taxable incomes

Pre-lottery taxable income	$4,000,000 lottery	$6,000,000 lottery	$8,000,000 lottery	$10,000,000 lottery
$0	9.4688	8.8993	8.5352	8.2284
$21,925	8.9843	8.5645	8.2325	7.9842
$74,900	8.2172	7.9675	7.7212	7.5724
$133,700	7.7766	7.5101	7.3759	7.2951
$224,900	7.2372	7.1483	7.1037	7.0769
$288,350	6.9696	6.9696	6.9696	6.9696

In previous semesters students have asked us two particularly intuitive "what if" questions. We have been asked about raising the assumed pre-lottery taxable income beyond the values shown. We simply asked the class to experiment with any higher level of income (beyond $288,350) of their choosing.

They quickly discovered that the internal rate of return on this problem never goes below 6.9696 percent. We have also been asked about the implications of a larger lottery. We have had the students work through that problem also. Table 3 shows the implications of four different lotteries, with the largest being valued at $10,000,000. As would be expected, the internal rate of return still has a minimum value of 6.9696 percent.

CONCLUSION

We have found the lottery problem to be an interesting exercise for students and an effective learning tool. While the subject of the exercise may seem somewhat light-hearted, we have found it to be effective in helping students with calculating after-tax cash flows, understanding concepts in the time value of money, and working with a financial calculator (or spreadsheet). Our students tell us that this exercise does help prepare them for the upcoming examination.

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Brigham, E. F., L. C. Gapenski & M.l C. Ehrhardt. (1999). *Financial Management: Theory and Practice,* ninth edition. Fort Worth: The Dryden Press.

Stocks, Bonds, Bills, and Inflation 1997 Yearbook (1997). Chicago: Ibbotson Associates.

APPENDIX
Excel spreadsheet for computations in exercise

	A	B	C	D	E	F	G	H
1	Income Tax Table							
2	Income At least	but less than	Tax +	Percent of Excess				
3	0	43850	0	0.15		Lotto jackpot	4000000	
4	43850	105950	6577.5	0.28		Income level	21925	
5	105950	161450	23965.5	0.31				
6	161450	288350	41170.5	0.36				
7	288350		86854.5	0.396				
8								
	9Tax Consequences of Selecting 25 Payments							
10	Taxable Income	Total tax	After tax income	Lotto win-25 years	Total income	Total tax	After tax income	Increase in after tax income
11	21925	3288.75	18636.25	160000	181925	48541.5	133383.5	114747.3
12								
13	Tax Consequences of Selecting Lump Sum Payment							
14	Income	Total tax	After tax income	Lotto win-lump sum	Total income	Total tax	After tax income	Increase in after tax income
15	21925	3288.75	18636.25	2000000	2021925	773350.2	1248575	1229939
16								
17	Income levels and corresponding IRRs							
18	Income	IRR						
19	21925	0.089843						

PREPARING THE SPREADSHEET

For the formulas reported below to work, the spreadsheet must be completed exactly as presented.

To prepare this spreadsheet, simply fill in rows 1-7 with the numbers as they appear in the spreadsheet. Fill in any text exactly as shown. Rows 11, 15, and 19 must have the formulas as shown below.

After this has been created the user of the spreadsheet only needs to change cells G3 and G4 to evaluate any jackpot level and any income level. The values in row 11, 15, and 19 will automatically be changed as a result of changing the values in either/both cells G3 or G4.

Row 11

A11: =G4
B11:=VLOOKUP(A11,$A$3:$D$7,3) + VLOOKUP(A11, $A$3: $D$7,4)
*(Al 1-VLOOKUP(A11, $A$3:$D$7,1))
C11: =A11-B11
D11: =$G$3/25
E11: =A11 +D11
F11: =VLOOKUP(E11,$A$3:$D$7,3) +VLOOKUP(E11,$A$3:$D$7,4)
*(Ell -VLOOKUP(E11, $A$3:$D$7,1))
G11: =-E11-F11
H11: =G11-C11

Row 15

A15: =G4
B15: =VLOOKUP(A15,$A$3:$D$7,3) +VLOOKUP(A11,$A$3:$D$7,4)
*(A15-VLOOKUP(A15, $A$3:$D$7,1))
C15: =-A15-B15
D15: =$G$3/2
E15: =A15+D15
F15: =VLOOKUP(E15,$A$3:$D$7,3) +VLOOKUP(E15,$A$3:$D$7,4)
*(E15-VLOOKUP(E15, $A$3:$D$7,1))
G15: =-E15-F15
H15: =G15-C15

Row 19

A19: =G4
B19: =RATE(25,H11,-H15,,1)

THE IMPACT OF TECHNOLOGY ON ACADEMIC ACTIVITIES AMONG HIGH SCHOOL ECONOMIC EDUCATION PROGRAMS IN OHIO

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ABSTRACT

Technology in the classroom may assist in developing greater student interest and teacher participation in Economic Education classroom instruction. This study analyses the availability of technology in high schools throughout Ohio. There is a need to understand how effectively teachers are utilizing technology and computers to implement economic instruction in designated economics courses as well as in conjunction with other courses. It is possible that technology and computers will assist teachers in becoming more interested and comfortable in utilizing economic concepts in their course instruction. The survey collected teacher perceptions on variables such as the availability of computers, internet access, integration of computer and economic education concepts, and teacher training in technology. These variables were cross-correlated with socio-economic variables: school type, school category, teachers perception of student performance and teachers perception of school socio-economic status. The data presented in the study support the conclusion that technology integration is currently slower than optimum but the progress is being made. It will take the combined effort of schools, businesses, and university Centers for Economic Education to promote this much-needed combination of technology, the Internet, and economics for the benefit of all.

INTRODUCTION

In teaching introductory economics courses to college undergraduates, the most common historical pedagogical method used is the straight lecture. To make economics more accessible to a variety of learners, more diversified

pedagogical methodology is desirable. (Becker and Watts, 1995). Experientially based instruction and technology are two pedagogical methodologies that are a possible powerful combination to promote the understanding of economics in our secondary schools. An earlier study demonstrates that experienced-based economic education at the high school level promoted the transfer of economic reasoning to everyday decision making better than the historically used lecture method. (Kourilsky, 1985) In addition, information technology is increasingly being viewed as an effective tool in promoting economic education in the classroom. Wood (2001) has identified four benefits of applying information technology in the classroom. Agarwal and Day (1998) also found beneficial elements to implementing and integrating the Internet into course work. These beneficial elements were primarily centered on the ability of the Internet to enhance communication between the students and the instructor and the ability of the Internet to bring real world problems and applications into the economics classroom. The growth in use of technology by schools is strong; schools are adding computer and networking equipment, which enables a majority of schools to have Internet access in their buildings. The expansion of computers in schools is expected to continue. We do not however see examples of deep and extensive school-wide integration of technology into the curriculum (Glennan & Melme, 1996). The Glennan and Melme report states that the use of technology significantly affects classroom practice and tends to be limited to small groups of teachers who are excited by the potential of technology to motivate their students and to access new resources. With proper staff development and more access to technology in the classroom we are likely to see a growing numbers of teachers integrating technology into their coursework.

Proper and increased use of current technology in the classroom may help generate more student and teacher interest in the instruction of Economic Education. According to Katz and Becker (1999): The teaching of economics is lagging behind other disciplines in implementing instructional and ovations that engage students more actively in the learning process. (p. 194) "It does look as if the Internet is having an immense impact on virtually all aspects of the teacher and student learning experience, starting with the enriching of their interactions, to data they can now access, and extending to major influences on the environments and the formats in which they use these and other course materials." (p. 198)

Walstad and Rebeck (2000) found that it is highly likely that over half of high school graduates never receive formal instruction and economics during the

formative years of their education. There has been, however, a doubling of students taking economic courses since the 1980's. Part of this doubling of students receiving economic instruction has been due to states implementing curriculum mandates that schools shall provide for economic instruction. Ohio has such a mandate but allows economics to be taught either by a designated economic course or through the subject areas of social studies, government, or business education courses. Walstad and Rebeck (2000) conjecture, however, that requiring economics to be taught in government, business, or other subject areas may not be as effective as traditional economic instruction through a designated economics course (p.101).

There is a need to understand how effectively teachers are becoming in utilizing technology and computers to implement economic instruction. Both in designated economics courses as well as in conjunction with other courses. It is possible that technology and computers will assist teachers in becoming more interested and comfortable in utilizing economic concepts in their course instruction.

THE SURVEY

The authors initially surveyed Economic Education instructors in all 1,045 high schools in Ohio, concerning their perceptions about the availability of technology and computers within their schools. An initial mailing resulted in 278 responses (26.6%). Computer related economic materials were offered as an incentive to respond. A second, follow-up survey was mailed to non-respondents and non-computer related economic education material was offered as an inducement to respond. The second survey resulted in an additional 190 responses (18.1%). A total of 44.7% of the surveys were returned during late1999 to mid 2000.

The survey (Appendix 1) collected teacher perceptions on variables such as:

- Availability of computers
- Internet access
- Integration of computer and economic education concepts
- Teacher training in technology

- Use of economic education experiential based learning projects in the classroom

These variables were cross-correlated with socio-economic variables:

- Teacher perception of student ability
- School type
- School kind
- Teachers perception of school socio-economic status

The raw survey data show that most teachers responding have computer access and are involved the integration of economic education with other subjects. The survey explores the degree of use of economic based experiential learning projects compared to traditional economic classroom instruction. Following are the full results of the survey are presented in the paper, together with the authors' conclusions.

SURVEY LIMITATIONS

The survey was based on subjective analysis of the individual teachers. There was no attempt made to specifically quantify the categories of socio-economic status or school type. The respondents were also not asked to see specifically quantify student grade averages.

The survey did not attempt to determine the quality of the Internet access available to the respondents nor to the quality or quantity of the computers and computer labs available to the teachers. Thirty-eight percent (38.2%) of the surveys received did not respond to School Category. The reason for this may be that the teachers were asked to make a subjective determination concerning the category classification. The subjective nature of the ranking may have inhibited the response due to the uncertainty of the school districts classification.

The survey was also not able to determine the varying degrees of difficulty of the economic projects that the respondents claimed to be conducting. It could be conjectured that some of the projects were very involved and included a great deal of economic concept instruction. On the other hand other projects were most likely very simple with possibly few economic concepts involved. In the past, it has been the author's experience that teachers will conduct economic

projects without bringing out any concept instruction. It was beyond the scope of the survey to analyze the degree of economic instruction conducted in the projects.

The authors believe that it can reasonably be assumed that economic instruction is being provided in Ohio schools at a higher rate than this survey would lead us to believe. The authors suspect that teachers involved in economic instruction, but had no Internet or technology training, did not respond to the survey. It is believed that teachers who did have economic instruction and Internet and technology access were more motivated to respond than those who did not have such access

SURVEY RESULTS

Surveys were sent out to each high school in Ohio, a total of 1045. Two hundred and eighty three schools responded to the survey. Table 2 outlines the variables requested in this survey and the actual number and percentage of each variable replied to, and a complete compilation of survey responses.

It was especially encouraging to see that over 283 of the 468 respondents claim to have had either extensive or a moderate amount of training in teaching economic concepts. 42.2% of the respondents claimed to have at least a moderate amount of training in teaching economic concepts. 19.3% of the respondents claim to have received extensive training in economic concepts while only 5.9% of the respondents had no training to teach economic concepts.

Approximately sixty-two percent (61.8%) stated that they had their students do economic projects. Economic projects teach economic concepts through experientially based learning. A similar amount of respondents are also integrating economics into other subject areas. This infusion of economics into other traditional subject areas may be fostered by the use of economic projects and therefore beneficial for students who would, otherwise, fall into the non-economic instructed student category.

Of the 468 respondents, 370 (75.7%) said that they had Internet access in the classroom. 24.3% said that Internet access in the classroom was not available. 87.7% did have Internet access available through school laboratories while only 12.3% said that no Internet access was available through laboratories. 43.2% of the respondents said that they teach economic concepts in all of their classes while 56.7% said that they taught economics in select classes.

Overall, schools did not make available computers for teacher personal use at home. 51.7% of the respondents did claim that computers were available for personal use at school. 76.6% of the respondents said computers were available in the classroom and a very encouraging 90.9% said that computers were available through school labs. Fifty-five percent (55%) of the teachers had extensive or moderate amount of training in technology use in the classroom. About four percent (4.1%) of the respondents had no training in technology use in the classroom. An encouraging 70.6% was integrating computers into the instruction of economic concepts.

Most of the responses were received from public rural schools. A smaller percentage (32%) came from suburban schools. There was a very limited response from urban school systems (17.3%). Many of the respondents felt that their students were learning at grade level (49.9%) and most felt that their schools were from middle socioeconomic status (60.2%). 37 % and 26.8% felt that their students were learning below grade level and that they were from low socioeconomic status respectively. It is difficult to determine whether the 20 +percentage responding from these below grade level and low socio-economic categories can be seen as encouraging. It could be conjectured from Walstad and Rebeck (2000) findings that this is an improvement over the past decades. It leaves open the very real expectation that much more needs to be done in directing economic education to the urban lower socio-economic schools.

TABLE 2
Description of Survey Analysis & Percentage of Responses

Definition	Code	Variable Description	Count	%
School Type	ST1	Urban	66	17.2
	ST2	Suburban	124	32.3
	ST3	Rural	193	50.3
School Category	SC1	Public	200	73.8
	SC2	Private	35	12.9
	SC3	Parochial	36	13.2
Grade Level	GL1	9^{th}	6	1.3
	GL2	10^{th}	3	0.6
	GL3	11^{th}	12	2.6

TABLE 2
Description of Survey Analysis & Percentage of Responses

Definition	Code	Variable Description	Count	%
	GL4	12^{th}	56	12.3
	GL5	9-12	201	44.2
	GL6	10-12	36	7.9
	GL7	11-12	74	16.3
	GL8	Other	66	14.5
Student's Average	STAV1	Below grade level	173	37
	STAV2	At grade level	233	49.9
	STAV3	Above grade level	61	13
School Status	SS1	Low socio-economic	125	26.8
	SS2	Middle socio-economic	280	60.2
	SS3	High socio-economic	60	12.9
Available Computer in the Classroom	AVCOCL1	Not available	108	23.4
	AVCOCL2	Available	354	76.6
Available Computer in the Lab	AVCOLA1	Not available	42	9.1
	AVCOLA2	Available	420	90.9
Available Computer for Personal Use	AVCOPU1	Not available	212	45.9
	AVCOPU2	Available	250	54.1
Available Computer for Personal Use at Home	AVCOHO1	Not available	319	56.9
	AVCOHO2	Available	241	43.1
Available Computer for Personal Use at School	AVCOSC1	Not available	239	51.7
	AVCOSC2	Available	223	48.3
Available Internet Access in the Classroom	AVINCL1	Not available	119	24.3
	AVINCL2	Available	370	75.7
Available Internet Access in the Lab	AVINLA1	Not available	57	12.3
	AVINLA2	Available	405	87.7
Available Internet Access for Personal Use	AVINPU1	Not available	251	54.3
	AVINPU2	Available	211	45.7

TABLE 2
Description of Survey Analysis & Percentage of Responses

Definition	Code	Variable Description	Count	%
Available Internet Access for Personal Use at Home	AVINHO1	Not available	351	76
	AVINHO2	Available	111	24
Available Internet Access for Personal Use at School	AVINSC1	Not available	275	59.5
	AVINSC2	Available	187	40.5
Are you integrating computers into instruction of Economic Concepts?	INTEGCO1	Yes	321	70.6
	INTEGCO2	No	134	29.4
Have you had Training in Classroom Technology Use?	TECTRAIN1	Extensively	56	12.1
	TECTRAIN2	A moderate amount	198	42.9
	TECTRAIN3	Very little	189	40.9
	TECTRAIN4	None	19	4.1
Do you Teach Economic Concepts?	TEACHECON1	In all of the classes	198	43.2
	TEACHECON2	In select classes	260	56.7
Have you had training in Teaching Economic Concepts?	TEACHTRAIN1	Extensively	89	19.3
	TEACHTRAIN2	A moderate amount	194	42.2
	TEACHTRAIN3	Very little	150	32.6
	TEACHTRAIN4	None	27	5.9
Do you have your students do Economic Projects?	ECONPRO1	Yes	283	61.8
	ECONPRO2	No	175	38.2
Are you integrating Economics into other subject areas?	INTEGECON1	Yes	293	65.7
	INTEGECON2	No	153	34.3
Computer Type	COMTYP1	IBM	263	61.7
	COMTYP2	Apple/MAC	72	16.9
What are the Economic Concepts you teach?	ECONCONC1	Wants & needs, goods & services, scarcity, opportunity costs, and/or resources	106	23.4
	ECONCONC2	Supply & demand, productivity, factors of	39	8.6

TABLE 2
Description of Survey Analysis & Percentage of Responses

Definition	Code	Variable Description	Count	%
		production, international trade, and/or wealth creation		
	ECONCONC3	Both of any of 1 & 2	268	58.7

SURVEY CORRELATIONS

The survey of Ohio high teacher technology preparedness produced a variety of positive and negative correlations. A Pearson Correlation for two-tailed significance was run using SPSS. Among the most significant correlations were found among the categories of teacher perceived levels related to school type, student grade average, and school socio-economic status.

Table 3 shows a significant correlation between urban schools and teachers perceiving students as performing below grade level. This variable correlated significantly at the alpha 0.01 level. The urban school variable also correlated significantly with the lower socio-economic status. There was negative correlation between the urban school type and students performing at grade level and students coming from the middle socio-economic status.

Students performing below grade level correlated significantly with lower socio-economic status. Students performing at grade level correlated significantly with students from middle socio-economic levels. Students performing at grade level, in turn, correlated negatively with urban schools and the lower socio-economic variable. Low socio-economic status schools also correlated negatively with the availability of Internet access.

Other correlations of significance were found in and schools rated as high socio-economic status which correlated with the suburban school type. Private schools correlated negatively with rural school types but positive with student averages above grade level. Rural schools correlated significantly with students performing at grade level. Students performing above grade level correlated significantly with private schools. Schools rated as higher socio-economic status correlated significantly with private schools and students performing above grade level. Rural schools correlated positively with schools classified having middle socio-economic status.

Other areas of correlation, which proved interesting, were found with correlations between suburban schools and the availability of computers in laboratories. It is not surprising that there was a significant correlation between the non-availability of the Internet in laboratories and schools rated and the low socio-economic status level. The availability of the Internet and computer available in laboratories was significant with suburban schools. The non-availability of computers in laboratories correlated significantly with students performing below grade level. Teachers integrating economic concepts in all classes correlated significantly with suburban type schools.

The variable of teachers using economic projects in their class had many significant correlations. Teachers not having students doing economic projects correlated significantly with students performing below grade level. Teachers having their students do economic projects correlated significantly with students performing above grade level. Students doing economic projects also correlated significantly with students from high socio-economic level status. In turn, teachers having very little training in economic concepts correlated significantly with teachers not doing economic projects with their students. Teachers who reported having very little training in technology use in the classroom correlated significantly with teachers not offering economic projects. Having students do economic projects correlated positively with teachers who have had moderate amount of technology training. Conversely, teachers who were not doing economic projects correlated significantly with teachers reporting that they were not integrating computers into the instruction of economic concepts. The economic project variable also correlated positively with available internet access in the classroom and in the lab.

TABLE 3: Pearson Two-tailed Correlations

	ST1	ST2	ST3	SC1	SC2	SC3	STV1	STV2	STV3	SS1	SS2	SS3
ST1	1.000	-0.247	-0.346	0.068	-0.094	0.066	0.080	-0.053	-0.031	0.211	-0.101	-0.128
ST2	-0.247	1.000	-0.513	0.062	0.048	-0.085	-0.075	0.003	0.110	-0.292	-0.002	0.410
ST3	-0.346	-0.513	1.000	-0.014	-0.226	-0.230	-0.048	0.137	-0.149	0.116	0.081	-0.277
SC1	0.068	0.062	-0.014	1.000	-0.250	-0.254	-0.008	0.028	-0.031	0.048	-0.038	0.001
SC2	-0.094	0.048	-0.226	-0.250	1.000	-0.083	-0.036	-0.084	0.178	-0.082	-0.087	0.231
SC3	0.066	-0.085	-0.230	-0.254	-0.083	1.000	-0.041	0.022	0.030	-0.159	0.102	0.047
STV1	0.080	-0.075	-0.048	-0.008	-0.036	-0.041	1.000	-0.757	-0.302	0.183	-0.081	-0.138

TABLE 3: Pearson Two-tailed Correlations

STV2	-0.053	0.003	0.137	0.028	-0.840	0.022	-0.757	1.000	-0.382	-0.148	0.178	-0.067
STV3	-0.031	0.110	-0.149	-0.031	0.178	0.030	-0.302	-0.382	1.000	-0.050	-0.130	0.281
SS1	0.211	-0.292	0.116	0.048	-0.082	-0.159	0.183	-0.148	-0.050	1.000	-0.755	-0.219
SS2	-0.101	-0.002	0.081	-0.038	-0.087	0.102	-0.081	0.178	-0.130	-0.755	1.000	-0.446
SS3	-0.128	0.410	-0.277	0.001	0.231	0.047	-0.138	-0.067	0.281	-0.219	-0.446	1.000
	AVL1	AVL2	AVA1	AVA2	AVH1	AVH2	AVC1	AVC2	ANL1	ANL2	ANA1	ANA2
ST1	0.052	-0.520	0.022	-0.022	0.006	-0.006	0.011	-0.011	0.085	-0.085	0.091	-0.091
ST2	0.012	-0.012	-0.073	0.073	-0.049	0.049	-0.070	0.070	-0.033	0.033	-0.138	0.138
ST3	-0.105	0.105	0.007	-0.007	0.083	-0.083	0.080	-0.080	-0.138	0.138	-0.038	0.038
SC1	-0.070	0.070	-0.018	0.018	-0.010	0.010	0.022	-0.022	-0.155	0.155	-0.075	0.075
SC2	0.112	-0.112	0.052	-0.052	-0.003	0.003	0.031	-0.031	0.224	-0.224	0.141	-0.141
SC3	0.164	-0.164	-0.064	0.064	-0.120	0.120	-0.107	0.107	0.143	-0.143	-0.060	0.060
STV1	0.006	-0.006	0.082	-0.082	-0.072	0.072	-0.058	0.058	0.035	-0.035	0.091	-0.091
STV2	-0.060	0.060	-0.099	0.099	0.056	-0.056	0.070	-0.070	-0.091	0.091	-0.077	0.077
STV3	0.072	-0.072	0.032	-0.032	0.012	-0.012	-0.033	0.033	0.077	-0.077	-0.010	0.010
SS1	-0.003	0.003	0.079	-0.079	0.134	-0.134	0.042	-0.042	0.031	-0.031	0.112	-0.112
SS2	-0.015	0.015	-0.022	0.022	-0.070	0.070	-0.025	0.025	-0.072	0.072	-0.048	0.480
SS3	0.026	-0.026	-0.090	0.090	-0.097	0.097	-0.033	0.033	0.036	-0.036	-0.094	0.094
	AVU1	AVU2	AVO1	AVO2	ASC1	ASC2	IC01	ICO2	TRI1	TRI2	TRI3	TRI4
ST1	-0.035	0.035	-0.017	0.017	-0.054	0.054	-0.079	0.079	-0.038	0.009	-0.025	0.102
ST2	-0.062	0.062	-0.082	0.082	-0.048	0.048	0.126	-0.126	0.029	0.078	-0.067	-0.076
ST3	0.054	-0.054	0.096	-0.096	0.073	-0.073	-0.001	0.001	-0.019	-0.006	0.054	-0.087
SC1	-0.058	0.058	-0.020	0.020	-0.072	0.072	0.067	-0.067	0.010	0.020	-0.043	0.039
SC2	0.033	-0.033	0.065	-0.065	0.036	-0.036	-0.112	0.112	-0.056	0.033	-0.039	0.105
SC3	-0.058	0.058	-0.120	0.120	-0.122	0.122	-0.018	0.018	-0.058	-0.056	0.103	-0.020
STV1	-0.018	0.018	-0.067	0.067	0.037	-0.037	-0.002	0.002	0.055	-0.236	0.175	0.065
STV2	0.011	-0.011	0.023	-0.023	-0.013	0.013	0.019	-0.019	-0.045	0.159	-0.118	-0.028
STV3	-0.002	0.002	0.055	-0.055	-0.043	0.043	-0.005	0.005	-0.008	0.114	-0.090	-0.049
SS1	-0.009	0.009	0.046	-0.046	0.006	-0.006	-0.115	0.115	0.043	-0.084	0.038	0.046
SS2	0.034	-0.034	0.013	-0.013	0.012	-0.012	0.062	-0.062	-0.026	0.027	-0.014	0.011
SS3	-0.052	0.052	-0.084	0.084	-0.049	0.049	0.062	-0.062	-0.009	0.100	-0.065	-0.075

Teachers integrating economic concepts into other subject areas correlated significantly with teachers who are integrating computers in the instruction of economic concepts. When asked if teachers were incorporating computers into instruction of economic concepts, those answering no correlated significantly with private schools, which corresponded with private school teachers not having available Internet access in the classroom. Private schools also correlated significantly with teachers reporting very little teacher training and economic concepts. Teachers with very little training in economic concepts correlated significantly with students performing at below grade level. Teachers with moderate training in economic concepts correlated significantly with students performing at grade level and teachers with no training in economic concepts correlated positively with students performing at below grade level. Teachers reported to have extensive training in economic concepts correlated significantly with suburban school types. Teachers reporting little teacher training in economics correlated significantly with teachers who were not integrating economics into other subject areas besides economics.

Students rated as performing below grade level correlated positively with not having computers available in the laboratory. Students performing at grade level correlated with significantly with having computers available in the laboratory. Of special interest was the finding that teachers teaching economic concepts in select classes correlated positively with not having Internet access in the laboratories. It may be assumed, therefore, that teachers who do not have Internet access and laboratories will tend to limit their economic instruction to select classes while those who do have Internet access will tend to provide economic instruction to all of their classes. This finding was further reinforced by the results which shown that suburban schools will tend to have economic instruction taught in all classes, which would correspond to the positive correlation between suburban teachers and available internet access.

Public schools correlated significantly with having available Internet access in the classroom. The public school classification also reported a high correlation with Internet access for personal use that school. Private schools showed a significant correlation with not having available Internet access in the classroom. Rural schools did have a positive correlation with having available Internet access in the classroom and in the lab.

CONCLUSIONS

Ohio has set a goal of connecting it's elementary and secondary classrooms and school library media centers to the information superhighway. With this goal close to being accomplished the focus has now turned to the integration of the Internet into the curriculum. A critical factor at this stage is to provide pre-service and inservice teachers the necessary training to be able to accomplish this task. A 1993 national survey of elementary and secondary educators, who were frequent and experienced users of computers, found that early uses of telecommunications in the schools were self-taught and were limited to computer teachers and media specialists. (Honey & Henriquez, 1993). This has changed in the last few years as school districts and teacher education institutions have prepared in-service and pre-service teachers to better use new technologies such as the Internet. Katz and Becker (1999) feel, "..that the Internet is having an immense impact on virtually all aspects of the teacher and student learning experience, starting with the enriching of their interactions, to data they can now access, and extending to major influences on the environments and the formats in which they use these and other course materials."(p. 198). What can be said from this survey is that it appears that at least 44.7% of Ohio schools have some form of economic instruction and integration with the Internet is occurring however the non-responding 55.3% of the schools surveyed leave open to conjecture whether economic instruction is occurring in the form mandated by Ohio law. Economic instruction may not be as widespread as economic educators would like to believe.

The use of experientially base learning through economic projects versus traditional concept lecture methods, has been an effective way to teach economics. (Kourilsky, 1985) The survey results, which show that teachers not having students involved in economic projects, correlated significantly with students performing below grade level. Teachers who reported having very little training in technology use in the classroom, correlated significantly with teachers not offering economic projects. In turn, teachers having very little training in economic concepts correlated significantly with teachers not doing economic projects with their students. Developing computer and technology user- friendly economic based student projects could be an efficient and effective means to involve students and teachers in low socio-schools to become more involved in economic instruction. The possibility of low-tech project based economic instructional methodologies should not be ignored since many of these schools do not have technology access. Teachers who were not doing economic projects correlated

significantly with teachers reporting that they were not integrating computers into the instruction of economic concepts. Computer access for these teachers may be extremely effective in promoting economic education in their schools.

Teachers with moderate training in economic concepts correlated significantly with students performing at grade level and teachers with no training in economic concepts correlated positively with students performing at below grade level. It is obvious that teacher training in economic concepts is paramount to implementing economic concept instruction. This obvious finding needs further development in the area of gaining support within the business and educational community if economic educators are to be successful in helping those most in need of this type of instruction.

It is not surprising that there was a significant correlation between the non-availability of the Internet in laboratories and schools rated and the low socio-economic status level. The survey does signal a need for economic and state curriculum educators to move aggressively in making teachers knowledgeable about what is available and can be done when access is created. It may be assumed that teachers who do not have Internet access and laboratories will tend to limit their economic instruction to select classes while those who do have Internet access which tend to provide economic instruction to all of their classes.

Overall, it would seem that Economic Education instruction in Ohio is beginning to be integrated with technology and the Internet. It will be incumbent upon economic educators to develop curricula and promote economic education workshops which will encourage teachers and administrators to utilize technology and economic instruction for the benefit to of the students.

If Ohio is any example it may be conjectured, given Ohio's mandates to teach economic education in all of it's high schools, that other states without these mandates may be an even greater need of the melding of technology and Economic Education. It would appear that this integration is currently slower than optimum but the progress is being made. It will take the combined effort of schools, businesses, and university Centers for Economic Education to promote this much-needed combination of technology, the Internet and economics for the benefit of all.

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Appendix 1
Teacher Survey on Economic Concepts Instruction and Technology Use

April 26, 2000

A special offer for needed input. By answering the attached survey and placing it in the enclosed postage paid envelope, The University of Akron Center for Economic Education will send you the following:

1. A list of the easiest and most important concepts to teach.
2. A copy of Chris Farrell's Sound Money Guide to Economic Literacy.
3. A list of organizations to write for free economic finance materials.

Or you may choose to receive a free disk of the most helpful Internet bookmarks for use in Lesson Planning, Student Education, and Personal Finance.

Thank you for your participation and support of Economic Education.

Sincerely,

Dr. Fred M. Carr

✂----------

(May be mailed separately). Enclosed is my completed survey. Please mail my choice below to:

Name:

Address:

Please choose one of the following:

☐ 1. A list of the easiest and most important concepts to teach.
2. A copy of Chris Farrell's Sound Money Guide to Economic Literacy.
3. A list of organizations to write for free economic finance materials.

OR

☐ A free disk of the most helpful Internet bookmarks for use in Lesson Planning, Student Education, and Personal Finance. Disk format desired:
☐ IBM ☐ MAC

1. Socio Demographics
School Name:
School Type: (Check one) ☐ Urban ☐ Public
☐ Suburban ☐ Private
☐ Rural ☐ Parochial

School District:
Grade Level:
Subjects you Teach:

2. I consider my students on average to be: (Check one)
- ☐ Below grade level in subject comprehension
- ☐ At grade level in subject comprehension
- ☐ Above grade level in subject comprehension

3. I consider my school to be in a: (Check one)
- ☐ Low socio-economic status
- ☐ Middle socio-economic status
- ☐ A high socio-economic status

4. My school has computers available: (Check all that apply)
- ☐ In my classroom
- ☐ In labs
- ☐ For personal use
  - ☐ At home ☐ At school

5. My school has Internet access: (Check all that apply)
- ☐ In my classroom
- ☐ In labs
- ☐ For personal use
  - ☐ At home ☐ At school

6. Are you integrating computers into instruction of economic concepts?
- ☐ Yes ☐ No

7. Have you had training in technology use in the classroom: (Check one)
- ☐ Extensively ☐ A moderate amount
- ☐ Very little ☐ None

8. Do you teach economic concepts: (Check one)
- ☐ In all of your classes ☐ In select classes

9. Have you had training in teaching economic concepts: (Check one)
- ☐ Extensively ☐ A moderate amount
- ☐ Very little ☐ None

10. How were you assisted in learning how to teach economic concepts?
- ☐ Regional Center for Economics Education
  - Number of courses taken: ☐ 1 ☐ 2 ☐ 3+
- ☐ Junior achievement
- ☐ Self taught ☐ University/College Economics Department
- ☐ University/College of Business

	☐ Other
11.	Number of years in teaching: ☐ 1-4 ☐ 5-8 ☐ 9-14 ☐ 15+
12.	Number of years in teaching Economic concepts: ☐ 1-4 ☐ 5-8 ☐ 9-14 ☐ 15+
13.	Please check all the economic concepts that you teach: ☐ Supply & Demand ☐ Opportunity Costs ☐ Want & needs ☐ Factors of Production ☐ Goods & services ☐ International Trade ☐ Productivity ☐ Wealth Creation ☐ Scarcity ☐ Resources ☐ Others (Please specify) :
14.	Do you have your students do economic projects: ☐ Yes ☐ No If Yes, briefly describe:
15.	Are you integrating economics into other subject areas: ☐ Yes ☐ No Please specify subjects:
Comments about economic instruction you would like to make:	

ECONOMICS ARTICLES

DETERMINANTS OF U.S. FOREIGN DIRECT INVESTMENT IN EUROPEAN UNION: CASE OF U.K., FRANCE, AND GERMANY

Balasundram Maniam, Sam Houston State University
Hadley Leavell, Sam Houston State University
Sanjay S. Mehta, Sam Houston State University

ABSTRACT

The purpose of this study is to analyze the determinants of U.S. FDI on three European Union (EU) countries. The purpose of the research is two fold; (1) to determine the factors that affect U.S. FDI in these EU countries, and (2) to analyze the current trend of U.S. FDI towards these EU countries. Different multiple regression analyses will be performed to obtain the economic results of this study. A comprehensive model will be tested for economic variables from 1977 to 1997.

INTRODUCTION

The growth of FDI during the past thirty years has given multinational corporations a decisive role in shaping the patterns of trade and investment around the world. Although the U.S. had always been the top provider of FDI to the rest of the world, the Japanese took over the first spot in the late eighties. The U.S. again become the world=s biggest provider of FDI in the early nineties. The U.S. led the rest of the world with the highest absolute FDI inflows of $76.5 billion and FDI outflows of $74.8 billion in 1997 (United Nations, 1998). In general, from the seventies to the early nineties, global FDI grew at an average of 13 percent per year. That trend is consistent with the picture that emerges from a casual observation of the year-to-year movements in FDI flows.

Although the United States is still the major source of FDI in many countries around the world, its role has somewhat changed since the mid-eighties.

This is partly due to the fact that there is more competition in the global market place than before, and due to the new economic order in many parts of the world. For instance, today there are more nations competing aggressively with the U.S. by supplying FDI in an increasing amount. Many countries are liberalizing their FDI policies and opening up their markets to foreigners.

LITERATURE REVIEW

A survey of existing literature shows that there are studies of U.S. FDI in this region but they are outdated and many of them date back even before the creation of European Community (EC) in 1958. Since then explanations of the growth and pattern of U.S. FDI in EC have mainly focused on the size and rate of growth of the internal market, the effects of the formation and expansion of the EC, and the consequences of the U.S. capital controls program from 1965 to 1972. Bandera and White (1968), Scaperlanda and Mauer (1969, 1973), Schmitz and Bieri (1972), Lunn (1980), and Scaperlanda and Balough (1983) have all shown market size to be a salient explanatory variable of U.S. FDI in this region.

In tests in which both the level of GNP and growth of GNP are included as explanatory variables, the specific effect of the rate of market growth on U.S. FDI in the EC has been enigmatic and inconsistent. For example, Scaperlanda and Mauer (1969) tested three EC growth variables and found each to be insignificantly associated with inbound U.S. investment, and often wrongly signed. Schmitz and Bieri (1972), discovered that the EC=s share of total U.S. FDI was negatively (and sometimes significantly) related to the EC=s rate of growth from the period 1952 to 1958, but positively related for the period 1959 to 1966.

In their attempt to proxy the implementation of tariff changes resulting from the formation of the EC, Scaperlanda and Mauer (1969) used the ratio of U.S. exports to the EC divided by intra- EC exports and found that this proxy variable was not significantly related but has the wrong sign. Lunn (1980) employed U.S. exports to the EC divided by U.S. exports to the world minus the same ratio from the previous year as an explanatory variable and found that it had a significant negative relationship to the inward direct investment as hypothesized. Others such as Aharoni (1966), Usher (1977), Shaw and Toye (1978), Lim (1983), Rolfe and White (1992) concluded that key attractions of FDI are such factors as market size, GNP growth, and country stability. Rueber (1973) and Root and Ahmed (1978) agreed that market size, GNP and stability factors are

probably more important. Evans and Doupnik (1986) stated profit repatriation is the first priority. Cable and Persaud (1987) partially agreed but expressed unwillingness to write off the value of incentives such as tax holidays. The research is conducted to analyze the determinants of U.S. FDI on the European Union (EU) countries, specifically U.K., France and Germany. The purpose of the research is two fold. First it will determine the factors that affect U.S. FDI in these EU countries, specifically examine empirically the determinants which influence U.S. FDI. The examination of these determinants of FDI in these countries is more important than ever for both home country (U.S.) and host countries due to the interdependent nature of the global economy today. Second the study will analyze the current trend of U.S. FDI towards these EU countries. It is also hypothesized that the U.S. FDI into these countries is impacted by the membership in the regional integration framework (in this case EU), by the creation of the Euro (the new common currency in the EU), and by new competition from other industrialized nations such as Japan. This brings many changes to the region; among them, their economic policy harmonization and new measures to liberalize FDI framework among them. These changes will have a direct impact on U.S. FDI policy in these countries.

DATA AND RESEARCH METHODOLOGY

The U.S. has a large influence in many parts of the world in terms of FDI. The U.K. and western Europe have been big beneficiaries of this large outflow. For instance, half of all U.S. FDI abroad went to western Europe and of that, forty percent went to U.K. (Bureau of Economic Analysis, 1997). Therefore, the U.S. plays a vital role in the region as provider of FDI.

A list of FDI determinants (demand and supply determinants) has been discussed and tested in the literature (see Lunn, 1980; Scaperlanda & Balough, 1983)). Such factors as relative profit rates or differentials, local market size and growth, past levels of FDI, and the investment climate in terms of regulations and incentives have been suggested by various authors such as Dunning (1980) and Froot and Stein (1991). Some of the factors most commonly mentioned are:

(a) *Profitability*: FDI movements are generated by the expectation of higher profits, this depends on factors related to market size, growth, and the foreign investment climate.

(b) *Market variables*: Local market size and growth variables have been widely supported in the literature as determinants of FDI. A growing market will attract foreign investment because of the possibility of efficient on-site production through the realization of economies of scale. Another factor is the discount rate in the local economy. When interest rates rise, capital inflows from foreign countries generally increase. When interest rates fall, there is a capital flight (Chacholoades, 1990).

(c) *Trade flows and trade discrimination*: Trade discrimination through the imposition of high tariffs or the use on non-tariff barriers on trade encourages FDI as foreign firms try to produce under shelter. The higher the tariff, the greater would be the incentive for the foreign producer to produce locally in order to maintain the market. A trade deficit appropriately lagged may encourage foreign capital inflows and are likely to simulate FDI if the result of generally poor trade performance is a desire for export diversification and a shift toward import substitution policies.

(d) *Exchange rate*: Aliber (1983) maintained that the key attribute of multinational corporations (MNCs) is not that it engaged in foreign production, but that it financed at least part of the production in its home currency. He suggested that the strongest currency provides companies an advantage in investing over weaker currencies, because of investors preference for securities denominated in the strong currency and hence a cheaper cost of capital. On the other hand, Froot and Stein(1991) implied that a strong home currency discouraged and weaker currency encouraged FDI in the nation.

(e) *Unemployment and wage rate*: Islam and Maniam (1993) used supply determinants such as the unemployment rate and the wage rate to explain FDI. For instance, the U.S. unemployment rate is a good proxy for the business cycle when used as a determinant of FDI outflow from the U.S.

(f) *Political Stability*: Rueber et al (1973) and Root and Ahmed (1978), agreed that political stability may also be an important factor in attracting FDI.

(g) *Tax Incentives and Tax Holidays*: Cable and Persaud

(1987) and others refused to discount the idea that incentives like lower corporate tax and tax holidays encourage inward FDI.

A comprehensive econometric model will be tested with the following variables and hypothesis:

$$RFDI = B_0 + B_1GDP + B_2CGDP + B_3TB_{-1} + B_4ER + B_5USEM + B_6STB + B_7TIN + E_t,$$

where

RFDI is the dependent variable which measures the U. S.(home country) foreign direct investment and GDP ratio. The independent variables capture some demand and supply determinants of the U.S. investments in host country and home country.

GDP = GDP in dollars that measures the market size of host country which is expected to be positive.

CGDP = Annual real growth rate of GDP that measures the growth rate of market size of the host country which is expected to be positive.

TB_{-1} = Trade balance of the host country measured in U.S. dollars which is equal to the total export minus total imports lagged one year and it is expected to have an ambiguous sign.

ER = Real exchange rate which measures the real exchange rate of domestic currency in terms of U.S. dollars and it is expected to have a negative sign. It is the average rate at year end.

USEM = U.S. unemployment rate (proxy for business cycle) which is expected to have a negative sign.

STB = Dummy variable represents political/economic stability (1= if country is stable, 0 = otherwise) and is expected to have a positive sign.

TIN = Dummy variable represents tax incentive and tax holidays (1= if large tax incentive and holidays, 0 = otherwise) and is expected to have a positive sign.

E_t = Stochastic disturbance term, is assumed to be white noise.

The test will first be conducted using the entire observation period (1977-1997) and repeated using two sub-period data for each country (1977-1986, 1987-1997). Any serial correlation or auto correlation will be corrected and the

model should provide a good indication of the variables that are significant determinants of U.S. FDI in these countries.

The data will be collected from secondary sources for the period 1977-1997, from various issues of Balance of Payment Yearbook, International Financial Statistics, and Department of Commerce- Bureau of Economic Analysis. Online material from sources such as Data Stream and various others will also be used to gather the most recent information and data.

EMPIRICAL RESULTS

Table I provides the estimated values of the coefficients and their corresponding t-statistics using the Ordinary Least Square (OLS) tests for the entire testing period (1977-1997). The OLS estimation shows that all the estimated coefficients have correct theoretical signs, although some of them are not significant. In the case of U.K., the GDP and TB variables are significant at the one percent level and USEM is significant at the five percent level. For France, TB, STB, and TIN are significant at the one percent level, and the GDP is significant only at the five percent level. For Germany, only the GDP variable is at the one percent level and all the other variables are not significant. Therefore it is safe to say that the market size (GDP) is significant in all three countries, meaning that the OLS analysis provide compelling statistical evidence that the market size hypothesis is valid for FDI in these developed countries as suggested in the literature. The trade balance variable, lagged by one period is significant for U.K. and France but not for Germany. The two dummy variables, STB and TIN, representing political stability and tax incentive respectively, are significant for France at the one percent level but they are not significant for U.K. and Germany. This is not surprising since many investors view British and the German governments more stable than the French government. Since French government has the tendency to provide more tax incentives than U.K. and Germany.

What is most puzzling is the growth of the market, measured by CGDP, which is insignificant for all three countries. In other words, the growth of the market irrespective of its level, does not exert any significant influence in the inflow of U.S. FDI. The USEM is significant for the U.K. market and not for the other two countries. Hence, high unemployment rate in the U.S. has a direct significant impact of the determinants of U.S. FDI in U.K. This finding is not surprising especially for the U.K. market since it absorbs about forty percent of all U.S. FDI that goes to Western Europe. On the other hand, the regression analysis did not provide any support that there is a strong link between the

movement of real value of the host country currency and the inflow of U.S. FDI, as suggested by Froot and Stein (1991).

Table I also shows that the estimated adjusted R2 is quite high for the three countries, meaning the large variation of the dependent variable (RFDI) is explained by the regression. This means that these three regression equations are a good fit. For all three countries, the F-statistics is also significant at a one percent, which implies that these independent variables explain well about the dependent variable and its impact on the economy.

TABLE I
Regression Analysis of the Determinants of U.S. FDI
in U.K., France and Germany from 1977 to 1997

Coefficients	U.K.	France	Germany
B_0	-4377.401 (-5.997)**	-328.837 (-0.836)	-55.752 (-1.022)
B_1	51.086 (9.659)**	3.435 (2.687)*	4.290 (7.111)**
B_2	5.154 (0.330)	3.422 (-0.752)	7.484 (-1.763)
B_3	15.143 (4.977)**	3.996 (7.074)**	0.482 (1.894)
B_4	-3.536 (-1.672)	-1.744 (-0.627)	-0.979 (-1.362)
B_5	-86.022 (-2.622)*	-8.538 (-1.505)	-8.084 (-1.566)
B_6	86.564 (1.037)	51.735 (3.276)**	70.012 (1.470)
B_7	122.986 (1.752)	55.911 (3.569)**	54.006 (1.292)
R^2	0.96187	0.97216	0.97099
Adjusted R^2	0.94134	0.95717	0.95538
F-Statistics	46.847**	64.86057**	62.17138**

** and * indicate significance at the 1% and 5% levels respectively

The regression analysis is then repeated by breaking the data set into two sub-periods (from 1977-1986 and 1987-1997). These sub-periods are chosen because since the late eighties the FDI from other countries have increased, and U.S.= role as the major provider of FDI around the world have somewhat diminished due to competition from other industrialized nations such as Japan.

Tables II, III and IV provide the results of U.K., France, and Germany respectively.

The question is whether there is a significant difference in the regression estimates between these two sub-periods. The most interesting result of this analysis is that all the variables have the correct theoretical sign but most of them are not significant at the one or five percent level. For U.K., the F-statistics of the regression equation is significant at the one percent level for the first sub-period and at the five percent level for the second sub-period. Similarly, for France, the F-statistics is significant at the one percent level for both sub-periods.

TABLE II: Regression Analysis of the Determinants of U.S. FDI in U.K. for two sub-periods (1977-1986 and 1987-1997)

Coefficients	1977-1986	1987-1997
B_0	-1066.025 (-3.066)**	-4434.852 (-1.394)
B_1	12.967 (3.132)	57.0490 (2.079)
B_2	17.086 (1.115)	12.620 (0.310)
B_3	0.172 (0.055)	7.732 (0.301)
B_4	-2.475 (-3.559)	-9.902 (-0.804)
B_5	26.459 (2.323)	142.928 (1.557)
B_6	35.168 (0.617)	77.658 (0.181)
B_7	1.156 (0.119)	75.741 (-0.109)
R^2	0.99744	0.96867
Adjusted R^2	0.98851	0.89557
F-Statistics	111.611**	13.25116*

** and * indicate significance at the 1% and 5% levels respectively

TABLE III: Regression Analysis of the Determinants of U.S. FDI in France for two sub-periods (1977-1986 and 1987-1997)

Coefficients	1977-1986	1987-1997
B_0	-35.116 (-0.172)	-1338.318 (-1.825)
B_1	2.256 (1.953)	13.326 (1.776)

B_2	3.229 (0.630)	2.647 (0.406)
B_3	1.540 (2.193)	2.147 (1.168)
B_4	-3.193 (-1.532)	-4.005 (-1.281)
B_5	-2.177 (-0.612)	-2.244 (-0.217)
B_6	1.131 (0.085)	32.479 (0.708)
B_7	15.383 (1.172)	58.139 (0.839)
R^2	0.98721	0.98721
Adjusted R^2	0.95737	0.95737
F-Statistics	10.35045**	33.08450**
** and * indicate significance at the 1% and 5% levels respectively		

This is to say that these variables significantly explain the determinants of FDI in these two countries. But in the case of Germany, the F-statistics is only significant at the ten percent level, meaning that these variables do not explain very well the determinants of U.S. FDI into Germany. In the same token, it also implies the possibility of omission of other relevant variables. Further test was conducted to test for auto-correlation and the test revealed the absence of auto-correlation on the estimation process. Consequently, the possibility of any missing variable in finding the determinants of U.S. FDI in these countries, especially in Germany is unfounded.

TABLE IV
Regression Analysis of the Determinants of U.S. FDI
in Germany for two sub-periods (1977-1986 and 1987-1997)

Coefficients	1977-1986	1987-1997
B_0	-1137.778 (-1.799)	-134.655 (-0.455)
B_1	16.506 (2.193)	2.901 (1.702)
B_2	26.070 (2.927)	2.788 (0.307)
B_3	0.018 (0.040)	0.316 (0.322)
B_4	-2.903 (-2.139)	-2.998 (-1.043)

B_5	-16.279 (-0.902)	-4.957 (-0.204)
B_6	37.543 (0.866)	32.878 (0.389)
B_7	26.779 (0.871)	29.115 (0.338)
R^2	0.95389	0.92601
Adjusted R^2	0.79252	0.75335
F-Statistics	5.91116	5.36341
** and * indicate significance at the 1% and 5% levels respectively		

The objective of this study is also to observe the trend of U.S. FDI in these countries over the last twenty years. Using the sub-periods data (1977-1986 and 1987-1997) and the overall period data (1977-1997), the mean of FDI and the mean growth of FDI is calculated for each country, as shown in Table V. The result clearly shows that U.K. has been the major recipient of U.S. FDI over these years, both in terms of absolute FDI inflows as well as in the annual growth rate of FDI. This is not surprising since U.K. receives about forty percent of all U.S. FDI that goes to western Europe (Bureau of Economic Analysis, 1997). It is interesting to note that the annual growth rate of U.S. FDI from first sub-period (1977-1986) to second sub-period (1987-1997) for these three countries. For the U.K., it increased from 8.97 percent to 14.52 percent, for France it increased from 4.39 percent to 14.21 percent, but for Germany, it increased from 7.53 percent to 7.80 percent only. In other words, even though German reunification process did cause some influx of U.S. FDI into Germany although it is not as significant as previously thought. The most recent data also suggested that U.K. is still the top recipient of U.S. FDI in Western Europe (Bureau of Economic Analysis, 1999).

TABLE V: Trends of U.S. FDI in U.K., France and Germany (Based on Historical Cost Position)

		Sub-Period I (1977-1986)	Sub-Period II (1980-1997)	Overall Period (1977-1997)
U.K.	Mean of FDI (millions of $)	$27980.8	$90261.9	$60604.2
	Mean Growth of FDI	8.97%	14.51%	114.7%

France	Mean of FDI (millions of $)	$7825.6	$23291.8	$15926.9
	Mean Growth of FDI	4.39%	14.21%	9.79%
Germany	Mean of FDI (millions of $)	$15367	$34479.6	$25378.3
	Mean Growth of FDI	7.53%	7.80%	7.68%

SUMMARY AND CONCLUSION

This study uses annual data for twenty-one years (1977-1997) to observe the determinants of U.S. FDI in the three top industrialized nations in the EU bloc. The regression analysis testing the entire test period shows that the factors that affect U.S. FDI in these countries have the correct theoretical sign in all cases. The market size coefficient (measured by GDP) is significant for all three countries and the trade balance is significant for U.K. and France. The two dummy variables representing political stability and tax incentive are only significant for France and not for U.K. and Germany. The F-statistics is significant for all three regression equations representing these three countries. The R2 is also quite high for all these countries. Breaking the data set into two sub-periods, the test results revealed that although the regression coefficients for all three countries have the correct theoretical sign, they are not significant at the one or five percent levels. But, the F-statistics is still significant at the one or five percent level for U.K. and France but only significant at the ten percent level for Germany. The presence of auto-correlation and possible omission of relevant variables is observed to be unfounded. This implies that these independent variables are significant in explaining the determinants of U.S. FDI in these three European countries.

Finally, looking at the trend of U.S. FDI into these countries revealed that U.K. is receiving bulk of U.S. FDI during these testing period. Looking at the mean absolute FDI and mean growth rate of FDI, revealed an upward trend in all three countries although it is significant in the case of U.K., followed by France and Germany.

In summary, the study provided a clearer picture of the role U.S. FDI plays in these three countries. It is hoped that this study also contributed to an increased understanding of U.S. FDI in this region by providing new insights into variables affecting U.S. FDI. This study also provided a clear framework to look at the role U.S. FDI on other EU countries.

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IMPORT AND EXPORT DEMAND ELASTICITIES BETWEEN THE U.S AND THE EUROPEAN UNION EURO CURRENCY ZONE

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ABSTRACT

Demand elasticity for imports as well as demand elasticity for exports are important concepts. They allow the economists to determine the impact of a variation of the exchange rate of a currency on the balance of trade of the concerned countries. For example, if the demand elasticity for exports to a country is inelastic, a relative decrease of the value of the home currency will increase the quantity of exports. However, the resulting revenue from exports will be less than before the depreciation of the home currency. The balance of trade will indeed worsen.

Before acting on the value of a currency to improve the balance of trade, a Nation must possess a very good knowledge of where the demand elasticity for exports or imports stands, a rational move being, maybe, out of this world.

INTRODUCTION

Demand elasticity is defined as the percentage change in quantity, relative to a percentage change in price. In international trade, similarly, demand elasticity for imports is defined as the percentage change in the quantity of imports divided by the percentage change in the relative price of imports. Demand elasticity for exports is defined as the percentage change in the quantity of exports divided by the percentage change in the relative price of exports. Those elasticity indexes are proper to each country dealing with another specific country (bilateral elasticity indexes), since they are function of what is exchanged (purchases with the discretionary or the disposable people's income for example), and who is trading. Elasticity indexes are indeed function of many other factors such as the existence or not of substitutes (similar product quality wise available

from another country with a lower price, resulting from a different variation of its currency exchange rate, for example), country' s tariff changes, subsidies etc ... We must admit that the elasticity concept is complex. However, it remains an interesting index for forecasting the impact of a variation of a currency exchange rate on the balance of trade and the current account, between two countries exchanging a significant amount of products, if we can recognize the true meaning of this index.

A privileged domain of observation was recently offered to our sagacity. Let us take advantage of this opportunity, to understand the complexity of the elasticity of demand for imports and exports.

DOMAIN OF OBSERVATION

Our domain of observation has been defined as The United States of America and the euro-zone of the European Union. The euro-zone is made of the entire European Union (15 countries), minus the United Kingdom, Denmark, Sweden and Greece. The euro-zone is an active trading partner of the U.S. exporting to the U.S. as much as $165 billion per year and importing from the U.S. as much as $118 billion a year (01/01/01). Those eleven countries are sharing a single currency, the euro, since January 1, 1999. This currency versus the U.S. dollar has a variable rate of exchange. This rate of exchange has been steadily declining for the past two years, modifying the competitiveness of euro- zone and U.S. products, making them relatively cheaper for the euro-zone products imported in the U.S. and relatively more expensive for the U.S. products exported to the euro-zone. By way of consequences, the U.S. demand for those euro-zone products may have changed, as well as the euro-zone demand for the U.S. products. It seems thus that those two international trade partners make the perfect set to study a little deeper those export and import elasticity indexes, as they may be in 2001.

IMPORT ELASTICITY INDEX

First we have compiled, on a monthly basis, the amount of imports from the euro-zone by the U.S for the period starting on January 1, 1999 to the end of February 2001 (26 months). A study of the imports from the main partners of the euro-zone (Austria, Belgium, Finland, France, Germany, Italy, Netherlands and Spain) did confirm the trend observed for the euro-zone (Table 1). Imports

from the euro-zone are increasing in current dollar term. For the past twenty-six months those imports in current dollars have been steadily increasing at a rate of $130.4 million a month .

Table 1

				Imports from the euro-zone									
Year	Mo.	euro/Dol.	Dol./euro	Euro-zone	Au.	Bel.	Fin.	Fra.	Ger.	Ital	Net.	Spa.	Others
1999	Jan.	0.8784	1,138434	9928	219	739	212	1851	3566	1596	611	415	2534
	Feb.	0.907586	1.101823	10892	252	684	227	1968	2951	1670	538	391	2211
	Mar.	0.930918	1.074209	12436	239	962	229	2201	4811	1964	716	445	869
	Apr.	0.943680	1.059682	11523	221	725	239	2125	4495	1770	656	390	902
	May	0.954343	1.047842	11472	227	795	232	2136	4427	1837	618	427	773
	June	0.968186	1.032859	12374	261	807	275	2123	4791	2024	687	424	982
	July	0.935127	1.069374	12976	251	778	266	2207	4859	2048	738	431	1398
	Aug.	0.945763	1.057348	12192	252	608	237	2320	4593	1974	669	457	1082
	Sept.	0.937667	1.066477	11352	248	740	214	2071	4279	1659	661	346	1134
	Oct.	0.956689	1.045272	13101	258	882	283	2235	4826	1921	838	427	1431
	Nov.	0.990435	1.009657	13566	241	764	250	2338	5235	1998	840	455	1445
	Dec.	0.990435	1.004543	12860	241	723	246	2333	5115	1979	901	445	877
2000	Jan.	1.021362	0.979085	11743	253	696	251	2321	4385	1802	731	480	824
	Feb.	1.037491	0.963864	12038	240	779	268	2125	4408	1950	727	499	1042
	Mar.	1.046774	0.955316	14843	274	985	319	2598	5499	2158	914	538	1558
	Apr.	1.100743	0.908477	13315	269	796	223	2482	4975	1981	792	451	1346
	May	1.068468	0.935919	13825	286	878	308	2618	4841	2062	858	466	1508
	June	1.046437	0.955624	13337	256	693	257	2324	4699	2105	772	481	1750
	July	1.081849	0.924344	13714	274	881	278	2375	4961	2244	828	513	1360
	Aug.	1.122854	0.890588	13682	259	683	246	2275	5135	2149	783	513	1639
	Sept.	1.140920	0.876486	13745	256	818	256	2325	4832	2318	779	373	1788
	Oct.	1.188072	0.841700	15013	306	948	322	2801	5129	2102	903	434	2068
	Nov.	1.151482	0.868446	14575	292	902	266	2762	4962	2138	854	497	1902
	Dec.	1.070348	0.934276	13909	268	871	255	2777	4911	2042	762	485	1538

2001	Jan.	1.077398	0.928162	14150	309	870	303	2548	4898	2102	833	543	1744
	Feb.	1.088312	0.918854	13247	302	841	290	2342	4866	1952	712	417	1525
	Mar.	1.132638	0.882895										
	Apr.	1.113832	0.897801										

On a year basis, the imports have increased apparently in non-adjusted for inflation value by 0.94. %. This value of imports has to be adjusted for inflation. The euro-zone inflation has been for the past two years 2 % per year. The value of the imports in constant dollars has in fact decreased by 1.06 % a year. This value of yearly imports, since the euro has depreciated at a rate of 11.88% a year, implies that the quantity of products imported during a year from the euro-zone has indeed increased by 10.82%. We have then established the quantities imported month after month, base January 1999, taking into account the inflation and the euro currency depreciation (Table 2).

Table 2

1999	Imports from the euro-zone					2000	Imports from the euro-zone				
	$ from euro-zone	$ adjusted for euro-zone inflation	Imports quantity	Import elasticity Real-time	Import elasticity 3 months		$ from euro-zone	$ adjusted for euro-zone inflation	Import quantity	Import elasticity Real-time	Import elasticity 3 months
Jan.	9928	9928	8721	- 3.78		Jan.	11743	11508	11754	- 24.22	1.93
Feb.	10892	10874	9869	- 6.14		Feb.	12038	11777	12219	1.20	- 7.64
Mar.	12436	12395	11538	4.72		Mar.	14843	14497	15175	0.21	- 8.41
Apr.	11523	11465	10820	- 0.45	1.96	Apr.	13315	12982	14290	- 2.81	3.83
May	11472	11396	10875	- 6.13	- 0.20	May	13825	13456	14378	- 1.79	- 0.69
June	12374	12271	11881	0.33	- 6.49	June	13337	12959	13561	-0. 89	1.16
July	12976	12846	12013	4.65	- 0.98	July	13714	13303	14391	- 1.18	2.00
Aug.	12192	12050	11396	- 9.49	3.66	Aug.	13682	13249	14876	- 3.13	1.59
Sept.	11352	11201	10502	- 8.03	- 2.35	Sept.	13757	13287	15159	- 2.00	- 0.57
Oct.	13101	12904	12346	- 1.96	-14.27	Oct.	15013	14488	17212	- 1.66	- 3.41
Nov.	15566	13340	13212	9.49	7.88	Nov.	14575	14041	16167	- 3.35	3.92
Dec.	12860	12624	12567	- 8.03	2.49	Dec.	13909	13376	14317	5 .71	3.00

We have then studied, on a monthly basis, the variation of quantity of products imported in the U.S, products coming from the euro-zone over the variation of the rate of exchange of the euro with respect to the dollar for the period starting on January 1, 1999 to the end of February 2001. This is the import elasticity index (Table 2).

Visual observation does show a definite trend. Most of the monthly import elasticity indexes computed are negative numbers, what is expected. Some exceptional positive numbers are explainable by some micro trade variations. Large negative numbers across the board are explainable by some product seasonality, euro exchange rate variation anticipation, and accounting practices.

However are these elasticity of demand for imports indexes as calculated following the described above process meaningful? In fact, these indexes might be erroneous because we have neglected the time dimension.

Imported merchandises at time t1 (December for example) is the result of transportation orders at time t2 (November for example). (t1-t2) is then the transportation duration. The shipment leaving the exporting country might the result of short negotiations (ordering time) and some manufacturing time (October for example). It is also the results of currency variation appreciation expectation by the importers, a currency future appreciating or depreciating being a factor to accelerate or slow down the mean flow of merchandises.

This time lag between a decision and its effect has been widely studied by economists who have called this timely effect the J-curve effect. What we know for sure is that the elasticity indexes computed from real time variation of imports related to real time variation of currency exchange rate are not correct. The value of imports cannot be real time related to the spot rate of the currency. But by how much time can we relate imports or exports to the spot rate of the currency? Studies of the import elasticity index taking into account two-month, three-month, four-month or six-month moving average exchange rates or a three-month import time lag did not modified fundamentally the elasticity indexes.

Along the twenty-six month period, when performing a bivariate regression analysis, the import elasticity index is not a constant but varies time wise linearly from -2.15 to -0.73. The demand elasticity for imports in 1999 is elastic. Then, in 2000, the demand elasticity is becoming unitary elastic and even inelastic at the end of 2000. A further depreciation of the euro would increase the quantity exported to the U.S. by a smaller percentage.

EXPORT ELASTICITY INDEX

We have compiled, on a monthly basis the amount of export to the euro-zone from the U.S for the period starting on January 1, 1999 to the end of February 2001 (26 months). A study of the exports to the main partners of the euro-zone (Austria, Belgium, Finland, France, Germany, Italy, Netherlands and Spain) did confirm the trend observed for the euro-zone (Table 3). Exports to the euro-zone seem, in value, to increase. For the past twenty-six months, those exports have been steadily increasing in current dollars at a rate of $31.27 million a month.

Table 3

Y.	Mo.	Exports to the euro-zone											
		euro/Dol.	Dol./euro										
				Euro-zone	Aus.	Bel.	Fin.	Fra.	Ger.	Ita.	Net.	Spa.	Oth.
1999	Jan.	0.878400	1.138434	8374	271	939	124	1702	1980	730	1504	468	354
	Feb.	0.907586	1.101823	8717	200	1101	156	1605	2192	771	1641	455	819
	Mar.	0.930918	1.074209	10066	242	1231	157	1767	2764	821	1669	485	930
	Apr.	0.943680	1.059682	8988	201	1096	217	1546	2331	1066	1552	415	564
	May	0.954343	1.047842	12535	201	1069	127	1672	2173	750	1513	660	4370
	June	0.968186	1.032859	12242	199	984	137	1564	2089	768	1619	491	4361
	July	0.935127	1.069374	7699	121	862	141	1290	1995	889	1367	349	685
	Aug.	0.945763	1.057348	8226	295	929	126	1296	2155	689	1689	387	660
	Sept.	0.937667	1.066477	8607	184	1009	99	1442	1995	765	1647	452	1014
	Oct.	0.956689	1.045272	9373	273	1087	132	1606	2501	1030	1630	460	654
	Nov.	0.990435	1.009657	9177	212	1019	133	1393	2225	837	1781	782	795
	Dec.	0.995477	1.004543	9878	189	1057	121	1926	2388	979	1802	727	689
2000	Jan.	1.021362	0.979085	8072	173	967	102	1471	2045	775	1515	455	569
	Feb.	1.037491	0.963864	8940	219	1039	107	1564	2197	864	1790	409	751
	Mar.	1.046774	0.955316	10299	226	1317	138	1783	2792	899	1949	452	743
	Apr.	1.100743	0.908477	9606	206	1134	125	1705	2695	856	1662	590	633
	May	1.068468	0.935919	9547	257	1083	115	1601	2407	790	1758	752	784

	June	1.046437	0.955624	9821	202	1153	122	1692	2296	921	1837	582	1016
	July	1.081849	0.924344	8745	151	1145	124	1460	2275	868	1575	470	677
	Aug.	1.122854	0.890588	9657	201	1207	137	1649	2413	870	1865	523	702
	Sept.	1.140920	0.876486	10042	241	1174	143	1615	2441	1368	1839	474	747
	Oct.	1.188072	0.841700	10382	215	1190	157	1779	2568	966	2188	599	720
	Nov.	1.151482	0.868446	10260	287	1375	144	1815	4273	858	2017	469	822
	Dec.	1.070348	0.934276	10677	176	1176	156	2119	2644	965	1978	548	915
2001	Jan.	1.077398	0.928162	9879	214	1153	133	1643	2601	923	1821	506	885
	Feb.	1.088312	0.918854	10412	206	1151	132	1983	2030	890	1826	534	760
	Mar.	1.132638	0.882895										
	Apr.	1.113832	0.897801										

On a year basis, the exports in value have increased by 0.29 % in current dollar terms. The figure has to be adjusted for U.S. inflation. This inflation has been, for the U.S., 2.8 % a year. The value of the exports to the euro-zone in constant dollars has indeed decreased by 2.51 % a year. We have established the quantities exported month after month (base January 1999), taking into account the U.S. inflation (Table 4).

We have then studied, on a monthly basis, the variation of quantity of products exported from the U.S, products going to the euro-zone, over the variation of the rate of exchange of the euro with respect to the dollar for the period starting on January 1, 1999 to the end of February 2001. This is the export elasticity index (Table 4).

Table 4

1999	Export to the euro-zone					2000	Export to the euro-zone				
	$ to euro-zone	$ to euro-zone adjusted for inflation	Export quantity	Export elasticity Real-time	Export elasticity 3 months		$ to euro-zone	$ to euro-zone adjusted for inflation	Export quantity	Export elasticity Real-time	Export elasticity 3 months
Jan.	8374	8374	8374	1.16		Jan.	8072	7846	7846	6.36	2.87
Feb.	8717	8697	8697	5.57		Feb.	8940	8669	8669	15.59	27.58
Mar.	10066	10019	10019	- 8.48		Mar.	10299	9963	9963	- 1.43	- 2.80

Apr.	8988	8925	8925	29.13	10.04	Apr.	9606	9270	9270	0.29	- 0.55
May	12535	12418	12418	- 1.81	- 1.02	May	9547	9191	9191	- 1.24	2.89
June	12242	12099	12099	13.18	- 33.79	June	9821	9431	9431	- 3.56	- 2.35
July	7699	7591	7591	5.64	5.66	July	8745	8378	8378	2.35	- 2.93
Aug.	8226	8092	8092	- 4.99	2.98	Aug.	9567	9143	9143	2.88	- 2.20
Sept.	8607	8446	8446	4.12	- 2.39	Sept.	10042	9573	9573	0.76	0.93
Oct.	9373	9176	9176	- 0.68	- 2.08	Oct.	10382	9873	9873	0.46	- 0.38
Nov.	9177	8963	8963	14.02	- 8.26	Nov.	10260	9733	9733	- 0.51	2.34
Dec.	9878	9624	9624	- 7.93	-10.14	Dec.	10677	10104	10104	-12.20	-49.45

Visual observation does show a definite trend. Most of the monthly export elasticity indexes computed are, as expected, negative numbers (Table 4). Some of them are positive. Those real time positive indexes are explainable by export of larger quantities than usual of some U.S. products (like commercial airplanes) where the U.S. has achieved some monopolistic status, or real supremacy. In twenty-six months, the euro has lost about 1 % a month (11.88% per year).

When performing a bivariate regression analysis, the export elasticity index indeed is not a constant but varies from -6.73 to a positive number (+1.5), (Chart 4) a positive number, which does not have any economic meaning. However, it seems that we are now in a period of total inelasticity. An increase in the value of the dollar will not decrease the quantity of U.S. products exported to the euro-zone.

THE MARSHALL-LERNER CONDITION

The general condition for exchange rate stability is referred to as the Marshall-Lerner condition. The ultimate impact on the current account balance depends upon the changes in spending on imports and changes in revenue from exports associated with the change in exchange rate. If domestic demand is inelastic, the impact of a currency depreciation is ambiguous. It does depend on the amount of revenue generated by the partner country on exports. If the increase spending on imports is greater than the revenue on exports, the current account balance will worsen. Unstable result will not occur as long as the sum of the absolute values of the export and import elasticity indexes is greater than 1.0 in case of initial balance of trade.

In case of initial unbalanced of trade, the condition becomes:

$ Exports ---------- x [(Export elasticity index)] + [(import elasticity index)] > 1 $ Imports

In our example, for year 2000, $imports = $165.73 billion, $exports = 118 billion

Export elasticity index = [0.01], Import elasticity index = [0.79].

The Marshall-Lerner inequality for stability is not satisfied (0.57). A depreciation of the dollar by a small percentage will not improve the balance of trade, but will worsen the balance of trade and the resulting current account.

CONCLUSIONS

From the U.S. perspective, there is an import elasticity index between the euro-zone and the U.S., which is not a constant, but a variable. This import elasticity index between the U.S. and the euro-zone was established by observation during a period of a continuous almost linear decrease in the rate of exchange between the euro and the dollar at a decreasing level, starting at -2.15 in January 1999 to -.79 in February 2001.

The absolute value of the import elasticity index is larger than one (zone elastic) when the relative value of the dollar with respect to the euro is low, and smaller than one (zone inelastic), when the relative value of the dollar with respect to the euro is high. Today, this very small import elasticity index (inelastic index, indeed) let us presumes that a small depreciation of the dollar, or a small relative appreciation of the euro will, everything else being equal, have a negative impact on the balance of trade of the U.S. Indeed the balance of trade of the U.S. will worsen.

From the U.S. perspective, the export elasticity index is not a constant, but a variable. The export elasticity index between the U.S. and the euro-zone was established by observation during a period of continuous decrease in the rate of exchange between the euro and the dollar at a decreasing level from -6.73 in January 1999 to zero at the end of 2000. The absolute value of the export elasticity index is larger than 1 (zone elastic) when the relative value of the dollar with respect to the euro is low, and smaller than 1 (zone inelastic), when the relative value of the dollar with respect of the euro is high.

For the past ten months, the absolute value of the export elasticity index has been below 1.00; which means that any small depreciation of the dollar, or a small appreciation of the euro will not decrease the euro-zone trade surplus. This trade surplus will indeed be increasing.

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PRIVATIZATION IN HEALTH CARE: THEORETICAL CONSIDERATIONS AND REAL OUTCOMES

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ABSTRACT

Over the last two decades privatization of health care services has received a great deal of attention in virtually all industrialized nations. Privatization and the free market system have been particularly appealing models for countries that face rapidly escalating health care costs, increasing dissatisfaction with the efficiency and quality of care provided in public health facilities, and, most importantly, shrinking public resources to support provision of health care services. The main purpose of this paper is to systematically examine the role of privatization in the health care field. The paper concludes that privatization of health services has the potential to solve some, but not all, of the problems faced by many countries in their health care systems. A properly designed and managed system of partnership between the public and the private sector, rather than total elimination of the government role in health care is advocated based on the experiences of different countries with privatization of their health care systems.

INTRODUCTION

Over the last two decades privatization of health care services has received a great deal of attention in virtually all industrialized nations. Privatization and the free market system have been particularly appealing models for countries that face rapidly escalating health care costs, increasing dissatisfaction with the efficiency and quality of care provided in public health facilities, and, most importantly, shrinking public resources to support provision of health care services (Manga, 1987; Scarpaci, 1989; Young, 1990; Banoob, 1994; McLaughlin, 1998). Although advocates of privatization believe that the sale or administrative transfer of public goods and services to the private sector will stimulate market competition and improve the efficiency and quality of

service provision, opponents see serious limitations to the role of privatization and free market forces in health care.

The main purpose of this paper is to systematically examine the role of privatization in the health care field. The paper is organized as follows. First, I discuss the role of markets in health care and provide the economic rationale for government intervention in cases where competitive markets tend to fail. The next section explains the meaning of privatization and distinguishes various types of privatization that have been observed in health care. This section is followed by the discussion on potential benefits and problems of privatization. I then present the detailed literature findings, paying particular attention to published reports of actual experiences of industrialized nations including Great Britain, United States, and Canada as well as other eastern and European countries and evaluate the extent to which their efforts have been successful. The last section summarizes the lessons to be learned from the privatization initiatives and discusses important policy and research implications for the future.

The paper concludes that privatization of health services has the potential to solve some, but not all, of the problems faced by many countries in their health care systems. A properly designed and managed system of partnership between the public and the private sector, rather than total elimination of the government role in health care is advocated based on the experiences of different countries with privatization of their health care systems.

THE ROLE OF MARKETS IN HEALTH CARE AND ECONOMIC RATIONALE FOR GOVERNMENT INTERVENTION

Competition versus regulation has been a fundamental health policy choice in many countries for improving both financing and delivery of their health care services. Economics shows that if certain conditions are met, then allowing market competition to operate unencumbered by government interference will result in economically efficient outcomes (Fielding & Rice, 1993). One of the most important aspects of pure competition is the long-run behavior of firms in this market structure. In the lung run, purely competitive firms "operate at the lowest possible cost, charge the lowest price that they can without going out of business, and earn no economic profit " (Welch & Welch, 1992). Competitive markets are likely to produce the optimal rate of output, because individuals benefiting a service pay the full costs of producing that service in such markets.

Resources are also optimally allocated since additional benefits from consuming the last unit are equal the cost of producing that last unit (Feldstein, 1994).

However, there are several conditions that need to be met for such an outcome to occur. First, there must be numerous buyers and sellers in the market, each with no power over price. Second, entry into and exit from the market must be free. Third, the goods and services produced must be homogeneous, and consumers and producers must possess perfect information regarding the price and quality of alternative choices. Finally, the efficiency of competitive markets is derived under conditions where there are no significant externalities, public goods, and monopolies (Folland, Goodman & Stano, 2001).

There is little doubt that some of these conditions are not met in the health care market. The health care markets depart from competition in several important ways. First, there are barriers to entry such as licensure laws and health planning controls on prices and facility construction. Second, products and services produced in the health care market anything but homogeneous, and consumers have limited information. Third, firms have the potential to form monopolies given their small size in certain markets. Finally, externalities are prevalent in health care (Fielding & Rice, 1993; Folland, Goodman & Stano, 2001).

In general, when the prices of all goods and services equal the marginal social benefits and marginal social costs of these items, the market system is said to achieve an efficient outcome (Hyman, 1993). Governments can have a role in improving market efficiency in cases where competitive markets tend to fail. Therefore, government intervention in health care industry is generally justified on the basis of some form of market failure. The most prominent examples of market failure involve monopoly power, externalities, and public goods (Folland, Goodman & Stano, 2001).

A firm exercises monopolistic power when it influences the price of the product it sells by reducing output to a level at which the price it sets exceeds marginal cost of production (Hyman, 1993). Examples of health care markets where firms can exercise monopoly power include hospital services in markets with few providers, pharmaceutical products that are protected by patents, and licensure laws and other forms of regulation that restrict entry into professions like physicians and dentists (Folland, Goodman, & Stano, 2001). Monopoly is inefficient because it produces too small a level of output than a competitive market. Efficiency could be attained by forcing the monopolist to increase his output until prices fell to a level equal to marginal social costs. The appropriate

government remedy to decrease monopoly power include elimination of barriers to entry into a market, preventing price collusion, and improving information among consumers (Feldstein, 1994).

The second situation where the allocation of resources can be improved is when there are externalities in a market. An externality can be defined as "an uncompensated direct effect of the production or consumption of a good on persons other than the producers or consumers" (Folland, Goodman, & Stano, 2001). The effects on others could be positive or negative. Negative externalities are costs to third parties, other than the buyers or the sellers of an item, not reflected in the market price (Hyman, 1993). An example of a negative externality is the damage done by industrial pollution to persons and their property. Positive externalities, on the other hand, represent benefits to third parties, other than buyers or sellers of a good or a service, not reflected in prices. For example, inoculation against a disease results in a positive externality. Those who are vaccinated benefit themselves, of course, but the external benefit of inoculations is the reduction in the probability that those other than persons purchasing vaccinations will contract the disease (Folland, Goodman & Stano, 2001).

When a negative externality exists, too much output will be produced and sold in a competitive market relative to the efficient amount. In this case, the marginal social cost will exceed the marginal benefit. Conversely, positive externalities will lead to underproduction and higher-than-optimum prices, where marginal social benefits exceed the marginal cost. When such external costs and benefits exist, governments should calculate their magnitude, then use subsidies and taxes to achieve the optimum rate of output in the market place (Folland, Goodman & Stano, 2001; Feldstein, 1994).

Market failure also arises because only an inefficiently small quantity of pure public goods will be provided in private markets. A pure public good is "one for which consumption is nonrival (i.e., consumption by one individual does not reduce someone else's consumption) and nonexcludable (i.e., a consumer cannot be excluded from consuming the good either by having to pay or through some other mechanism)" (Folland, Goodman & Stano, 2001). National defense is often given as a prominent example of a pure public good. Even if one refuses to pay the costs of national defense, that person will still be defended. Although it has been argued that health care services represent private goods (Folland, Goodman & Stano, 2001), certain public health services such as, inoculations and environmental protection do share the characteristics of public goods and

governments are expected to be provide these services given their predicted undersupply in private markets (Hyman, 1993).

Finally, efficiency is not the only criterion that is used to evaluate resource allocation in a society. It has been argued that outcomes should also be evaluated in terms of equity, that is, in terms of the perceived fairness of an outcome (Hyman, 1993). Critics of the market system claim that many participants in the system cannot satisfy their most basic needs because low incomes provide them with little capacity to pay for market goods and services. Therefore, they argue, it is necessary that these disadvantaged group of people receive transfers financed by taxes on more fortunate members of society. In the context of health care markets, redistributive government programs (i.e., Medicare and Medicaid in the United States) have the function of lowering the cost of services to a particular group by enabling them to purchase those services at below-market prices (Feldstein, 1994).

To summarize, under certain circumstances competitive markets are shown to fail in providing health care services efficiently. Even if the competitive markets can achieve efficient distribution of health care services, it is possible to find many people in society who are not satisfied with the way these services are being provided in the market place (i.e., equity considerations). Therefore, the market failure to achieve efficient and equitable outcomes is commonly used as a basis for recommending government intervention in health care markets or government provision of services.

CONCEPTS OF PRIVATIZATION

At the most basic level, privatization refers to the transfer of ownership and management of publicly owned assets to the private sector. While in its narrowest sense, privatization has been described as a tool used by public sector agencies to improve efficiency or lower costs, in a much broader sense it is defined as "a philosophy of government that advocates a greater role for private market incentives and the mechanism of competition in achieving public purposes" (Gardner & Scheffler, 1988).

In the context of health care, the term "privatization" is equated with reduced levels of public provision, subsidy, or regulation of either preventive or curative health services (Scarpaci, 1989). The emphasis on provision, subsidy and regulation is particularly important given privatization is mostly associated only with the private provision of public services. However, privatization in

health care often includes a broad range of arrangements (contracting-out, contract management, and load-shedding) rather than sale of public assets to the private sector. Indeed, it has been argued that health care privatization rarely entails the sale of an entire health program to a private fee-for-service provider (Scarpaci, 1989).

While contracting out particular health services with the private sector is said to represent commercialization rather than privatization (Forde & Malley, 1992), this form of privatization has been widely used by many state governments to provide health care services to their Medicaid and Medicare beneficiaries in the United States. Through contracting states have been able to shift some of the financial risk and responsibility to the private sector while maintaining their actual accountability and oversight responsibility (Gardner & Scheffler, 1988).

Another example of privatization in health care is the contract management of public hospitals. With contract management, provision and control of certain components of hospital operation, such as management services, laundry and food services are transferred to the private sector but the responsibility and accountability remains with the public sector.

Load-shedding represents one of the most extreme forms of privatization in health care. In the case of load-shedding, the performance as well as the responsibility of service delivery are transferred to the private sector. This form of privatization often manifests itself when the government totally withdraws itself from the delivery of a service that it no longer considers to be the responsibility of the public sector (Gardner & Scheffler, 1988; Smith & Lipsky, 1992).

POTENTIAL BENEFITS OF PRIVATIZATION

During the past two decades, governments have frequently turned to the private sector to lower costs and increase efficiency because of increased health care costs, decreased government subsidies, and a myriad of constraints on resources. The reliance on privatization as a cure for the health care sector's rapidly increasing costs is mainly due to ingrained beliefs about the nature of publicly-owned entities and their privately-owned counterparts. Many of the arguments in favor of privatization reflect the views of those people who belong to the public-choice school, such as James Buchanan, Anthony Downs, Gordon Tullock, and writers associated with the Institute of Economic Affairs as well as Frederick von Hayek and Milton Friedman of the Department of Economics at the University of Chicago (Scarpaci, 1989). The main argument of this school is that

the invisible hand of the market is more efficient and responsive to consumer needs than the government and the government should play only a minimal role in society.

The proponents of privatization not only believe that the government is inefficient mainly because it can not provide services at a minimal cost, but they also contend that efficiency and innovation in the private sector is frequently hampered by the government interference with private sector activities through regulation (Scarpaci, 1989; Smith & Lipsky, 1992).

Advocates of privatization also claim that privatization introduces savings of community financial resources because the private sector is assumed to manage public assets more efficiently (Forde & Malley, 1992). The role of managers in the private sector is one of the key factors in this regard. Generally speaking, managers in the private sector are said to be more accountable and sensitive to consumer demands since they are often subject to removal by their respective stockholders (Scarpaci, 1989).

In contrast, managers in the public sector are mainly salaried and do not have the same monetary incentives that their private counterparts enjoy. Therefore, they are assumed to be less concerned with the efficiency of their service provisions. However, it is important to note that in health care, not all private firms are for-profit. In economic terms, the most important distinction of the nonprofit firm is the nondistribution constraint which means that no one is allowed to have a legal claim on the nonprofit's residual (revenues over expenses) (Folland, Goodman & Stano, 2001). Indeed, there is evidence to suggest that nonprofit entities and their managers are more likely to emphasize "a mission of community service in addition to the maintenance of financial viability", "provision of charity care", and "commitment to medical education and clinical training programs for physicians and other health care personnel" than their for-profit counterparts (Gardner & Scheffler, 1988).

Another important factor assumed to facilitate higher efficiency and innovation in the private sector is the lack of government bureaucracies that are often thought to hamper innovations. Through privatization, it is possible to free a particular service from government restrictions which allows it to expand according to consumer demands.

One of the key arguments in favor of privatization is that it promotes and maximizes "individual choice". Proposals favoring voucher like systems in health care, which allow individual choice of providers while fostering competition among service providers, have their roots in this individual choice

argument (Smith & Lipsky, 1992). It has also been argued that through increased competition, privatization encourages the public sector to become more cost conscious, and improve overall efficiency of service provision and resource allocation (Forde & Malley, 1992). Finally, the removal of the responsibility of providing health services from the public sector is said to decrease the financial burden of the public sector and release public resources for other alternative programs (Mohan, 1989; Forde & Malley, 1992).

PROBLEMS OF PRIVATIZING HEALTH SERVICES

The underlying assumption of privatization is that through competition in the market place it is possible to maximize consumers' freedom of choice and providers' autonomy which will eventually lead to higher quality and minimum costs. However, there are a few economists, in particular Kenneth Arrow, Robert Evans, and Eli Ginzberg, who are convinced that the paradigm of the competitive market cannot be applied to health care (Ginzberg, 1988).

One of the key assumptions of a competitive market is that consumers have the necessary knowledge and expertise to make a free choice on the services available in the marketplace. This is a particularly problematic assumption in health care because consumers' knowledge of health and medical care is usually inadequate to make informed decisions (Scarpaci, 1989; Banoob, 1994). Another concern about market competition is the potential that some health care providers can form monopolies and keep increasing fees indefinitely unless they are regulated (Forde & Malley, 1992; Banoob, 1994). It has been also argued that private insurance companies can skim the market to minimize their own risks and maximize their profits (Manga, 1987). Finally, under a fee-for-service reimbursement system, providers can initiate unnecessary diagnostic and therapeutic procedures in the absence of an aggressive system of utilization review and quality monitoring (Banoob, 1994).

Because of the several market failures described above and earlier in this paper, the opponents of privatization argue that a dominant role of the public sector in financing and provision of health care is essential to avoid waste and social inequity (Janssen & Van der Made, 1990).

In contrast to public provision of services, free market approaches are also said to fail in promoting altruistic behavior in a society which is essential for the formation of social cohesion (Scarpaci, 1989). In fact, one of the most persuasive rationale for public provision of services is the fact that some individuals in

society feel altruistic concern about the health or level of medical-care consumption of their fellow citizens, especially those with low incomes than themselves (Bovbjerg, Held & Pauly, 1987).

Finally, it has also been noted that public provision of health services through central coordination is more efficient than market-oriented approaches especially in developing countries with less mature-private markets (Scarpaci, 1989).

PRIVATIZATION INITIATIVES OF SELECTED COUNTRIES

Having discussed the pros and cons of privatization in health care, this section will take a closer look at the privatization efforts of different countries within their health care systems to draw some general lessons to be learned from their experiences. I will first provide a rather detailed assessment of the privatization initiatives in Great Britain, United States, and Canada. This will be followed by a brief review of the experiences of other eastern and European countries.

Great Britain

In Great Britain, establishment of a proprivatization policy by the Conservative government in 1979 has been the key factor for the development and implementation of various privatization initiatives. The primary examples of these include the sale of unneeded NHS property to private developers, increasing contracting out of clinical and nonclinical services, and provision of tax-based and other incentives to people for the purchase of private health insurance. With the government's "ideologic commitment to a reduction of the State's role in the economy, together with creating a climate in which the private sector can flourish" (Gardner & Scheffler, 1988) governmental privatization initiatives have been instrumental in stimulating the shift of responsibilities for health care delivery from the public to the private sector in Great Britain.

An excellent analysis of the extent of health care privatization under the Conservative government and its potential effects is provided by Mohan (1989). In his article, the author discusses the arguments for and against privatization in the British context by examining four key aspects of privatization: (a) the private finance and provision of health care; (b) the public finance and private provision of health care; (c) the subcontracting of NHS services to the private sector, and (d)

commercialization of the activities of health authorities. The following details about the privatization initiatives in Great Britain come from Mohan (1989).

Although the National Health System (NHS) model of Great Britain is characterized by national ownership or control of production factors, the Conservative government has encouraged the growth of the private sector on the grounds that it can supplement the state's limited resources to provide the necessary health care services to the public. Therefore, in Great Britain "the private sector is seen by the government as supplementing, not supplanting, the NHS."

Private funding and provision of acute hospital care services represents one of the first privatization initiatives in Great Britain. This particular privatization initiative has initially increased the resources available in the health care market place and facilitated greater individual choice of services in the country. However, increased competition later resulted in excess capacity, leading to the closure of under-capitalized individual hospital units, and serious concerns about the profit motives of the hospital chains which was incompatible with the British tradition of non-profit health care.

The private provision of publicly funded long-term care services for the elderly populations represents another form of privatization in Great Britain. The nursing home industry has enjoyed a rapid expansion in the country after the Conservative government adopted a policy which allowed the cost of accommodating elderly people in private nursing homes to be met by the social security budget where no suitable public-sector accommodation is available.

Again while this form of privatization has increased the supply of nursing beds in communities with a high proportion of retirees, it has been reported that the concentration of nursing homes had varied greatly both geographically (areas with high retirement migration having more nursing homes) and within health authorities. In addition, maintaining a standard level of care provision in nursing homes has proven to be critically important given the empirical evidence of poor care practices in a number of nursing homes. While this has required greater regulation and monitoring of such homes in order to assure compliance, increased regulation by the state is said to have an undesirable effect of compromising the independence of privately run nursing home facilities.

Another striking example of the effect of privatization on health care services in Great Britain involves a government policy of transferring former patients of long-stay psychiatric hospitals out of institutions into the community. While the goals of this policy were "to help patients lead autonomous lives and to

avoid the stigma and institutionalization associated with long-stay hospitals", the lack of resources in the community to provide replacement facilities when long-stay hospitals are closed produced very disturbing outcomes for the patients. Having been discharged into communities that are unable to care for them, many of the patients ended up on the streets, in doss-houses (flop-houses), or in prison. Others, who could afford private-sector accommodations, have become vulnerable to exploitation by landlords.

The other principal form of privatization in Great Britain involves the private provision of ancillary services. After the 1983 election, the government required all health authorities in England to expose their main support services (laundry, cleaning, and catering) to competitive bidding. Although this initiative was mainly aimed at achieving greater efficiency in the NHS, it also served the government's desire to weaken NHS trade unions following their involvement in major NHS industrial disputes. In implementing its policy, the government faced considerable resistance from the work force given the fact that almost two thousand jobs were threatened by this initiative. In addition, many District Health Authorities (DHAs) were unwilling to disrupt their positive relationships with the work forces. Therefore, there was conflict between not only DHAs and the central government, but also trade unions and DHAs. Moreover, the extent of contracting-out of services has been reported to be uneven between the rural and urban areas with private contractors being more successful in rural than urban DHAs.

In Great Britain, both technical and political factors have been the main causes of observed variations in contracting-out initiatives. With regard to the technical factors, the high cost of capital was one of the barriers to entry for laundry and catering industries for many private contractors. In addition, private contractors have had a difficult time in breaking into the market because recent capital investments made a large proportion of laundry and catering plans in NHS hospitals relatively modern and efficient. Therefore, private contractors have been active mostly in tendering for cleaning services where barrier to entry was less of a problem. They have also been able to undercut NHS tenders by cutting down on worker wages. In terms of the role of political factors, it has been reported that some health authorities in Great Britain have been forced to put contracts out to a private contractor, even though the private contract has not always been the economical option.

Overall, while the government has claimed some cash saving as a result of subcontracting the ancillary services, it has been argued that these alleged savings

have not been weighed against a set of unquantified costs. Examples of these costs include unemployment payments to former NHS employees, social security payments to those forced to accept lower wages as well as the costs associated with staff time and efforts of preparing specifications for contract tender documents. In addition, this form of privatization has received serious criticisms from the labor force, which maintained that cost savings have been realized at the expense of the worst-paid section of the NHS labor force- predominantly female part-timers. Given the total gross savings amounted to only less than 0.5 percent of the NHS budget, the success of the government's competitive tendering initiative was very limited in the country.

Finally, a more recent trend in terms of privatization initiatives in Great Britain has been the development of more collaborative types of relationships between the government and the private sector. Some primary examples of such initiatives include the encouragement of charitable fundraising for hospitals, a proposal for joint planning between a DHA and the private sector, and the possibility of commercial involvement in the running of parts of some hospitals in London.

United States

In American health care, production of health care services is largely in the private sector regardless of whether financing is public or private. Most privatization initiatives in the United States represent a number of attempts made by the government to control the rapidly rising cost of health care. The primary examples of privatization in the United States that I would like to discuss briefly include: the use of selective contracting and competitive bidding by states, contract management of public hospitals, and, more recently, the use of case management and managed care approaches in health care delivery.

Selective contracting in health care is defined as "a system by which a payer (either public or private) defines a restricted list of health care providers for its subscribers or recipients" (Gardner & Scheffler, 1988). Under such a system, a process of competitive bidding is generally used to determine the ultimate providers of care with reimbursement arrangements ranging from fixed fee schedules to some sort of capitation payments. According to Christianson (1985), the major assumption underlying the use of competitive bidding and selective contracting is that the process "rewards providers who restrain fee and charge increases or develop cost-effective ways to organize and deliver care, since

these actions could result in lower bids and, consequently, increase the likelihood of winning a contract."

The reality check of this assumption is provided by Gardner & Scheffler (1988) who reviewed the literature on states' experiences with selective contracting and competitive bidding in the United States. The authors' assessment of the state of Arizona's Medicaid program -Arizona Health Care Cost Containment System (AHCCCS)- indicated that while the program had achieved a modest degree of success in caring for the indigent without increasing total public health expenditure in the first year, the state funding for the program increased dramatically between the first and second year as a result of the expansions of benefits. Further, the authors noted many problems with the administration of the AHCCCS such as, failure to pay providers promptly and excessive overhead costs which necessitated the return of the program administration to public control from the private sector. Finally, the competitive bidding process had to be modified in practice because the state had no choice but to give the bidders the opportunity to negotiate or re-bid given that some providers' initial bids exceeded anticipated levels. This, in turn, resulted in inflated bids in the initial round of the bidding process which raised costs to the government in the long term.

The California Medicaid program, Medi-Cal, is another example of selective contracting in the United States. It has been reported that by using competitive bidding and selective contracting, the state saved close to $200 million dollars in the first six months of the program (Iglehart, 1984). In the first full year, actual expenditures for the program were reported to be $165 million below the projected costs with little documented harm to beneficiaries (Johns, Derzon, and Anderson, 1985). According to the most recent evidence, Medicaid selective contracting is said to reduce the rate of inflation in average costs per admission and per patient day during the period of 1982 to 1986 (Gardner & Scheffler, 1988).

Another common form of privatization in the United States is the contract management of public hospitals. Contract management generally involves a formal agreement between a private firm and the board of trustees of a hospital, under which the private sector assumes responsibility for the day-to-day management of the hospital (Alexander & Lewis, 1984; Manga, 1987). However, under contract management, the hospital remains a part of the public sector and the legal responsibility of the managed institution still rests with the board of trustees.

Many of the arguments in favor of private management of the public hospitals are based on the superior performance of the private sector over the public sector. Easy access to increased management expertise, joint purchasing and capital, ability to make decisions quickly, and timely response to consumer demands are some of the examples of the advantages of the private management often cited in the literature (Alexander & Lewis, 1984; Manga, 1987: Gardner & Scheffler, 1988).

In contrast to the theoretical propositions, the available empirical evidence regarding the performance of contract-managed hospitals by the private sector (especially by for-profit firms) indicated that reported profitability increases were most likely to be achieved as a result of higher mark-ups as opposed to the increased productive efficiency, expenses per patient day were higher under contract management, and certain services, such as occupational therapy, psychiatric outpatient, and psychiatric emergency services are likely to be dropped when a public hospital becomes contract managed (Rundell & Lambert, 1984; Kralewski et al., 1984; Gardner & Scheffler, 1988). In addition, it is also argued that private management corporations tend to target hospitals that are experiencing greater than average operating and financial problems and most likely to be small and located in rural areas in the United States (Manga, 1987).

Case management and managed care approaches to patient care have also been viewed as other important manifestations of privatization in the American health care sector given the fact that when the public sector requires either of these approaches for the delivery of care, these services are generally contracted out to private organizations (Gardner & Scheffler, 1988). Gardner and Scheffler argued that although these two terms are conceptually related, they represent different methodological approaches to health care delivery. Therefore, they suggested that "case management" be used to refer to "the coordinated evaluation, selection, and provision of appropriate clinical alternatives at the individual patient level." On the other hand, the term "managed care" is said to imply "a more macro approach, involving the integration, monitoring, and control of the use of health care resources, generally instituted at the organizational level for the purpose of constraining utilization and thereby containing costs" (Gardner & Scheffler, 1988).

In recent years, attention in both the private and public sectors increasingly has turned to managed care as a means for both holding down growing health care costs and increasing access to health services in the United States. Indeed, virtually every state is increasing their reliance on managed care

as a health care delivery model for its Medicaid population. While in 1983, only 3 percent of the Medicaid population (750,000 beneficiaries) were enrolled in managed care, this figure has increased to 11.6 million Medicaid beneficiaries (almost one-third of all beneficiaries) by 1995 (Rowland & Hanson, 1996).

Currently there are three major Medicaid managed care models being used by most states: (a) fee-for-service primary care case management, (b) limited-risk prepaid health plans, and (c) full-risk plans (Health Maintenance Organizations -HMOs or Health Insuring Organizations- HIO. Although the primary care case management model has accounted for much of the growth in managed care enrollment in the early 1990s, the HMO full-risk model is the type of plan now used most often by states in their Medicaid managed care programs (Rowland & Hanson, 1996).

As with other forms of privatization analyzed in this paper, it is necessary to monitor the impact of managed care on access to and quality of care for the Medicaid population as the share of Medicaid beneficiaries in managed care continues to grow. In my view, this is critical given Medicaid managed care programs are being implemented primarily to contain rising costs of the Medicaid program and the Medicaid population is comprised primarily of low-income women and children, disabled persons and the elderly- a population that needs even greater protection against any undesirable effects of market-oriented approaches to health care in this country.

However, most recent evidence regarding the experiences of five states with Medicaid managed care does not seem to present a desirable picture of the states' monitoring ability. Along with many problems with the administration of these programs, Rowland and Hanson (1996) reports that "none of the states had sufficient data to routinely monitor either baseline care patterns and access or the effects of the initiative... Virtually no state had information on care patterns and access to care for the uninsured before they were eligible for the program." Of course, valid assessment of the performance of Medicaid managed care programs is almost impossible without the presence of complete and reliable information.

Canada

Unlike the Great Britain and the United States, there has never been a substantive drive toward privatization in Canada. Available evidence also indicates that presently there is no serious advocacy of privately owned acute care hospitals or a desire to return to a private insurance system for services currently

covered by the Canada Health Act (Manga, 1987). Perhaps more importantly, private insurance is outlawed by most provincial legislations in the country.

In a theoretical paper, Manga (1987) discussed the pros and cons of health care privatization in the context of Canada's current health care system. According to the author, the most common forms of privatization that have been implemented or are under consideration for future implementation in Canada include the following: (a) increased private financing of physician services through extra-billing, (b) increased funding of hospital operating expenses through user fees, (c) increasing funding of hospitals through philanthropy, commercial activities or contracts for purposes of capital replacement or facility or program expansion, (d) the increased use of private for-profit management of hospitals, (e) contracting- out in part or in whole certain activities of hospitals such as laundry, laboratory, and purchasing of supplies) to private for-profit firms, and (f) the administration and management of certain governmental activities such as medical claims processing and maintaining information systems by private firms.

The author's assessment of the privatization initiatives listed above is based on the following three major health policy objectives: economic efficiency, containment of overall or public sector expenditures, and equality of access to health services. Manga argues that any specific privatization initiative should meet these policy objectives in order for it to be considered an acceptable health policy option in Canada. The author's detailed discussions of the individual privatization proposals using the three health policy objectives shape his overall judgment (rejection) of privatization in health care.

In this section I would like to explain the first type of privatization that played a dominant role in the discussions presented by Manga. Underlying the user fees approach, Manga argues, is the assumption that excessive consumer demand is the main driving force for escalating health care costs. Therefore, it has often been argued that it is possible to discourage unnecessary use of health care services by increasing "patient responsibility" for health care costs. In the Canadian context, the notion of increased "patient responsibility" has been translated into patients paying a greater proportion of total health care costs directly through hospital per diems and physician charges through extra-billing. Based on the available evidence from empirical studies on extra-billing, Manga concludes that this form of privatization is not likely to enhance the technical efficiency with which medical services are produced, less likely to reduce total

expenditure on health care services, and most likely to reduce accessibility to care largely among the poor people.

With regards to the technical efficiency objective, Manga points to the evidence that physicians who practice extra-billing themselves believe that their productivity in terms of hours of work and patients seen per day would rise if extra-billing were to be banned. In addition, extra-billing is said to reinforce the fee-for-service method of reimbursing physicians which is less likely to improve technical efficiency by encouraging health manpower substitution in the production of health services, especially in a period of rising supply of physicians.

In terms of the effect of extra-billing on total health care expenditures, Manga argues since the price elasticity of physician services is quite low, the increased price per service more than offsets the reduction in utilization that might occur under extra-billing. Further, he claims, there is no guarantee that the reduction in utilization will produce savings to the health care system as a whole because patients may substitute a more expensive type of hospital services (emergency care) for physician services, they may forego preventive care which latter necessitates more expensive care, and finally physicians themselves may increase their service intensity as a response to a decline in the number of patients. Based on these arguments, Manga concludes that total (public and private) health expenditures are more likely to rise under extra-billing. Finally, the author argues that extra-billing might have serious negative consequences for the equity objective because it reintroduces financial risk to the sick and might deter the use of necessary care, at least among the poor.

As for the other forms of privatization, Manga summarizes his discussion by stating that the empirical findings are "confusing and inconsistent and preclude a definite conclusion as to the wisdom of a general push for privatization". Only contracting out hospital services was favorably judged by the author and it is felt that Canadian hospitals have not used this form of privatization sufficiently to take advantage of lower cost opportunities in the private market. Overall, the author favors even more regulatory government involvement to achieve greater economic efficiency and equity in the health care sector.

Other Eastern and European Countries

In a recent article Banoob (1994) provides some valuable lessons to be learned from the health services privatization initiatives of selected eastern and

European countries. For example, in Russia a new approach to decentralize the health services, based on the health maintenance organization (HMO) model of the United States, is reported to produce some undesirable outcomes as a result of the system's efforts to control costs. Restrictions of referrals from polyclinics to hospitals, refusals of certain diagnostic procedures, and practice of performing outpatient surgical procedures in polyclinics are said to put an increasing number of patients at risk of suffering serious complications given a lack of quality monitoring systems in place.

Another unexpected outcome with the market-oriented approach to health care in Russia relates to the requirement of mandatory health insurance for all citizens of the country. Despite the fact that some large companies did in fact offer health insurance for their employees, many newly formed private insurance companies experienced low revenues given the employers allocate only 3.5% of employees' wage to health care- a figure that poorly compares with corresponding figures of Germany (12.5%) and the United States (10%).

Czech Republic is another country which also began to explore policies of privatization and reducing the role of government in 1990 by setting the basic principles of health care in two stages: "first, to eliminate unnecessary bureaucratic barriers and deformations and release latent resources for health care; second, to reform management and make communities the owners of health institutions." It has been reported that the country has had many implementation problems which required several redesigns in the second stage and delayed the scheduled implementation (Banoob, 1994).

Finally, the case of Hungary provides an excellent example of the extent to which health policies can be formulated to be explicit about the principle of privatization in any health care reform initiative. In 1990, all national and regional authorities in Hungary were abolished and replaced with autonomous health facilities with the implementation of a program called "The National Renewal Programme." Despite this program specifically stating that "putting institutions in private hands, we give impetus to enterprises flexibility in meeting the needs of the population. The restructuring of the service system will be integrated with the diversity of ownership.", similar to the case of Czech Republic, this privatization initiative could not be implemented as scheduled, and modifications have been made to facilitate a slower and practical approach with a more balanced mix of public and private financing.

Based on the experiences of the eastern and central European countries explained above, Banoob (1994) stresses the need for a careful examination of the

other market economy health systems, focusing especially on their mistakes, before rushing into any kind of radical health care reform. He reminds us that in this century, learning by doing in health care is too expensive and risky. Therefore, the author recommends a long-term planning period of at least 7-10 years to effectively build a health care system with a mix of public and private components rather than totally eliminating the existing government-run systems (Banoob, 1994).

Similarly, Young (1990) encourages European countries to develop health policies that favor maintaining an appropriate mix between competition and regulation rather than moving toward a completely unregulated health care system.

CONCLUSIONS AND SUMMARY OF THE LESSONS TO BE LEARNED

At first glance, privatization of health care services seems to be a panacea for the current fiscal crises faced by many countries. However, it is important to assess both short-term and long-term realities to understand the full impact of privatizing any area of service. Privatization can lead to lower costs and some savings in the short-term but it may not match with long-term objectives. Scarpaci (1989) specifically rejects the proposition that health services privatization is merely a response to the fiscal crises of the government or part of a global conspiracy to roll back the welfare state. Instead he argues that "health services privatization depends on the specific nature of conflict among the state, the private sector, health care consumers, and capital." It is also important to note that the results of a particular privatization initiative may be heavily affected by the political, economic, and social situation of the country under consideration.

The review of the literature on the privatization of health care services suggested that the case for and against privatization is not clear. In theory, privatization can lead to higher market competition, higher efficiency and quality of service provision, lower costs, and greater consumer choice. However in practice, it has proven to be very difficult to materialize many of the theoretical promises, if it is not properly designed and implemented.

According to Gardner and Scheffler (1988) there are two factors that can cause difficulties in implementing any privatization initiative: " (a) failure of those who are designing and implementing the process to understand (or trust, or be patient with) the basic "philosophy" of privatization, resulting in improperly structured incentives or other design flaws, and (b) political constraints, which compromise even a well-designed privatization effort."

In the case of the United States, selective contracting through competitive bidding presented a primary example of how implementation difficulties might require even a greater involvement of the government in the bidding process which clearly undermines the real price-cutting impact of the private sector. The experience of Great Britain with contracting-out demonstrated how political constraints could sometimes lead to choices that are not always economical. In addition, both Great Britain's experience with the private provision of nursing home services, and the United States' experience with Medicaid managed care arrangements demonstrate the importance of having appropriate monitoring mechanisms in place to maintain the quality of care provision by the private sector

and protect consumers against any undesirable effects of privatization. Further, the case of Canada highlights the importance of assessing individual privatization proposals against well-specified health policy objectives in any country where privatization of health care services is considered as a viable policy option. Finally, it has also been documented that the need for hasty implementation and unrealistic time frames of privatization initiatives as well as the immaturity of private market systems can lead to several redesigns and compromises in practice based on the experiences of Russia, the Czech Republic and Hungary.

The present review also revealed the need for more empirical studies to document the likely effects of privatization on health care costs, quality, and accessibility. As evidenced from the articles that were reviewed in this paper, most of the analyses of health services privatization tend to be descriptive in nature with extensive theoretical discussions of the merits and weaknesses of privatization.

Another important limitation of the literature on health care privatization relates the indiscriminate use of the term "private sector" by many scholars to represent only for-profit organizations. While there is a general agreement that the term "privatization" refers to the process of transferring certain governmental responsibilities to the private sector, it is important to note that these activities can be assumed by either investor-owned for-profit or not-for-profit private organizations. Since there is considerable evidence to suggest that investor-owned for-profit and not-for-profit firms differ in their approaches to health care delivery (Alexander & Lewis, 1984; Schlesinger, Marmor & Smithey, 1987), it is important to make the distinction between the for-profit and not-for-profit firms in future studies of any types of privatization initiatives.

A common theme has emerged from a number of articles that were reviewed in this paper: It is the public-private partnership, rather than total elimination of the government role that has the greatest potential to address many of the problems that each country faces in its health care system. However, since each country has its unique set of resources to support health services and organization and delivery systems to provide care, it is necessary that each country design and manage its own system of partnership between the public and the private sector.

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THE VALUE ADDED TAX AND TOURISM IN EUROPE

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ABSTRACT

The introduction of the Value Added Tax in England and Ireland was required for membership in the European Union. The change to this system of taxation had broad consequences for the economies of these nations. The tourist industry successful lobbied for an exemption from the tax for customers from America and the Common Wealth of nations. A multiple linear regression analysis, using the .01 level of significance, found three factors to be statistically significant predictors of the increases in sales for the largest of these company; The number of outlets, the number of visitors and the VAT.

INTRODUCTION

On January 1, 1973 the United Kingdom and Ireland were both formally admitted to the European Union (EU) by April 1 the UK had instituted a value added tax (VAT) with Ireland following suit in September. This ended a decades long debate among politicians and academia over the merits of the VAT relative to current consumption and direct taxes in existence in the UK and Ireland.

VAT "is a method of taxing, by installments, once and only once, final consumer spending in the domestic economy... [A tax imposed] as goods change hands on their way through the production and selling chain." [1,5]

There are three major arguments made in favor of the VAT over other forms of taxation. First the VAT shifts the tax burden away from more productive activity toward consumption. This should promote economic growth in the private sector. Direct taxes, like the income tax, tend to reduce work incentive. Even more important they reduce net savings and investment. Investment and savings taxes can be reduced to promote growth in the private sector.

Traditionally economists have opposed consumption taxes because of their regressive nature. The VAT is a consumption tax that can be made

relatively progressive by eliminating the taxes on vital consumer goods, such as food and clothing, while increasing the tax rate on luxuries. Since the poor spend more of their scarce income on necessities and the wealthy buy more luxuries the tax burden is shifted to wealthier members of society.

Secondly VAT spreads the consumption tax more evenly over a broad range of goods and services reducing excessive taxes on particular industries, like the automobile industry, and the negative economic aspects of such a tax.

Finally, by exempting exports from the tax, the VAT favors exports over imports further promoting sales abroad. Increased exports provides jobs and growth to the national economy.

The VAT has other advantages that must also be considered. The VAT is relatively neutral. It does not favor one industry over another, except to the extent that it is used to promote social goals like tax progressiveness. This reduces the need for lobbying to gain tax advantages and also levels the playing field for business.

VAT is nearly impossible to avoid, unlike income tax. Participants in the underground economy, which is estimated to be as much as 15% of Gross Domestic Product, are no longer able to avoid taxation by dealing in cash and under-reporting income.

VAT has worked particularly well in the EU because it's standardization in 1967 by the Council of Ministers allowed for great uniformity among the member nations. It also leveled the field with respect to trade among the member nations. It further promoted trade among member states, who were taxed at the same rate as domestically produced goods. A rate which was considerably lower than the rate imposed on nonmember nations. At the same time VAT does not provide an advantage in trade to nations with lower VAT rates. Goods produced in England, with a lower VAT of 17%, pay the going rate of 22% on their goods sold in France. This further allowed member governments more flexibility in establishing tax rates to support varied levels of government expenditures, particularly on social programs. Reducing the direct tax in favor of a VAT also discourages worker movement for the sole purpose of lowering income tax burden.

Despite all of the advantages of the VAT there were some concerns about this method of taxation, particularly in the UK. The major concern was in controlling the costs of administering the VAT. Costs were monitored in part by looking at the VAT as a simple accounting procedure that could by standardized, and then training businesses in its use. Some businesses still incur extra

administrative costs as the result of complexities in the law regarding exemptions and special cases. There was also a very costly one time only expense as the result of adding the VAT and phasing out other taxes.

Another major concern was over double taxing that occurs when businesses make purchases of capital for business use. They must pay a VAT on those products as well as a second tax on their own output.

These issues were addressed by the EU in their regulations regarding the VAT established in 1967. These regulations allow each member nation to set their own VAT rate within a range of 12% to 22%. The UK has one of the lowest rates in the EU of 17%, 18% in Ireland, compared to 22% in France and Germany. Further the regulations require that businesses be allowed to deduct the VAT on capital and other materials purchased for production from VAT payments on final output. Exports are exempted to promote trade and economic activity. Nations may also impose some flexibility in the rates to promote social and economic goals, upon consultation with the EU. These regulations were designed to promote a consistent levelized tax base among member states while allowing some flexibility in recognition of differences in the needs and attitudes of the nations.

THE PROBLEM

The regulation of primary concern to this paper is article ten which allows for exemptions from VAT for goods in transit, exports, and other exemptions deemed necessary by the member nation. The purpose of this regulation was to encourage exports and tax imports from non-EU nations. The effects of the regulations should increase trade and promote economic activity and growth. In 1979 the UK and Ireland, with pressure from the tourist industry, broaden the scope of these regulations to include purchases made by foreign nationals from non-EU nations within the UK and Ireland. Those individuals making purchases in England or Ireland could receive a rebate from the business. The business could then receive compensation from the government for that rebate. Some businesses imposed a price restriction exempting purchases of less than 50 pounds, to reduce the paper work. Other businesses gave the exemption to all buyers at the moment of purchase requiring special forms. Most of these businesses used a professional tax service that calculated the tax rates on exempt purchases, applied for rebates from the government and even issued checks directly to consumers for qualified purchases.

Other European nations, with a major tourism industry, had enacted similar legislation in the past. The argument for this exemption was that sales to foreigners within the nation were no different than exports made to that country. The governments concurred with respect to purchases made by non-EU citizens, which made up the bulk of the purchases in many of these businesses. EU tourist were not exempt form the tax by agreement since that could jeopardize the leveling aspects of the EU rules by encouraging nationals from high tax nations, particularly France which is close by geographically, to simply travel to England and Ireland to avoid the higher tax.

The real motivation of the tourist industry to pressure for the exemption was the fall in sales that occurred after the imposition of the VAT in 1973. Tourist sales in 1973 and 1974 fell 12% over the 1972 figures nationwide. Sales, particularly to non-EU travelers, continued to fall throughout the 1970s. The passage of the exemption in 1979 saw a modest increase in sales in 1980 that sky rocketed throughout the 1980's and into the 1990's. The purpose of this paper is to analyze the effects of the VAT exemption on sales to foreigners.

The study is based on data obtained from a major manufacturer of fine woolen products and a retailer of products from Ireland and the UK. The company headquarters are in Ireland. The company requested confidentiality as a condition of releasing sales information. The company operates 17 major outlets throughout the Britain and Ireland, making it one of the regions largest retailers. They are the largest single retailer in the tourist market and have additional sales to 2,733 smaller businesses and outlets throughout the region. In 1991 their outlet sales totaled 44.7 million with another 13.6 million in catalog sales and 21 million in sales to other retail outlets for a total of 79.3 pounds. This study examined only those sales from their outlets, which concentrate on the tourist trade. The company has important contracts with most of the major tourist operations. The outlets are always located near major tourist attractions in England, Ireland and Scotland. The outlets provided tourists with restaurant services and sales of their own woolen products as well as crystal, stoneware, and assorted trinkets from Ireland and the UK. In 1991 83% of their outlet sales were to citizens of non-EU nations, while only 9% were to EU citizens and 8% to nationals. The largest sales were to Americans (42%), followed by Canadians (18%), Australians (15%) and other common wealth nationals (20%).

THE STUDY

Table one indicates outlet sales from 1972 to 1998. Sales in 1972 reflected a growth in the tourist industry with 17.2 million pounds in sales. Sales for the company dropped significantly in 1973, the year that VAT was imposed, as they did for all similar retail businesses catering to visitors. Sales remained relatively flat throughout the 1970's. The exemption was enacted midway through the 1979 season and had no significant impact on sales. The 1980 season, the first full year of exemption for purchases, showed a dramatic increase in sales from 13.9 million to 17.4 million. This sales increase continued throughout the 80's and 90's. The sales in 1990 were nearly three times greater than those in 1979. Was the increase in sales due solely to the change in the VAT exemption or did other factors play a significant role?

TABLE I
Company Outlet Sales 1972 - 1998

YEAR	OUTLET SALES (millions of pounds)	YEAR	OUTLET SALES (millions of pounds)
1972	17.2	1984	21.6
1973	12.1	1985	23.1
1974	13.6	1989	38.2
1975	13.8	1990	42.3
1976	14.1	1991	44.7
1977	13.2	1992	48.2
1978	13.8	1993	51.6
1979	13.9	1994	51.7
1980	17.4	1995	53.1
1981	18.6	1996	55.6
1982	18.2	1997	59.9
1983	21.3	1998	62.2

To find out a multiple linear regression analysis was developed that examined other factors, which became the independent x variables. The regression model was:

$$S1 = Bo + B1ln1 + B2N01 + B3Iv1 + B4CE1 + B5V1 + B6ExR + e$$

Annual Sales to Non-EU Citizens (Dependent variable) S1 for each year from 1972 to 1998. The company sales figures to citizens of non-EU nations were used as the dependent variable.

Independent variables

The Rate of Inflation. (In1) Price inflation alone might explain the increase in sales figures during the period. It was important to use annual increases in the inflation rates to determine if they were a significant factor in determining sales increase.

The Number of Outlets. (N01) The company increased the number of outlets from 3 in 1973 to 17 in 1991. The greater the number of outlets the greater the exposure of the product. It was important to determine if that increase in the number of outlets was responsible for the changes in sales.

Increases in the number of Visitors to the Business. (Iv1) The company registered an increase in the number of visitors to their establishment. These increases alone could account for higher sales.

Changes in Total Export Sales for the UK. (CE1) Export figures fluctuated for total sales. The increases may be a reflection of total export increases.

VAT Effect. (V1) The VAT effect was measured with three dummy variables. A zero indicated pre-VAT revenue years (1966 - 1972), a one was used for the exemption years (1980-1998) and a 2 represented the VAT years with no exemption (1973-1979). The assumption is that the VAT exemption resulted in increased sales over the nonexempt years to a level enjoyed before the imposition of the tax.

Average Annual Exchange Rate. (ExR) The rate of exchange between the British/Irish Pound and the Dollar should have some impact on sales.

Error Term (e)

CONCLUSIONS

The multiple linear regression analysis, using the .01 level of significance, found three of the statistics to be consistently significant predictors of the increases in sales for the company.

The number of outlets, was as would be expected, a significant factor for every year except 1978 and 1984. Two new outlets were added in both 1985 and 1987 and sales increased most dramatically. Sales dropped in 1982, the same year that one outlet was closed.

The number of visitors also turned out to be significant for every year except 1984. There was some fluctuation but the overall increases in sales matched the overall increases in revenue.

Finally, the VAT was a significant predictor for every year in the study. Sales dropped significantly with the introduction of VAT in 1973, but increased significantly when the exemption was instituted in 1979. None of the other factors were consistently significant at the .01 level. The exchange rate factor was significant in 1982, 1984 and 1989 but not in any of the other years. This was surprising since that factor would seem to be significant in determining total sales. This may be explained by the fact that average exchange rates did not fluctuate dramatically during most of the years in question.

The t-statistic supported the finding of the regression analysis. All of the signs in the study were positive.

Other factors may have also played an important role in the increase in sales over time that were not included in this study. The recognized quality of goods may prove to be an important factor. This factor was left out because of the difficulty in quantifying such a subjective element. Competition pricing policies and frequency of special pricing "sales" may have also been important contributors to total income but data for those statistics were not available to the investigator.

There is further indication of the effect of VAT on sales to non-EU citizens in the fact that the per customer expenditure also increased after the tax exemption was introduced. In 1979, the last year visitors paid the VAT, sales per customer for non-EU buyers was an average of 138 pounds per sale. Sales per customer jumped significantly to 225 pounds in 1981. There was no change in the average purchase of EU citizens during the same period. Since EU visitors did not benefit from the exemption their purchase volume remained constant.

Another indication of the importance of the VAT exemption on sales to visitors was the increase in the percentage of sales going to non-EU citizens after the exemption was created. While the total number of sales transactions increased between 1979 and 1985, sales to domestic and EU visitors actually dropped slightly. In 1979 sales to EU citizens constituted 11% of the total customer base and sales to local residents 16%. In 1985 sales to EU visitors constituted only 9% of the total, a 2% drop, and the percentage of sales to domestic citizens fell from 16% to only 8% of the total. There was only a slight drop in the actual number of EU and domestic purchases per customer, less than 1%, however their was a big increase in the number of sales to non-EU citizens and an even bigger increase in the average value of sales per transaction. All of this indicates that the exemption of foreign travelers from the VAT did encourage sales. This company's policy was to refund the tax on the spot for customers buying in excess of 50 pounds worth of merchandise. This service reduced paperwork and waiting for the consumer making the rebate more attractive than a direct refund from the government, which requires up to one year processing time.

Another explanation for the increase in sales per visitor is the 50 pound limit imposed by the company to qualify for the exemption. It is important to note that the law does not require merchants to exempt foreign visitors, it merely makes it possible for them to pass on an exemption savings. The 50 pounds exemption limit could cause an increase in sales per transaction. For example, a person purchasing 40 pounds worth of material would get no exemption rebate directly from the establishment. The additional purchase of an item for ten pounds would qualify them for the exemption and a savings of 8.5 pounds, well worth the additional costs. The effect is to encourage additional consumption, particularly at the margin. While exact sales figures are not available for other tourist oriented businesses the general trends seem to apply to the industry as a whole making it possible to assume that the effects of a change in the VAT favoring foreign visitors were felt in sales growth for the entire industry. Industry wide sales figures to tourist grew at an annual rate of 11%, well above the annual inflation rate for the period after 1979, and only slightly lower than the 13% average rate for the company in this study.

The VAT has become a significant source of revenue for the government of the UK and Ireland. The tourist industry has exercised its considerable clout in providing an exemption for foreign visitors that has encouraged domestic sales and income but at a loss in revenue of approximately two billion dollars to the government. However, the increased sales of over 3.7 billion to tourist may

offset the VAT losses in higher payroll taxes and reduced unemployment costs. Government analyst have taken that position and thwarted at least two attempts by the British Parliament to revoke the special exemption.

The American Congress has considered using the VAT as a new source of revenue for the Federal government. Opposition from the states, who have become very depemndnet on the sales tax as a source of revenue, has prevented the congress from taking action on this tax. One of the implications of this study for governmtnet is to condider the pressure form lobbying groups to alter such a federal tax in support of their industry. This is a cautionary warning about the problems associated with a consumption tax.

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DISCOUNTING PRICE RIGIDITIES

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ABSTRACT

This paper examines an exposition of the menu cost version of price rigidity promoted by Mankiw and other New Keynesian economists. The inconsistency of the micro model's assumption of single period profit from price changes is examined in light of an assumption on the macro level of a positive opportunity cost of capital. In essence, the macro model assumes multi-period profit concerns through discounting of future profits. When the positive opportunity cost of capital is applied to the micro model of price change incentives, the price rigidity argument breaks down as an extreme case of the more general model. An equational reconciliation of this problem is presented. Implications for the price rigidity argument in light of the approach from this less restrictive model are included in the conclusion. A change in the way New Keynesian economics is presented in the classroom is strongly encouraged by these results.

INTRODUCTION

A major goal of the New Keynesian research agenda is to develop microeconomic foundations for price rigidities that form the basis for transmission of monetary events to real variability in the macroeconomy. The assumptions of monopolistically competitive firm structures and the presence of menu costs have been utilized to justify large business cycle results from changes in individual firms' demand. This is because changes in profit are small (second order) and are often offset by a similarly small menu cost which results in a threshold effect and thus, price rigidity (Mankiw, 1991).

Most of the applications of this scenario involve the recognition of the possibility of a transfer of price rigidity to the macroeconomy if monopolistically competitive firm structures characterize a significant portion of the economy (i.e., are 'representative'). A characteristic of macro models to which this concept is applied, however, is often ignored when micro level price rigidity is asserted. The characteristic is a positive opportunity cost of capital that implies that firms will

discount future incremental cashflows, including expected changes in profit from the price change decision. In other words, a firm, rather than making its price change decision based on a comparison between a one time menu cost and the change in profit in a single time period, will instead discount future incremental profits resulting from the price change decision.

In essence, the decision to incur the cost of a price change can be thought of as an investment decision. It may therefore be treated similarly to capital budgeting, cash management, and receivables management models.

In these models, the present value of incremental cash inflows is compared to the corresponding present value of incremental cash outflows. The implication is that, in order to produce a rigidity, the menu cost (present value of cash outflows) must exceed the present value of all future changes in profit expected from that price change.

An alternative treatment of the menu cost is to consider it to be an operating cost, rather than a capital investment decision. There are several ways to rationalize this scenario which one may wish to group into the 'near rationality' model.

A SIMPLE NON MARKET CLEARING MODEL WITH A POSITIVE OPPORTUNITY COST OF CAPITAL

The macroeconomic framework onto which we graft the assertions of the New Keynesian theory is important to the overall effect of nominal price rigidities and real rigidities. A simple representation of this type of model is the Barro and Grossman non market clearing format (Barro, Grosman 1976, ch 2). In this model a positive opportunity cost of capital exists.

Price rigidities are utilized in order to highlight the transmission of monetary shocks to real variables within an equational system. The micro justification for price rigidity is of great importance to the New Keynesian agenda, which is for the most part dedicated to finding microfoundations for rigidities rather than accepting exogenous assertions serving the same purpose.

It is assumed here that New Keynesian theorists would accept the proposition that the existence of a positive opportunity cost of capital in the macro model should be consistent with the micro level foundations. Therefore, a monopolistically competitive firm will discount benefits and costs at the market opportunity cost. In most versions of macro models, this is represented as a generic 'interest rate.' Even if the interest rate is not the rate of discount used by

firms, we can imagine that the discount rate used may co-move positively with market interest rates. The acceptance of this proposition results in several implications which can be addressed in this extension.

Although market clearing conditions are not possible under the Barro and Grosman price rigidity model, we still consider an economy which is internally consistent. The essence of this type of model is represented by "internal consistency conditions", reflecting not only price rigidity but also, in a recessionary period, a constraint on output representing excess supply.

Price levels are not included as arguments in the equational system. This is because prices are predetermined in the model. One New Keynesian justification for this is the existence of monopolistically competitive firm structures which set prices according to a suboptimal position which is near rational; that is, only a small departure from full rationality (optimality). The reason for this justification is that price changes, although costless, do not appreciably increase profit, because profit is second order (Akerlof, Yellen, 1991). The alternative to a near rational explanation of price inertia is to assume the presence of positive but fixed costs of changing price, or a menu cost. Although menu costs are small, it is argued, the change in profit from the price change is also small, and therefore the firm does not change price in reaction to a small change in nominal aggregate demand. A threshold effect prevails, in other words, where the firm will only change price if the increase in profit from doing so exceeds the cost incurred by the price change. Often, theorists tend to reject that a suboptimal choice is normative, even though it may be justifiable as an assumption because of observed occurrences in the real world. It therefore appears that for New Keynesian theory to remain a theory strictly embedded in optimizing micro behavior, that the menu cost version of price inertia is the crucial point to argue theoretically and prove empirically.

Price rigidity is the vehicle which "teases a market failure" out of an otherwise internally consistent model (Gordon, 1990, p.1136). The transmission of monetary shocks to real variables is carried out via an interest rate mechanism. For example, consider a purely monetary event. A monetary restriction often involves a fall in the flow supply of real money balances accompanied by a rise in the flow supply of government securities.

The effects in the non market clearing framework are that the decrease in the flow supply of real money balances creates excess demand in the money market, and the increase in the flow supply of government securities (an earning assets component) causes excess supply in the earning assets market. The

automatic correction is carried out by an increase in the rate of interest, restoring market clearing in both markets. The interest rate increase suppresses investment demand and consumption demand, which causes further excess supply (supply in excess of an already constrained supply curve) in goods markets (and further excess supply in the labor market). Output and labor employed thus adjusts downward, initiating a form of multiplier effect (as defined by the equational system). This highlights the accepted theory that price rigidity in combination with a demand constraint can result in significant negative macroeconomic consequences.

One might ask, why do firms not change price? With the presence of an exogenously determined demand constraint, firms would not be conditionally maximizing profit if they lowered price. If monopolistically competitive firm structures are representative, however, the price rigidity is explained by the menu cost. This is not to say that price levels do not change; it is simply that they are non-reactive (inertial) to a change in nominal aggregate demand, up to a point (threshold).

THE MENU COST MODEL

Mankiw's model of menu cost price rigidity involves a direct comparison of the menu cost to the change in profit that would result if the firm changed price. It seems logical to compare the benefit of the price change directly with the cost of the price change to determine the rationale of changing price.

In the menu cost version of price rigidity profit is assumed to be a continually differentiable function of the price of the firm's output. That is, it differs from perfect competition in that product price is an argument in the profit function; in the case of perfect competition, price is predetermined (firms are price takers). A key to the menu cost argument is that small deviations from the profit maximizing price result in only an infinitesimal change in the second order profit function.

The demand function (and therefore, marginal revenue function) faced by the imperfect competitor is downward sloping. Equationally, marginal revenue may be stated in terms of the price elasticity of demand and the price of the firm's output:

(1.1)

where:

Demand is defined in terms of real output and nominal GNP:

(1.2)

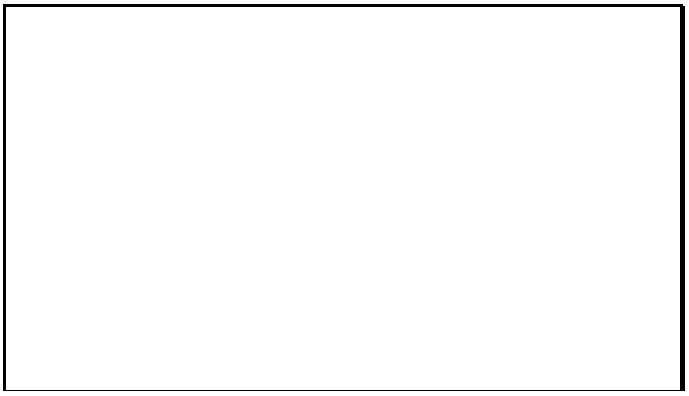
where:

Nominal aggregate demand (Y) becomes a shift variable for the price function. We define total cost in terms of productive factor costs, real output, and nominal aggregate demand:

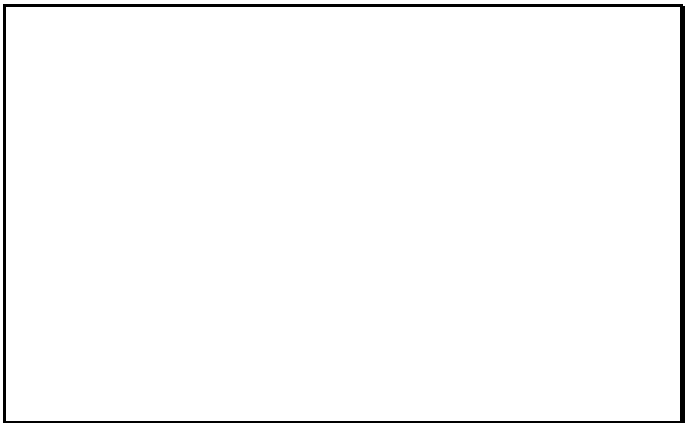
(1.3)

where:

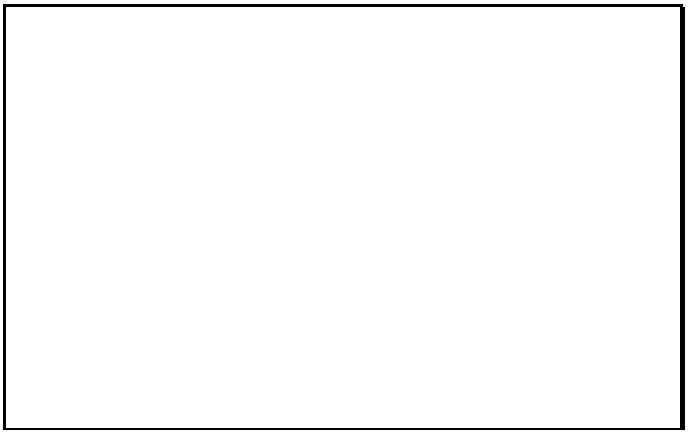
This equational form assumes that if input costs, output, or nominal aggregate demand rise, then (ceteris paribus) the firm's total cost will rise. Graphically, this can be represented as downward sloping demand and marginal revenue. For the sake of simplicity, we will also assume constant marginal cost and linear demand curve as shown in Exhibit 1.



We can illustrate the effects of a change in nominal aggregate demand, where the firm would be able to sell less output at a given price. The firm's demand curve shifts to the left in Exhibit 2. We can compare the positions of a profit maximizing firm versus a firm with nonresponsive pricing by considering the disequilibrium position (Exhibit 3; dotted lines):



We can more simply illustrate what the firm would gain versus what the firm would lose upon changing price by considering the relevant (current period) demand curve and the suboptimal price charged by the unresponsive firm (Exhibit 4).



The gain to the firm of resetting price may be defined for a one period model as rectangle B in the graph, whereas the firm would lose rectangle A if it reset price. The relationship of A to B depends on the price elasticity of demand, of course, but we know that the net gain to the firm would be B-A. It is important to recognize this net gain as a second order function, because a central argument

in the menu cost position is that the gain from cutting price is small. The firm incurs a one time cost of changing price: a menu cost. The second order gain in profit from changing price need only to be smaller than the menu cost to prevent the price change for a fully maximizing firm. The resulting decision rules relating the menu cost (Z) to the single period change in profit (B-A) logically follow: If B - A < Z, then it is fully rational for the firm not to change price. On the other hand, if B - A > Z, then it is fully rational for the firm to change price.

EFFECTS OF A MENU COST IN A MODEL WITH A POSITIVE OPPORTUNITY COST OF CAPITAL

In most macro models, including the one exemplified here, a positive opportunity cost of capital exists. It is therefore logical to assume that the existence of this opportunity cost of capital would be applied to the microfoundations.

With this in mind, the change in present and future profits resulting from the price change should be discounted to a present value. We can directly compare this present value to the (also discounted) cost of the price change or price change plan (whereby future plans for price changes would be considered as well).

Assume for simpler exposition that the cost of a single price change to occur now is already in present value. This is similar to the assumption Mankiw makes that the menu cost is a fixed, one time cost of a price change. This amount is known with certainty, if the cost will fully accomplish the price change.

Not only would the price change affect incremental profits in the current period, but also would affect incremental profits in future periods. On what basis would the decision be made to change price, or, not to change price?

For a price change to occur under fully optimizing firm structures, the present value of all future incremental changes in profit discounted at an appropriate discount rate must exceed the amount of the menu cost. In other words, the present value of the benefit must outweigh the present value of the cost for the decision to be a positive net present value action.

In order to state this relationship precisely, let represent the discounted present value of current and future profits resulting from the price change:

(1.4)

We can state the decision rule in the same notation as the single period form above. If < Z, then it is fully rational for the firm to not change price. If, on the other hand, > Z, then it is fully rational for the firm to change price. If our analysis is limited to fully rational firms, then the menu cost should be treated as a capital investment expenditure.

THE MENU COST AS AN OPERATING COST

An alternative way to look at the menu cost, and an argument that might be pursued by practitioners, is that the menu cost in practice is not viewed as a capital investment decision. It is viewed, rather, as an ordinary operating cost, incurred in the normal operation of the company. In reality, expected changes in profit directly resulting from the price change may be difficult, if not impossible, to segment from changes in profit from other managerial actions. These arguments are natural pragmatic reactions to abstract models of managerial behavior.

It is difficult to argue that business practices should be ignored in the building of economic models. In the strict sense, allowing menu costs to be incurred without considering the effect on profit, however uncertain, is a satisficing, rather than a maximizing position. Although placement of models which reflect suboptimal positions has occurred in the New Keynesian research agenda, it appears that the overall agenda of microfoundations research is dedicated to fully rational models to explain price rigidity. Most efforts build upon fully rational, rather than near-rational, foundations.

FREQUENT PRICE CHANGES

It is conceivable that a firm may change price rather frequently, and not necessarily as a reaction to spending (This is an important point to consider, because the extreme view of the rate at which price changes occur is that of

instantaneous price change, reflecting the classical absence of friction, that New Keynesians wish to dispute). If this is the case, then the incremental changes in future profits attributable to the current price change under consideration may be difficult to predict beyond a short period. Future changes in spending and prices would certainly offset or enhance the effects of the current price change.

This dilemma could be addressed by the presence of uncertainty in the neoclassical sense. A discount rate (d in equation 1.4) which is positively related to the degree of variance of expected future changes in profit can be assumed. In this way, increases in 'risk' would result in a lower present value of future incremental changes in profit.

The inability to predict the nature of future price changes and their effect on incremental profit estimates may not seem to be a burdensome task. The accuracy of forecasts with the presence of multiple price change expectations, however, could result in highly uncertain profit estimates.

CONCLUSIONS

This simple extension of the menu cost version of price rigidity involves at least four implications for the Mankiw model. They are as follows:

(1) The discounted present value of future incremental changes in profit will tend to be large relative to the single (current) period incremental change in profit associated with price change. In other words, the total of the current period's change in profit in combination with the sum of the present value of all future changes in profit will exceed the one period change in profit pursued in the Mankiw model. In equational form:

(1.5)

(2) The firm is more likely to change price under conditions where a positive opportunity cost of capital exists, because the benefit from changing price is greater than in the absence of discounting.

(3) As the perceived variation of estimated future incremental changes in profit increases, the firm is more likely to leave prices unchanged. This is because as the discount rate (d) for future incremental changes in profit increases, falls. The smaller is (relative to the menu cost) the more likely is price inertia.

(4) The limit of the present value of future incremental changes in profit as the discount rate approaches infinity (as variance rises) is equal to the single period incremental change in profit as in Mankiw's framework. If viewed in this light, the single period model represents a special case which operates under the relatively extreme assumption of infinite discount rates. The single period model would therefore appear logically inconsistent with macro models where a positive but non-infinite opportunity cost of capital exists.

Although the conclusions from this simple extension of the menu cost model are rather modest, they do directly address one criticism of the model. Some have suggested that menu costs are small, and are therefore unlikely to cause firms to practice price inertia. The counter-argument is that the change in profit is also small (second order) and therefore, the menu cost, though small, results in price inertia.

The conclusion drawn from including a positive opportunity cost of capital is that considering all future changes in profit will tend to promote price change, at least to a larger degree than the single period Mankiw version. A lesser degree of price rigidity thus translates to the macroeconomy. If prices are relatively flexible, then it is less likely that price rigidity is the cause of large macro fluctuations.

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CURRENCY BOARD AGREEMENT AND ITS ROLE IN THE DEVELOPING COUNTRIES

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ABSTRACT

Currency Board Agreement (CBA) is a popular tool for curbing hyperinflation processes in developing countries. This paper will discuss the role of CBA in the transition economies in Eastern Europe. The advantages and disadvantages of establishing a currency board versus a central bank will be presented briefly. The focus will be on the future development of economies, operating under a Currency Board (CB). The argument is that in the long run the CB mechanism is cruelly stifling the already embattled economies in the specific circumstances of post-communist Europe. In support of this viewpoint, the principles of the economic theory of fixed exchange rates will be presented.

INTRODUCTION

A necessary condition for a country's economy to advance is the predictability of the price level. The economic agents should be reasonably certain that the prices tomorrow are comparable with the prices today, or otherwise informed decision-making becomes impossible. It is a basic tenet of modern economics that inflation is usually well correlated with a corresponding increase in the growth rate of money supply (Milton, 1992; Mishkin, 1992; Fischer, Dornbusch & Schmalensee, 1988). Therefore, a simple prescription for reigning over inflation is designing a system, which prevents money supply from uncontrollable increases.

A currency board agreement CBA is such a system. In essence it pegs the currency of the embattled country to the currency of a low-inflation developed country. As it will be explained below, this simple monetary rule generates

automatic reactions inside the afflicted economy, that lead very often to subduing the growth in money supply and inflation. This automatic mechanism unfortunately has the tendency to be pro-cycle oriented. The result is that once a developing country goes into economic difficulties, the system of the CBA starts re-iterating these difficulties, thus burying the economy into deeper recession.

The truth is that this system is not devoid of its own attractive features. First, it is automatic and therefore independent of the decision making process of corrupt or incompetent authorities. Second, it is theoretically sound. As David Hume argued in the 18th century, the system tends to regulate the value of the price level in the economy by means of generating automatic changes in the money supply (Ingram & Dunn, 1993). Unfortunately, it's being argued that today's world is in many ways different from Hume's world by having institutions (like trade unions, minimum wage laws, etc.) that didn't exist in Hume's time. This arguably neutralizes a great deal of the power of the specie-flow mechanism, especially in the case when the CBA economy goes into recession. Third, CBA tends to stabilize the exchange rate with the major trading partners, thereby reducing the foreign exchange risks in international trade by a great deal. Basically, the main remaining systemic risk is the risk of curbing the CBA itself because of economic reasons (Argentina) or political strife (post-communist countries). This feature is especially attractive for small open economies like most of the East European economies (Bulgaria, Estonia, Lithuania). Fourth, the CBA is politically fashionable in today's East European world, since it serves well the ambitions of these countries to ascend the European Union.

On the negative side, the CBA mechanism is cruelly stifling transition economies in Eastern Europe. In the specific circumstances of post-communist Europe, CBA are "kiss of death" for the already embattled economies. We will use arguments from the economic theory of fixed exchange rates to defend this view.

LITERATURE REVIEW

Kopcke (1999) expresses the opinion that currency boards represent a beginning in the evolution of monetary regimes for emerging economies, but currency boards alone cannot ensure success. The author reviews the design of currency boards, the choice of reserve currency and exchange rate, and the role of a currency board in fiscal and monetary policy. Kopcke's work discusses the merits of currency boards, but admits that currency boards cannot fully insulate

their economies from the consequences of changing conditions in world markets. Currency boards provide a foundation for new currencies and give them a quick start, limit the rate of inflation in the developing economy and reflect a country's commitment to a responsible fiscal policy. Although a currency board guarantees the backing of its base money, faith in its currency rests on traders' and investors' confidence in the economy's financial institutions, capital markets, and fiscal management. The author concludes that currency boards represent a start rather than a destination, for the design of monetary institutions. Currency boards can offer emerging economies a temporary shield, but they are not the magic wands that will resolve all the problems and guarantee the triumph of the developing countries.

Anne-Marie Gulde, Juha Kahkonen and Peter Keller's paper (2000) discusses the pros and cons of currency board arrangements in the context of accession to the European Union (EU) and the Euro Zone. The topic is essential for a number of International Monetary Fund (IMF) member countries, getting ready for EU and EMU membership to which they attach great importance for both political and economic reasons. The argument is organized around three main themes: 1.Experience with currency boards in general; 2. Experience with currency boards in transition economies; 3. Strategies for transition to the Euro in currency board countries. After considering the pros and cons, the paper presents a positive answer, but comments that these countries need to maintain strict policy discipline and be prepared to deal with large capital inflows and asymmetric shocks, in order to preserve the viability of their CBAs throughout the process.

Jeffrey Miller (2001) in The Bulgarian Currency Board, analyzes the situation in Bulgaria under the CBA established in 1997. His paper takes a long-term prospective and assesses the board's immediate impact, as well as its prospects for the future. Miller reviews the macroeconomic performance of the Bulgarian economy, the structure, advantages and disadvantages of the currency board. The author concludes that the currency board has brought needed discipline to the Bulgarian economy and the government budget is under control. As a result the inflation has decreased considerably and the economy is beginning to grow. There are still problems that need to be addressed: servicing the large foreign debt, the current account deficit and declining exports. The solution is growth. Improved productivity will ensure the long-term viability of the board. Miller points that the political problem is the biggest one. The currency board restricts the options that the Government has. A major concern is whether the automatic adjustment mechanisms, which maintain balance-of-payments

equilibrium under a currency board, will create so much economic pain that they will not be politically sustainable. If political uncertainty diminishes confidence that currency board arrangement will survive, the currency board could lose credibility, increasing the risk of speculation against the Bulgarian currency. The author's conclusion is that a strong political support is vital for the success of the currency board in Bulgaria.

Gulde (1999) makes the argument that the CB in Bulgaria, though controversial and difficult to put into practice, has been an essential factor in the success of the country's stabilization program. The paper summarizes the process of choosing a currency board as a stabilization tool. The author reviews the initial macroeconomic and structural condition to accentuate that the CB is the ideal solution to the problems of high inflation and systemic banking crisis. The article discusses some reorganization and transition issues as well as the implementation experience of the Bulgarian currency board. In conclusion it states that CB served perfectly the role it was designed for - radical reduction of annual inflation and interest rates, and cure for the banking crisis. Bulgaria's experience emphasizes the power of a credible, rule-based system to rapidly change perceptions and economic behavior. But Gulde warns about three lessons, the most important of which is that a currency board is only one element of the stabilization program of a developing country. The long-term survival depends in the same way on the implementation of proper supporting actions.

Hanke and Schuler (1999) suggest that dollarization is desirable for Argentina, because Argentina is not willing to make its currency board-like system orthodox. An orthodox currency board has no discretion in monetary policy; market forces alone determine the money supply.

The authors consider the benefits and costs of dollarization. Dollarization is using a foreign currency as predominant or exclusive legal tender. The main advantage of dollarization over a currency board is that dollarization has greater credibility, because it is harder to reverse. The main advantage of a currency board over dollarization is that a currency board retains seigniorage domestically. The main cost would be losing the profit from issuing the monetary base (seignorage). Under an orthodox currency board, the country retains the profit. The major benefit of dollarization would be reduced interest rates and eliminated currency risk. This conventional benefit-cost framework leads to the conclusion that the benefits of dollarizing Argentina outweigh the costs.

THEORETICAL FRAMEWORK

Currency Board Arrangement is a partial case of a fixed exchange rate regime. What basically happens is that the central bank of the country under consideration assumes the obligation to sell a unit of its currency to anyone demanding it for a pre-specified fixed number of units of a foreign currency. Alternatively, the central bank assumes the obligation to purchase a pre-specified number of units of foreign currency in exchange for one unit of its own currency. For example, the Bulgarian CBA specifies that one Bulgarian Lev (BLV) will be exchanged for one Deutche mark (DM). The Argentinean CBA specifies that one peso (APS) will be exchanged for $1US.

This ostensibly simple arrangement spurs automatic reactions in the CBA economy. These effects were described in the 18th century by the English economist David Hume, and the mechanism through which they got realized came to be known as specie-flow mechanism (Ingram & Dunn, 1993). In essence, this mechanism works through changes in the money supply in the CB country that lead to ensuing changes in the price level.

A brief description of the specie-flow mechanism will be given, only to the extent to clarify the views on the future of the East European economies. Let's assume for a beginning that the economy of a CBA country is prospering. Among other things, this implies that the GDP is growing rapidly; the foreigners are stampeding to purchase this country's products, foreign investors are eager to invest in the country (i.e. purchase financial or physical assets in this country), etc. This implies that the foreign demand for domestic currency units is pretty high, and quite naturally, the exchange rate of the domestic currency unit has the tendency to appreciate. Having in mind the Bulgarian CBA, the exchange rate tends to increase from 1DM/1BLV to say 1.5DM/1BLV.

By law, however, the domestic (Bulgarian) central bank must keep the exchange rate at the targeted exchange rate of 1DM/1BLV. The only way to accomplish this is to increase the supply of levs, so that the clearing exchange rate will fall from 1.5DM/1BLV to 1DM/1BLV. The Bulgarian central bank starts selling Bulgarian levs on the foreign exchange market and this quickly brings the exchange rate to its fixed-by-law value of 1DM/1BLV. In practice this is done as the central bank buys from the commercial banks Bulgarian Government securities, thus disseminating levs resource to the banks. The banks start selling levs at the foreign market and purchasing foreign currency, since they are certain that the DM (well, the Euro!) is undervalued and it will soon appreciate.

The bottom line is that the Bulgarian economy starts enjoying a higher stock of money supply. Everybody is happy. Consumers see more money into their hands, and they start spending more on big- and small-ticket items. Firms start producing more, since they anticipate greater demand. In order to be able to carry on this expansion, firms start borrowing more from the banks and the latter are more than willing to accommodate the increased demand for loans, since they see lots of bank reserves, that need to be invested somewhere for a return. The economy is burgeoning and the country is prospering even more.

This escalating prosperity however plants the seeds of its own demise. As the demand (domestic and foreign) for domestic goods and services increases more and more, it is only a matter of time when the economy will reach the limit of its capacity, beyond which it cannot produce more. The increased demand starts being checked not by increase in the supply but by increase in prices. The price level starts increasing. This on its behalf starts rendering the domestic goods and services more and more expensive for the foreigners. The foreign demand for goods and services (and the derivative foreign demand for domestic currency) starts fading. This checks the increase in the money supply, the derivative economic boom and price level. The latter effect is the essence of the inflation-curbing properties of the CBA.

Now assume that for some reasons, the CBA economy is in recession. There are plenty of reasons why this may be true. To name some, most of the East European economies are in a transition stage, moving from a centrally planned economy to a free-market economy. This implies that there are a lot of structural inefficiencies in such an economy that contribute to negative performance. The loss of markets and the ensuing chaos after the demise of the Council for Economic Help is a second cause. In the particular case of Bulgaria, the United Nations embargo on remaining Yugoslavia and the war in the former Yugoslavia were potent negative factors for that country's economy.

Hume's mechanism starts working in the opposite direction. Money supply begins to shrink, thus pushing the economy into an even deeper recession. Theoretically, this will continue until the price level drops so low that the domestic goods, services and assets become attractive for the foreigners, so that they start purchasing domestic production and investing in this country. Then the specie-flow mechanism will once again start working for the embattled economy.

THE ADVANTAGES AND DISADVANTAGES OF ESTABLISHING A CB VERSUS A CENTRAL BANK

In most countries today the monetary authority is the central bank that has a monopoly of issuing the currency of a country. Its power is unrestricted by monetary rules, such as a binding commitment to a particular exchange rate or inflation rate (Schuler, 2001). Only a small number of countries had central banks before the 20th century, mainly in Europe. Until after WWII, countries had a variety of monetary systems, which generally provided lower inflation and better monetary performance than central banks have done. One such monetary system is the currency board, which enjoyed a revival of interest in the 1990s. Currency boards are suitable in any country where the national currency is not performing well in the long run as the major internationally traded currencies (Schuler, 2001). In most developing countries, establishing currency boards would significantly improve the quality of the national currency. Milton Friedman (1992) expresses the opinion that a fixed exchange rate with a major international currency is the easiest way to a stable and fully convertible currency for developing countries. Historically, currency boards have worked well in relatively large, close economies as well as in small open ones.

As of today, a few countries have established currency board systems, which operate in place of a central bank. Some of them are: Argentina, where Argentinean peso (APS) is pegged 1 to 1 to the US dollar, in Bulgaria, 1 lev (LV) equals 1 Deutschemark (DM). Lithuania established an exchange rate of 4 litas = $1 US and in Estonia 8 kroons = 1DM. (Source: IMF) The main benefits to be derived by a currency board agreement are as follows:

1. Foreign exchange risk between the domestic country and its major trading partners is significantly lowered, because full, unlimited convertibility is maintained between a county's currency and the anchor currency at a fixed exchange rate. Basically the foreign exchange risk is non-existent with the country to which the currency is fixed. In countries like Argentina where this is hardly the case, the foreign exchange risk is accompanied by a devaluation (currency board failure) risk.
2. Domestic interest rates and inflation are aligned with those of the country to whose currency the domestic currency is pegged. Because of the fixed exchange rate, the interest rates and inflation in the currency board tend to be almost

the same as those in the anchor-currency country. This is an automatic consequence from the Hume mechanism. There are exceptions in countries replacing highly inflationary central banks with currency boards, because the prices are initially low in terms of US dollar or Deutschemarks. (Schuler, 2001) There is a period of catch-up price increases and inflation is higher than in the anchor-currency country. Price increases narrow and annual inflation falls. This happened in Argentina and is happening in Eastern Europe. Low inflation and interest rates are the immediate obvious advantages of establishing a CB. In Bulgaria for example the annual interest rates dropped from 242.4% in March 1997 to 3.7% in September 1997 and 3.0% in Dec.1997. The annual inflation drastically fell down from 92613.2% in March 1997 to 58.6% in September 1997 and 7.8% in Dec.1997 (Source: Bulgarian National Bank).

3. Using currency issued by a currency board rather than using foreign currency, such as US dollars, directly captures seigniorage for the domestic government. Profits are generated (seigniorage) from the difference between the interest earned on the reserve assets and the expense of maintaining liabilities - notes and coins in circulation.
4. Financial discipline is achieved. The passive and automatic monetary policy of a CB has its advantages - corrupt governments cannot print money to finance hefty deficits and thereby create inflation.

The above mentioned benefits make the domestic economy a far friendlier place to make business for both foreign and domestic companies.

A major problem with currency boards is that once the economy starts going down, the automatic forces make it go deeper and deeper into troublesome waters. To support the currency value the domestic central bank needs to sell more and more of its foreign currency reserves. At some point these reserves may just get depleted and then the country declares devaluation of its currency to restore the equilibrium. The International Monetary Fund is a major source of short- and middle-term loans to meet such difficulties, which usually stem from imbalance in the current account of the country (Ingram & Dunn, 1993). The currency board has no responsibility for acting as a lender of last resort to protect banks from losses. Bank failures have been common in the recent currency

board-like systems, which have inherited many banking problems from the central banking system that preceded them. That was the case in Bulgaria in 1996 and 1997.

To summarize, the main advantages of CB are: predictability and rule-based nature of a currency board, low inflation, stable exchange rate, full convertibility, and international acceptability (Hanke, Steve & Schuler, 1999). Strict discipline also brings benefits - profligate governments cannot print more money to fund large deficits. The negative feature of the currency board is that the country is no longer able to govern its money supply and when the economy is weak, the country falls into even deeper downturn.

CBA AND PRESENT DAY EAST EUROPEAN ECONOMIES

In a word, the automatic prescription of the CBA mechanism for treating a recession is "even a worse recession". This is also known as "classic medicine". When an economy is developing well, the CBA makes it even better. When an economy is doing badly, it becomes even worse.

These pro-cyclical reactions of the CBA mechanism make it extremely inadequate as a means of helping a transitional economy change its course. It is a stifling coffin that buries an economy even deeper. It is true that CBA curbs inflation and establishes a relative stability in the economy, but this is more the stillness of death rather than the warm harmony of prosperity.

To make the things even worse, today's economies differ markedly from the economies in Hume's time. For example, in the recession case, it is very difficult for the price level to fall fast. There are a number of reasons for this. First, this is the natural tendency of workers to support increases in salaries and to vehemently oppose income drops. Second, East European economies are characterized (as almost anywhere in Europe for that matter) with powerful trade unions that work energetically against income level cut offs. Third comes the minimum wage law that restricts the ability of a recession economy to adjust to money supply decrease pressures. Fourth, the developing economies are as a rule characterized with weaker level of competition than the developed economies. This contributes ceteris paribus to a tendency of the price level to increase faster and to drop down slower in the developing economies than the developed ones. All these factors and others make the money supply based process of adjusting (aka classical medicine) extremely painful and of dubious value for the long-term development of a developing economy, say an East European one.

To bring some historical evidence that CBA and fixed exchange rate arrangements in general quite often hurt the long-term development of the corresponding countries, two cases come to mind: Britain of the 1920s (Ingram & Dunn, 1993) and Argentina of the 1990s (Press releases).

In the 1920s, the British Chancellor of the Exchequer Winston Churchill solemnly announced that Britain is to return to the gold standard. Gold standard is a monetary regime that is pretty similar to CBA in that the currency of a country is pegged to gold as opposed to the currency of another country. The result was that for twelve long years, British economy was agonizing in a deep recession. This recession was a direct consequence of the pro-cyclical features of the fixed exchange rate arrangements. At the same time, the French were enjoying a prospering economy, albeit accompanied by some inflation. The reason for that was the flexible exchange rate regime, with respect to gold, was embraced by France.

Argentina adopted its currency board in 1991. During the first several years the economy was going well due to the monetary stability and a sense of security brought by the fixed exchange rate regime. In the mid 1990s things went astray. The US dollar appreciated due in part to the strong dollar policy stance adopted by the US Federal Reserve and US Treasury. In January 1999 Brazil let its currency, the real, flow with respect to the dollar. The real depreciated and thus Brazilian goods became more competitive comparing to Argentine ones. The overall appreciation of the US dollar and the devaluation of Brazil's real adversely affected Argentina's competitive position, particularly in Latin American markets (Economic Trends, 2001). Later Chile also let its currency flow, and that added to the difficulties of the Argentinean economy. To regain its edge without depreciating the peso, Argentina had to lower domestic goods prices. Since 1999, consumer prices have been falling. Argentina's economy, particularly its labor markets, is not very flexible (Economic Trends, 2001). Prices adjust slowly and as they do, output and employment, as a general rule, fall. For the last three years, Argentina has mired in a deep recession, and it is a matter of time when the CBA will just crumble due to lack of foreign exchange reserves to maintain the artificial and devoid of economic rationality exchange rate of one peso equal to one US dollar.

It is true that immediately after the imposition of a CBA most countries score some improvement in their GDP growth. Still, the reason for this is the short-term peace coming with the CBA, which of course removes some important inefficiencies in the economy (say, foreign exchange risk, profit repatriation

uncertainty, etc.). It is naïve to believe, however, that any essential change has occurred in the economy that will lead it to a sustained growth. Indeed, the CBA is too simple of a device and simple things rarely work in the economy. The essence of CBA may be described as a lack of flexibility and this of course puts its toll on the economy.

As it was mentioned in the introduction, most of the East European countries look at the CBA arrangement as a necessary step in their efforts to ascend the European Union. A better strategy for these countries would be to complete to a certain degree their transition to a market economy by enjoying the freedom to set their own monetary policy and goals, and at a later point to enter the European Union and the European Monetary System. Or they may strive to enter the European Union but not the European Monetary System. Indeed, by entering the monetary system at an early date these East European countries risk falling into the position of some of the poorest states in the US (Mississippi, Arkansas, etc.) where money supply is scarce, prices and salaries are low, and they are only agricultural appendices to the affluent states. The mechanism which will render these East European countries the role of the ugly duckling in United Europe will be the same unforgiving specie flow mechanism which rules the money flows between countries with fixed exchange rates and between the districts of a single country. The result will be that the East European countries will become ever poorer when compared with the opulent Western relatives. It is not occasional that countries like Denmark and UK are not in a hurry to enter the European Monetary Union. While their currencies are without any doubt closely linked to the Euro due to the fact that the bulk of their trade is with the Euro zone, these countries still retain some freedom in helping their economies in rainy days. This privilege is however denied to the members of the European Monetary Union and East European countries like Bulgaria and Estonia. One may say that from a monetary point of view, Bulgaria and Estonia are already within the European Union. The forecast for the future of these East European countries and the poorer members of the EU (Greece, Portugal, Spain, etc.) is that they will continue becoming poorer and poorer in relative terms compared to the leaders in the Union.

CONCLUSION

East European countries established the CBA in an attempt to curb their hyperinflation. This paper claims that in general, ceteris paribus, for a

developing country (to which currency boards are usually applied) the currency board agreement is non-sustainable in the long run. Indeed, in developing countries in general competition is less developed in comparison with developed countries. This leads to a tendency in prices to go up. Therefore this leads to an effect of neutralizing of the "hammering" effects of the board, what translates into larger decreases in the money supply to obtain the same effect. Finally, the economy goes into shambles and political or economic (foreign reserve depletion) forces just lead to currency board abandonment. Most probably this will be the case for Argentina in the near future. The Eastern European countries can eschew this fate only if they succeed in joining the European Monetary Union before that. The latter of course does not mean that after entering the Union, their currency troubles will be over. On the contrary, they most probably will remain the poor cousins of the Western Europeans and the currency board will just "help" them in this.

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