

**Volume 11, Number 3**

**Printed ISSN: 1533-3604**

**PDF ISSN: 1533-3590**

# **JOURNAL OF ECONOMICS AND ECONOMIC EDUCATION RESEARCH**

**Editors:**

**JoAnn and Jim Carland**

**Carland College**

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# **JOURNAL OF ECONOMICS AND ECONOMIC EDUCATION RESEARCH**

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## LETTER FROM THE EDITOR

We are extremely pleased to present this issue of the *Journal of Economics and Economic Education Research*, an official publication of the Academy of Economics and Economic Education Research, dedicated to the study, research and dissemination of information pertinent to the improvement of methodologies and effective teaching in the discipline of economics with a special emphasis on the process of economic education. This journal attempts to bridge the gap between the theoretical discipline of economics and the applied excellence relative to the teaching arts. The Academy is an affiliate of the Allied Academies, Inc., a non profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge, understanding and teaching throughout the world.

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. These manuscripts are blind reviewed by the Editorial Board members. The manuscripts published in this issue conform to our acceptance policy, and represent an acceptance rate of less than 25%.

We are inviting papers for future editions of the *Journal* and encourage you to submit your manuscripts according to the guidelines found on the Allied Academies webpage at [www.alliedacademies.org](http://www.alliedacademies.org).

JoAnn and Jim Carland

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# EXCHANGE RATE OFFER CURVES: TWO EXAMPLES FROM THE HEADLINES

Jannett Highfill, Bradley University  
Raymond Wojcikewych, Bradley University

## ABSTRACT

*The paper introduces an innovative graph for teaching bilateral exchange rates called currency offer curves. The currency quantities are on the axes, and the exchange rate is the ratio between them, i.e., the slope of a ray from the origin. The paper uses the model to address two issues from the headlines (1) China's export led growth strategy, i.e., its policy of undervaluing the yuan, (2) the current euro-zone fiscal crisis' effect on the pound-euro market.*

## INTRODUCTION

Many observers believe that the economic relationship between the U.S. and China is a major factor contributing to the recent economic crisis (*The Economist*, 2009; Highfill, 2008). Well before the crisis the large current account deficit of the U.S. with China has been a subject of concern which inevitably raises questions about the dollar-yuan exchange rate. China fixed its exchange rate at 8.2765 yuan per dollar until July 2005. The value of the dollar against the yuan as of June 2010 is 6.8306, virtually unchanged over the last year, and about a 17% depreciation since 2005. Although there are always dissenting voices, many observers believe that this rate has been fixed by China in pursuit of an export-led growth strategy. As evidence, Derrick (BBC News, 2010) notes that "since the start of 2002, China has sold an astonishing \$2.187tn worth of its own currency, in an attempt to stop it gaining in value."

While there has been ongoing attention paid to the yuan-dollar relationship, recently the euro has been at the center of attention. "The issue," according to the head of the European Central Bank, Jean-Claude Trichet, "is that of financial stability within the euro area on account of bad fiscal policy in certain countries" (Trichet, 2010). The euro and the pound have both depreciated against the dollar over the December 2009 to June 2010 window, but the fiscal crisis has caused the value of the pound to appreciate relative to the euro. The value of the pound against the euro was about 1.1052 on December 4, 2009 while on June 4, 2010 it had increased to 1.2085. The second section of the paper helps students see that this can be explained by focusing on capital flows, primarily between Europe and Britain. If British investors are less interested in buying European bonds in June than they were in December, and European investors are more interested in buying British bonds, then the pound should have appreciated against the euro. J. Bradford DeLong describes this as "The Flight to Quality" (DeLong, 2010).

Although there is much more to the story than what can be explained in the classroom, our method allows students to see how such behavior affects the exchange rate.

When teaching exchange rates, we often ask students to imagine standing at a teller window at an airport kiosk trying to change money either before they get on an international flight, or even better, a little flustered after getting off an eight or eighteen hour flight. The point is that on one hand exchange rates are rather simple: you lay down one currency and pick up the other. On the other hand, if laying down a dollar is supplying and picking up a yuan, for example, is demanding, then you are always both demanding and supplying at the same time—unlike almost any other market you can think of. The pedagogical problem is that in every other market we emphasize that demand and supply are completely separate concepts. In the market for pizza demand comes from consumers and supply from firms.

The “currency offer curve” methodology presented here makes use of the fact that there are really only two quantities to keep track of—the exchange rate being the ratio of the quantities—and eliminates the problematical “demand for pounds and supply of euros” curves of the textbook supply and demand treatment of the foreign exchange market.

### **THE YUAN-DOLLAR MARKET FOR FOREIGN EXCHANGE: AN UNDERVALUED CURRENCY**

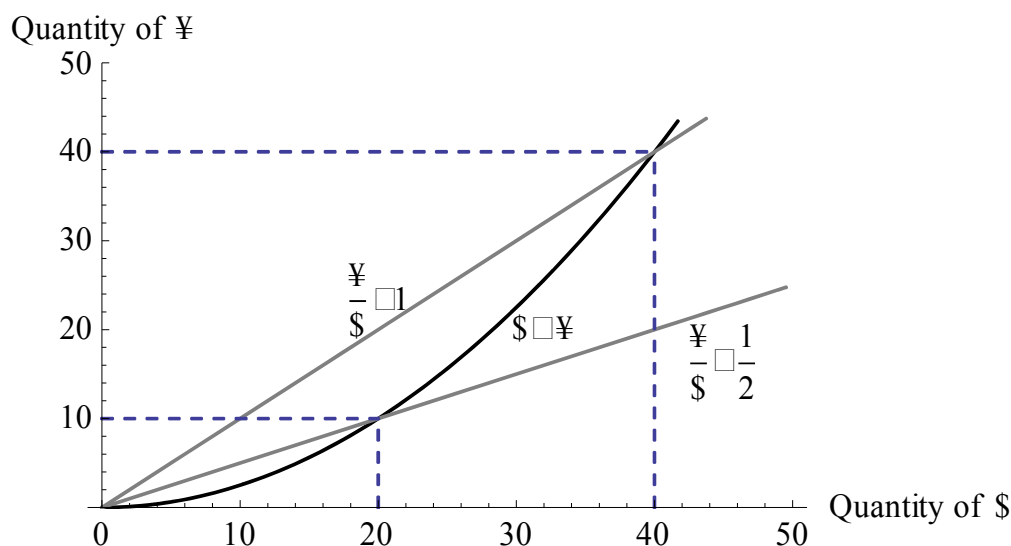
Denoting the quantity of yuan by  $Q^¥$  and the quantity of dollars by  $Q^{\$}$ , the dollar-yuan market is drawn with  $Q^¥$  on the vertical axis and  $Q^{\$}$  on the horizontal axis. Notice first that picking any point in the graph, the value of the dollar ( $= Q^¥ / Q^{\$}$ ) associated with that point is the slope of the ray from the origin going through it. For example, in Figure 1, at the point where  $Q^¥ = 10$  and  $Q^{\$} = 20$  the value of (one) dollar is one half (yuan). (Notice as well that we have sacrificed accuracy for teachability—as mentioned previously, the value of the dollar against the yuan is nothing like one or a half.)

#### **The Dollar-Yuan Offer Curve**

Figure 1 shows the dollar-yuan offer curve, denoted  $\$ \rightarrow ¥$ , which reflects the desires of all the private agents holding dollars that would like to exchange them for yuan at the various exchange rates. The reasons agents have for wanting to exchange dollars for yuan can be organized in a number of ways; equation (1) gives the version we find most useful:



Figure 1: Dollar-Yuan Offer Curve



$$Q^{\text{¥}} = \text{ChineseExports} + \text{InflowsIntoChina} + \text{HotMoneyIntoChina} \quad (1)$$

Exports includes the usual toys, cars, and software, but also includes such items in the current account as investment income and private remittances. The term “Inflows” refers to the traditional capital transactions; buying a stock or bond, making a “green-field” investment, and the like. We will use the term “Hot Money” to refer to any other capital transaction where holders of dollars want to exchange them for yuan. Although virtually all observers believe hot money flows exist the exact definition is often in the eye of the beholder. One person’s speculative transaction is another’s investment. As defined, all terms are positive. The initial presentation of the model may be aided by a table. (The values in the table are derived from the equation (A.1) in the appendix assuming  $m = 2$  and  $a_{\text{¥}} = 40$ .)

As students will probably expect, as the value of the yuan falls the quantity of yuan desired by dollar holders rises. Since exchange rates are ratios of currency quantities, the information in the first two columns is equivalent to the information in the center two columns, and for that matter in the last two columns. The traditional supply and demand approach maps the first two columns and/or the last two columns. The approach of the present paper maps the middle two columns.

**Table 1**  
**DOLLAR-YUAN OFFER CURVE DATA**

Value of Yuan ( $= Q^S / Q^Y$ )	Quantity of Yuan $Q^Y$	Quantity of Dollars $Q^S$	Value of Dollar ( $= Q^Y / Q^S$ )
4	$\frac{5}{2}$	10	$\frac{1}{4}$
2	10	20	$\frac{1}{2}$
$\frac{4}{3}$	$\frac{45}{2}$	30	$\frac{3}{4}$
1	40	40	1

Looking at Table 1, reading from the right, when the value of the dollar is one half agents offer 20 dollars hoping to obtain 10 yuan. When the value of the dollar is one agents offer 40 dollars hoping to obtain 40 yuan. In general, as the value of the dollar increases (rays from the origin get steeper and reading down the right-most column of Table 1), agents desire more yuan and are willing to put more dollars on the table to get them. The offer curve is thus upward sloping.

The intuition behind the convexity of the offer curve is perhaps best understood by asking students to think of what happens as the value of the dollar increases to a very high level. For any increase in the value of the dollar both the quantity of yuan demanded and the quantity of dollars offered increase. But as the value of the dollar goes higher and higher, each dollar offered gets a larger and larger number of yuan in return. Thus the curve becomes more and more vertical as the value of the dollar increases. (The equations for the offer curves are found in the appendix.)

### The Yuan-Dollar Offer Curve

Figure 2 shows the yuan-dollar offer curve, denoted  $¥ \rightarrow \$$ , which reflects the desires of all the private agents holding dollars that would like to exchange them for yuan at the various exchange rates as shown in equation (2).

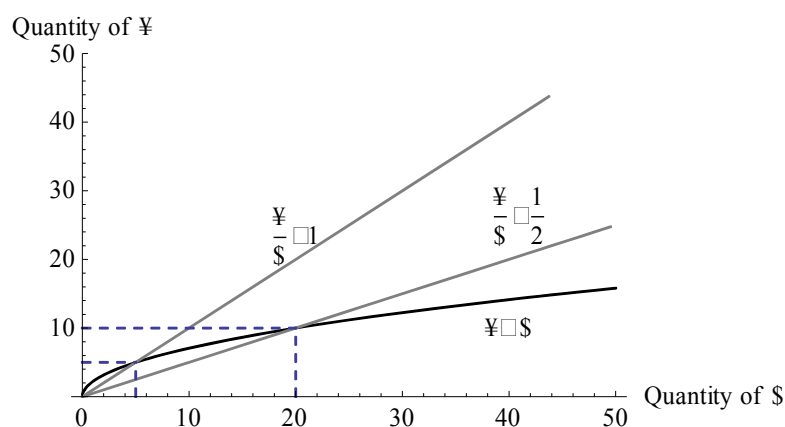
$$Q^S = USExports + InflowsIntoUS + HotMoneyIntoUS. \quad (2)$$

The discussion of these terms is similar to that above and will be omitted. Table 2 is similar to Table 1, but the yuan-dollar offer curve is being illustrated. (The values in the table are derived from the equation (A.2) in the appendix assuming  $n = 2$  and  $a_s = 5$ .)

<b>Table 2</b> <b>YUAN-DOLLAR OFFER CURVE DATA</b>			
Value of Dollar ( $= Q^{\$} / Q^{\text{¥}}$ )	Quantity of Dollars $Q^{\$}$	Quantity of Yuan $Q^{\text{¥}}$	Value of Yuan ( $= Q^{\$} / Q^{\text{¥}}$ )
1	5	5	1
$\frac{1}{\sqrt{2}} \approx 0.71$	10	$5\sqrt{2} \approx 7.07$	$\sqrt{2} \approx 1.41$
$\frac{1}{2}$	20	10	2

The first two columns show that as the value of the dollar decreases the quantity of dollars desired by yuan-holders increases. Again the figure is based on the middle two columns.

**Figure 2: The Yuan-Dollar Offer Curve**



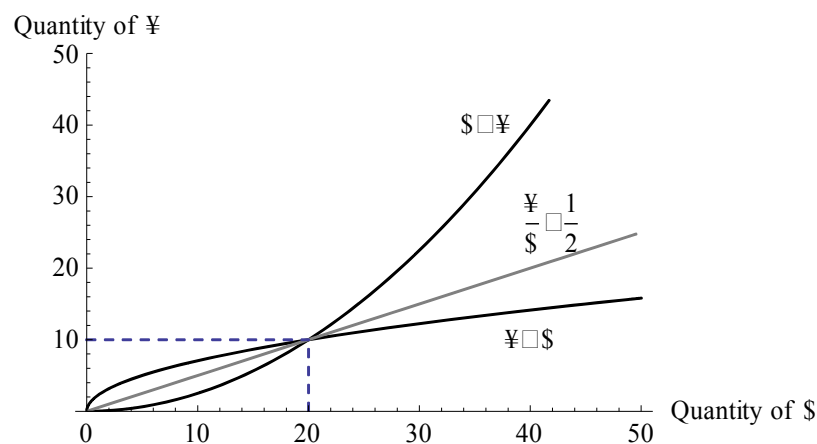
The rays from the origin in Figure 2 are the same as in Figure 1. In this case when the value of the yuan is one agents desire five dollars and offer five yuan in exchange. When the value of the yuan goes up to two (i.e., the value of the dollar falls to one half) agents desire 20 dollars and are willing to offer 10 yuan for them. The intuition for the concavity is similar to that above, noting of course, that the currency desired is now on the horizontal axis. Briefly, as the

value of the yuan gets higher and higher (the value of the dollar smaller and smaller and the rays from the origin flatter and flatter) the number of dollars received for each yuan supplied gets larger as well.

### Equilibrium in the Dollar-Yuan Market

Equilibrium in the foreign exchange market is defined simply as quantity of dollars desired equal to quantity of dollars offered, which is equivalent to quantity of yuan desired equal to quantity of yuan offered; see Figure 3.

**Figure 3: Equilibrium in the Dollar-Yuan Market**

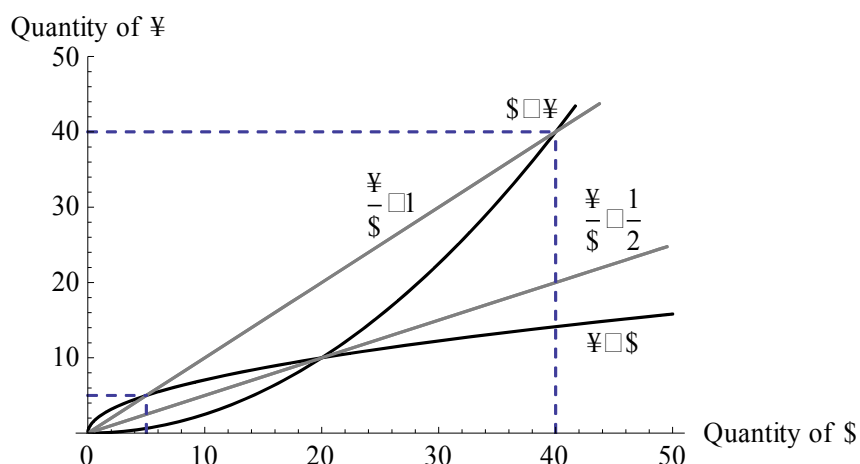


As the alert student will have noticed by now, the equilibrium value of the dollar is one half; in equilibrium the quantity of dollars traded is 20 and the quantity of yuan traded is 10. The analytical solution is found in the appendix for students interested in working through the formal derivation.

### China's Undervalued Currency

Suppose now that China sets a dollar-yuan exchange rate of one—that is, the yuan is undervalued and the dollar is overvalued. This is shown in Figure 4. In this example, when the value of the dollar is one, the quantity of yuan desired is 40 and the quantity of yuan offered is 15. The quantity of dollars offered is 50 and the quantity of dollars desired is 5.

Figure 4: China's Undervalued Yuan



The Chinese government, which controls the supply of yuan is in a position to support this non-equilibrium exchange rate. It simply supplies 35 yuan and accumulates 35 dollars.

The number of dollars put into the market by private agents (40) is clearly larger than the number of dollars desired by private agents (5) at the fixed (disequilibrium) value of the dollar of one. We would argue that our method helps students “see” that an export-led growth strategy leaves the supporting country awash in its competitor’s currency. Export-led growth only works when consumers in the U.S. are buying, and it requires that the Chinese government find assets in which to hold their dollars, making them vulnerable to forces in the U.S. economy that weaken those dollars. China can bluster all it wants, but it cannot both dump its holdings of U.S. assets and undervalue its currency.

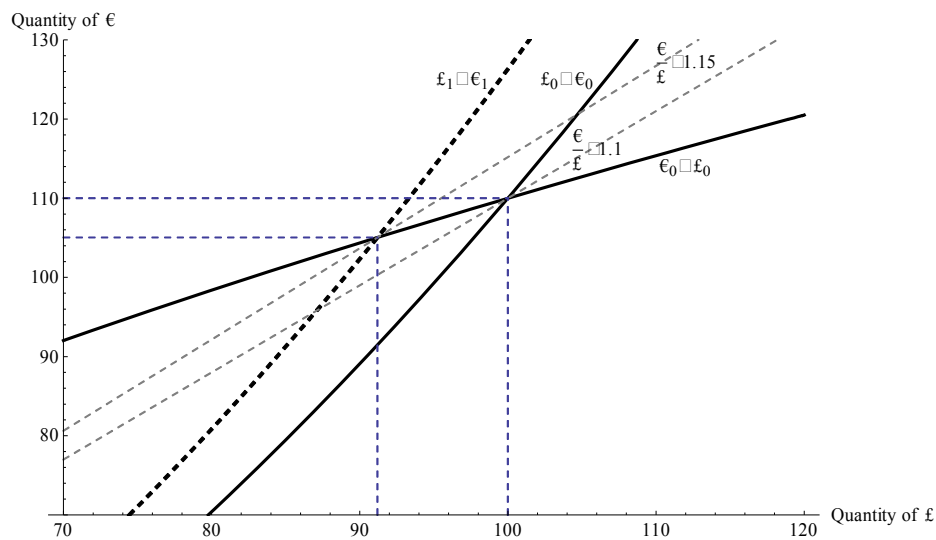
One reason that has been mentioned for China’s policy is that it can use its Sovereign Wealth fund for precautionary purposes, perhaps taking a lesson from its neighbors’ troubles during the Asian Crisis. To the extent that China has been a destination for global financial capital, it might be the case that, for whatever reason, those global investors decide to take their funds out of China. Hot money can flee as fast as it enters. If the Chinese government were willing to accept a devaluation in the yuan, then it would not need to intervene in the foreign exchange market. But it is not, and again, it must absorb the dollars required to support its currency.

### THE POUND-EURO MARKET: CAPITAL FLOWS

If students have just finished the dollar-yuan discussion above, we need only to explain how this example differs from the previous one. On the other hand, if this section is presented on its own, then a few introductory comments are required. First, the slope of any ray from the

origin is the value of the pound relative to the euro because the pound is on the horizontal axis and the euro is on the vertical axis. The dark solid convex offer curve in Figure 5 labeled  $\pounds_0 \rightarrow \text{€}_0$  reflects the wishes of agents holding pounds that want to exchange them for euros. The dark solid concave offer curve labeled  $\text{€}_0 \rightarrow \pounds_0$  reflects the wishes of agents holding euros that want to exchange them for pounds. The equilibrium value of the pound is found where the offer curves intersect. The value of the pound is 1.1 corresponding roughly to its value in December 2009. The equilibrium number of pounds traded is 100 and the number of euros is 110.

**Figure 5: Decrease in the Pound-Euro Offer Curve**



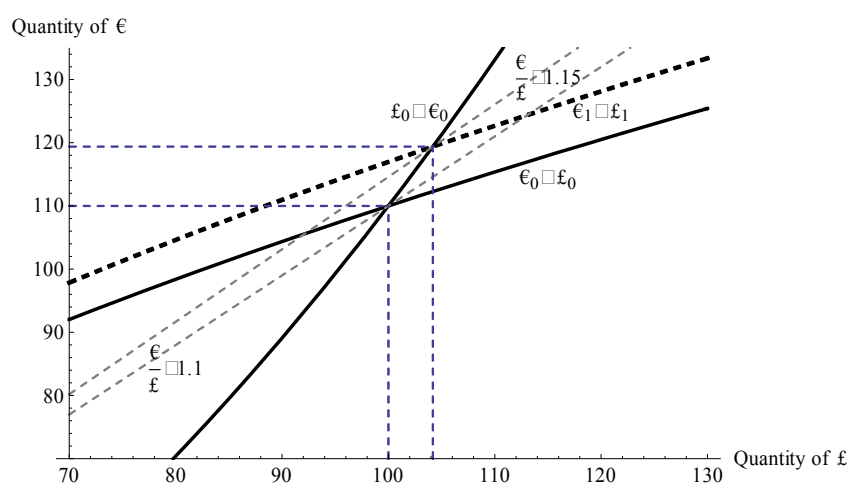
Although we are still simplifying the real world greatly for classroom presentation (notice the whole numbers for quantities and parameters in the appendix) we have attempted to show relatively realistic exchange rates. This is the reason why we moved the origin to (70,70) and omitted the portion of the offer curves near the axes.

It goes without saying that the pound/euro exchange rate affects agents in many ways: travel, imports and exports, remittances, and a whole host of other things. To simplify the presentation we will focus on capital flows. The original offer curve  $\pounds_0 \rightarrow \text{€}_0$  includes the agents wanting to purchase euro-denominated assets. The key point is that the fiscal crisis in Europe might prompt some agents who otherwise would have been buying euro-denominated assets to forgo those purchases. In that case, other things being equal, the quantity of euros desired would decrease. In this context “other things being equal” means along any ray from the origin because the exchange rate is constant for points along any such ray. The shift in the

pound-euro offer curve to the dark dashed curve labeled  $\pounds_1 \rightarrow \text{€}_1$  reflects this shift. The value of the pound rises to about 1.15, while the quantity of pounds traded falls to a little over 90 and the quantity of euros traded falls to about 105. (Although students may not be aware of it, the shift in Figure 5 is designed to produce a “clean” example when combined with the shift in Figure 6 to produce Figure 7.)

If the only goal were to illustrate the direction of the effect of the fiscal crisis on exchange rates, then Figure 6 would be sufficient. But, in fact, we expect the crisis would increase the number of agents holding euros that wish to purchase pound- denominated assets. This is shown in Figure 6 as a shift from  $\text{€}_0 \rightarrow \pounds_0$  to  $\text{€}_1 \rightarrow \pounds_1$ . The latter reflects higher quantities of both pounds and euros along any ray from the origin.

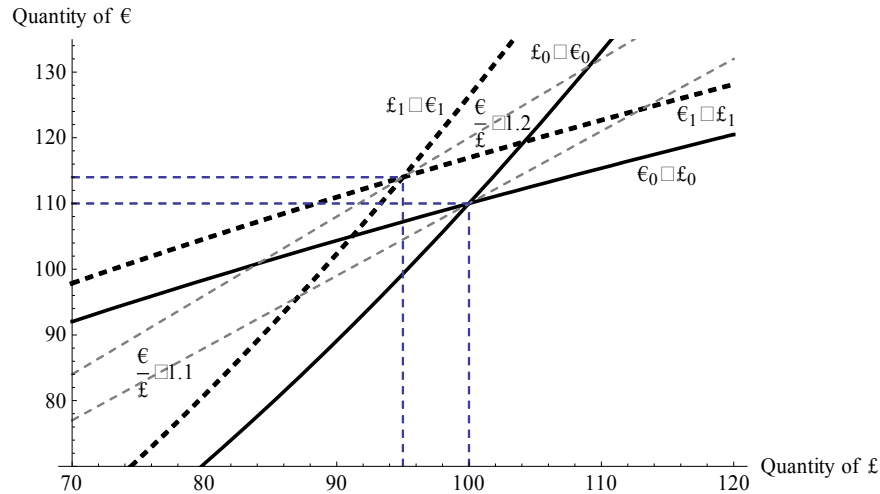
**Figure 6: Increase in Euro-Pound Offer Curve**



In this case the value of the pound again increases to about 1.15, while the quantity of pounds increases to about 104 and the quantity of euros increases to almost 120. The exchange rate prediction is similar to that of the previous figure, but notice that while the quantity of euros goes up in both figures, the quantity of pounds goes up here and down in the previous case.

Figure 7 combines the shifts of Figures 5 and 6 in the same space. The effect of both shifts together on the value of the pound is to increase it from 1.1 to 1.2. Thus it roughly captures the actual behavior of the pound in the six month window under consideration.

Figure 7: Net Capital Outflows from Europe to the U.K.



The quantity of euros traded increases from 110 (December) to 114 (June) while the quantity of pounds traded decreases from 100 (December) to 95 (June). It might be noted that the figure could have been drawn in such a way that the quantity of pounds could be held constant or increase. But we have shown a decrease in pounds because it could be the case that the fiscal crisis prompts some agents to switch from euro-denominated assets to assets denominated in, for example, dollars. It goes without saying that the relationship between Britain and the euro zone is a complex one (*The Economist*, 2010), but the fiscal crisis shows that exchange rates matter.

## CONCLUSION

The primary argument of the present paper is that currency offer curves are a simpler more efficient way of teaching exchange rates than traditional supply and demand. On the other hand, they offer more rigor than a simple verbal treatment. We have chosen to illustrate two issues from the headlines, but the method could be used to do any of the standard examples in an exchange rate unit. For example, Figures 5-7 could as easily be used to illustrate a world in which U.K. income is falling while euro-zone income is rising. In our classes we would spend a significant amount of time discussing the fact that the fiscal crisis we illustrated would have a qualitatively similar effect on exchange rates as a U.K. recession coupled with expansion in Europe. Students are aware that the first is seen in the popular media as reflecting well on the U.K. while the latter would be most definitely problematic. Students enjoy a certain irony. As for future work, we speculate that India would provide an excellent case study to the extent that



it is accused of a one-sided exchange rate policy, i.e., tolerating depreciations but not appreciations.

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## APPENDIX

The offer curve analysis of the present paper assumes isoelastic demand functions for both currencies, specifically,

$$Q_D^{\text{¥}} = a_{\text{¥}} \left( \frac{\$}{\text{¥}} \right)^{-m} \quad (\text{A.1})$$

$$Q_D^{\$} = a_{\$} \left( \frac{\text{¥}}{\$} \right)^{-n} \quad (\text{A.2})$$

where all parameters are positive. This is equivalent to assuming an elasticity of  $-m$  for the demand for yuan and  $-n$  for the demand for dollars. Using the identity

$$\frac{\$}{\text{¥}} \equiv \frac{Q_S^{\$}}{Q_D^{\text{¥}}}$$

these can be rewritten

$$Q_D^{\text{¥}} = (a_{\text{¥}})^{\frac{1}{1-m}} (Q_S^{\$})^{\frac{m}{m-1}} \quad (\text{A.3})$$

$$Q_S^{\$} = a_{\$}^{1/n} (Q_D^{\text{¥}})^{n-1/n}. \quad (\text{A.4})$$

Equation (A.3) is the dollar-yuan offer curve where  $Q_D^{\text{¥}}$  is the quantity of yuan desired and  $Q_S^{\$}$  is the quantity of dollars offered or supplied. Similarly, (A.4) is the yuan-dollar offer curve.

The equilibrium condition is  $Q_D^{\text{¥}} = Q_S^{\text{¥}}$  so that

$$a_{\text{¥}} \left( \frac{\$}{\text{¥}} \right)^{-m} = Q_D^{\text{¥}} = Q_S^{\text{¥}} = a_{\$} \left( \frac{\$}{\text{¥}} \right)^{n-1}$$

so that

$$a_{\$} \left( \frac{\text{¥}}{\$} \right)^m = a_{\text{¥}} \left( \frac{\text{¥}}{\$} \right)^{1-n}$$

$$\left( \frac{\text{¥}}{\$} \right)_{EQ} = \left( \frac{a_{\$}}{a_{\text{¥}}} \right)^{\frac{1}{m+n-1}} = \left( \frac{5}{40} \right)^{\frac{1}{2+2-1}} = \frac{1}{2}. \quad (\text{A.5})$$

The quantities, which this approach is designed to highlight, are

$$\begin{aligned}
 Q_{EQ}^{\$} &= a_{\$} \left( \frac{\text{¥}}{\$} \right)^{-n} = a_{\$} \left( \frac{a_{\$}}{a_{\text{¥}}} \right)^{\frac{-n}{m+n-1}} = (a_{\$})^{\frac{m-1}{m+n-1}} (a_{\text{¥}})^{\frac{n}{m+n-1}} \\
 &= (5)^{\frac{2-1}{2+2-1}} (40)^{\frac{2}{2+2-1}} = (5)^{\frac{1}{3}} (40)^{\frac{2}{3}} = 20
 \end{aligned} \tag{A.6}$$

and

$$\begin{aligned}
 Q_{EQ}^{\text{¥}} &= a_{\$} \left( \frac{\$}{\text{¥}} \right)^{n-1} = a_{\$} \left( \frac{\text{¥}}{\$} \right)^{1-n} = a_{\$} \left( \frac{a_{\$}}{a_{\text{¥}}} \right)^{\frac{1-n}{m+n-1}} = (a_{\$})^{\frac{m}{m+n-1}} (a_{\text{¥}})^{\frac{n-1}{m+n-1}} \\
 &= (5)^{\frac{2}{2+2-1}} (40)^{\frac{2-1}{2+2-1}} = 10.
 \end{aligned} \tag{A.7}$$

Notice the latter substitutions in each equation assume the parameters of the present paper, namely,  $m = n = 2$ ,  $a_{\text{¥}} = 40$ , and  $a_{\$} = 5$ .

The derivations for the pound/euro example are similar with an initial (December 2009) parameter set of  $m = n = 2$ ,  $a_{\text{€}} = 90.9091$ , and  $a_{\text{£}} = 121$ . The second (June 2010) parameter set is  $m = n = 2$ ,  $a_{\text{€}} = 79.1667$ , and  $a_{\text{£}} = 136.8$ .

Finally, it should be mentioned that although the analysis has relied on numerical examples, the qualitative results are similar as long as the currency demand functions are elastic. The model permits inelastic demand functions, but resulting curves are downward sloping rather than upward sloping. Further, stability still requires that the Marshall-Lerner condition be satisfied (Krugman and Obstfeld, 2009, 457-459).



# **HAS THE STUDENT PERFORMANCE IN MANAGERIAL ECONOMICS BEEN AFFECTED BY THE CLASS SIZE OF PRINCIPLES OF MICROECONOMICS?**

**Hui-Kuan Tseng, University of North Carolina at Charlotte**

## **ABSTRACT**

*This research focuses on the influence of the principles of microeconomics class size on students' achievement in the managerial economics course. The logistic regression results suggest that the class size effect is negative and highly significant. Caution should be used in interpreting the negative introductory class size effect found in this study which might be underestimated due to the potential grade inflation problem resulting from the traditional letter grading system. For future studies, a better measure of student performance in the managerial economics course is necessary.*

## **INTRODUCTION**

The impact of class size at the college level on students' performance has long been of interest. It is generally believed that the student-instructor interaction in a small class is more effective than in a large class. Yet, state-owned universities and colleges are generally under substantial financial pressure and increasing class size naturally becomes one of the instruments that administrators use to deal with the pressure.

This research examines the effect of class size in the introductory microeconomics course on students' performance in the managerial economics course. The setting for the research is the Belk College of Business, University of North Carolina-Charlotte, an AACSB International accredited, public university. All business majors, except accounting majors are required to take Managerial Economics (ECON 3125). This course builds on the principles of microeconomics course and emphasizes their applications to business decision problems. The prerequisites of this course are Principles of Microeconomics, Calculus, Elements of Statistics, and Introduction to Business Computing. Thus, to take this course, students must have acquired the basics of economic theory and be equipped with elementary mathematical, statistical and computing tools. However, in response to increased enrollment but limited resources, the Department of Economics has in recent years begun to offer primarily large-section classes for the principles of microeconomics course. To accommodate students' diverse schedule demands, the department also offered small lecture sections for the same course. Regardless of the section size, all

instructors were required to use the same text book and cover the same core-course outline. This raises the question of “has the student performance in Managerial Economics been affected by the class size of the Principles of Microeconomics course?” The research poses the hypothesis that the large-sized introductory class has a negative impact on students’ performance, in large part, because the student-instructor interaction in a large section tends to be less effective than in a small section. With less effective interaction, a large section may hinder students from understanding the course materials, developing problem-solving skills and cultivating independent thinking. These are essential achievement elements for a managerial economics course.

## **LITERATURE REVIEW**

Does a large class size adversely influence student achievement in higher education? Many studies have looked at this issue but the empirical results have been mixed. Toth and Montagna (2002) summarize eight studies published between 1990 to 2000 – two studies show no relationship between class size and achievement, two indicate a negative relationship, one shows a positive relationship, while three report mixed findings.<sup>1</sup> The most recent research by Kokkelenber et al. (2008) finds a negative relationship between class size and average grade point for various specifications and subsets of the data.

In a class size study specific to the economics discipline, Bellante (1972) found students in a “mass lecture” introductory economics class scored 2 points less than students in the small classes. Using a national economic education data base (TUCE III), Kennedy and Siegfried (1997) found class size does not affect student achievement in introductory economics. This insignificant or no class-size effect research result seems counterintuitive. Most of us implicitly believe that students in large classes learn less than students in smaller classes, partly because of the less effective student-instructor interaction. Becker and Powers (2001) argued that the missing data problems might cast a doubt on the no class-size effect result in earlier studies. In contrast, Arias and Walker (2004) find significant evidence that small class size in principles of economics has a positive impact on student performance in the course. The literature on the relationship between student performance and class size has often focused on the introductory economics courses. Little research has been done on intermediate level economics. Raimondo et al. (1990) examined the relationship between class size in introductory economics courses and student performance in subsequent intermediate economics courses. The results showed large-sized introductory microeconomics course did not significantly influence students’ performance in the intermediate microeconomics course, but large-sized introductory macroeconomics course did have a negative and statistically significant effect on students’ performance in the intermediate macroeconomics. Hou (1994) conducted a class-size effect study on managerial economics. As expected, students in a small-sized managerial economics class performed significantly better than students in a large-sized class.

## THE DATA AND THE METHOD OF RESEARCH

This paper seeks to identify factors that influence student performance in managerial economics at the Belk College of Business, University of North Carolina at Charlotte. Full-time students who had completed both microeconomic principles and managerial economics during the ten-semester interval from fall 2004 to spring 2009 were selected for this study. The sample consists of observations on 1156 students. Transfer students are excluded from this study because they had taken one or two of the prerequisite courses for ECON 3125 from other institutions. Part-time students are excluded mainly because their work schedule generally does not allow them to devote more time to their studies comparing with full-time students. Table 1 reports some selected characteristics of the student profile. Logistic regression analysis is applied for this research due to the categorical nature of the dependent variable. The dependent variable is managerial economics course grade (3125GRADE). While class size (SIZE) is the independent variable of most interest to this study, other independent variables - the student's grade point average (GPA), microeconomic principles course grade (2102GRADE), average grade for other prerequisite courses for managerial economics (MATHGRADE), the number of semesters pause between the completion of microeconomic principles and the beginning of managerial economics (PAUSE), gender (GENDER) and age (AGE) are also considered. Table 2 lists the variables in the model with their mean, standard deviation, minimum, and maximum values reported. The explanation of each variable follows.

### Dependent Variable

3125GRADE: The grading issues have hotly debated in higher education. One concern is the problem of grade inflation associated with the traditional letter grade system. Grade inflation refers to the phenomenon that shows a continued rise in the number of A's and B's assigned to students, which do not necessarily reflect increased levels of students' academic performance. Quann (1987) and Bressette (2002) have documented a reduction in grade inflation using a plus/minus system. Wilamowsky et al. (2008) found that the effect of the plus/minus system on curbing the problem of grade inflation is uncertain. The University of North Carolina at Charlotte uses a traditional letter grade system, i.e. A, B, C, D and F. Although there has been some discussion at the UNC-Charlotte on changing the grading system to plus/minus system, it has not been pushed further. Grades are measured as A = 4.0, B = 3.0, C = 2.0, etc. For this study, student performance in managerial economics is measured solely by the letter course grade. In the sample data, 24% of the students made an A, 35% made a B, 33% made a C, 6% made a D and only 2% made an F. The mean and standard deviation for 3125GRADE are 2.73 and 0.97, respectively.

## **Independent Variables**

**SIZE:** What is a “large class”? Gibbs et al. (1996) and Toth & Montagna (2002) define a “small” class as “30 or fewer students” while a “large” class as “70 or more students”. Maxwell & Lopus (1995) defines a “small” class as having a ceiling of 55 students and a “large” class as having a ceiling of 120 students. This study defines a small class as 46 or fewer students and a large class as 60 or more students. There is a gap between 46 and 60 seen in the actual class size distribution. Over the ten semesters from fall 2004 to spring 2009, 733 students enrolled in small-sized principles of microeconomics classes and 423 students enrolled in large-sized classes. SIZE has a value equal to 1 if the class size is large and a value of 0 if the class size is small. The Principles of Microeconomics class size is expected to have a negative impact on student performance in the Managerial Economics class (3125GRADE) mainly because of the lack of teacher/student interaction in a large class which tends to hinder student understanding of the introductory economics material. The mean and standard deviation for SIZE are 0.64 and 0.48, respectively.

**GPA:** Student’s grade point average prior to the managerial economics course is used as predictor of student success since GPA indicates how much effort the student has put into his or her studies as well as student ability. Higher GPA is expected to lead to higher 3125GRADE. The mean and standard deviation for GPA are 3.01 and 0.46, respectively.

**PREGRADE:** The managerial economics course extends the principles of microeconomics course and emphasizes application to business decisions by employing marginal analysis and regression analysis. A higher average grade for all the prerequisites courses

(PREGRADE) is expected to lead to higher grade in managerial. The mean and standard deviation for PREGRADE are 2.75 and 0.68, respectively.

**PAUSE:** This independent variable measures the number of semesters pause between students’ completion of the principles of microeconomics course and the beginning of the managerial economics course. Since the introductory microeconomics is the prerequisite for managerial economics, the longer the pause between the two courses, the lower 3125GRADE is expected to be. The mean and standard deviation for PAUSE are 1.62 and 1.21, respectively.

**GENDER:** In the literature on student performance in economics, gender has been highlighted as a factor influencing learning. For example, Anderson, Benjamin, and Fuss (1994) found that male students perform better than female students in the introductory economics course. Ballard and Johnson (2005) found that women tend to have low expectations about their ability to succeed in introductory economics mainly because of their relatively low level of competency in math. Marcal et al. (2007) found that females earn slightly lower grades in intermediate macroeconomics course. However, males and females students earn similar grades in intermediate microeconomics. In order to investigate whether or not there is a difference between the odds of success in the managerial economics course for female and male students, this study includes GENDER in the regression. The sample includes 667 male students and 489



female students. Following Ballard and Johnson (2005), this study hypothesizes that female students earn lower grades than male students in the managerial economics course because of the required math skills in the course. The GENDER variable takes a value equal to 1 if the student is a female and a value of 0 if the student is a male. GENDER is expected to have a negative effect on 3125GRADE. The mean and standard deviation for GENDER are 0.42 and 0.49, respectively.

<b>Table 1</b>		
<b>Characteristics of Student Profile: Fall 2004 – Spring 2009</b>		
Total Number of Students	1156	
Managerial Economics Grade		
A	277	(24%)
B	406	(35%)
C	381	(33%)
D	64	(6%)
F	28	(2%)
Gender		
Male	667	(58%)
Female	489	(42%)
Age (in years at the time when 3125 was taken)		
22 and under	988	(85.5%)
23 – 30	144	(12.5%)
31 and above	24	(2%)
Ethnicity		
American Indian/Alaskan Native	2	(<1%)
Asian/Pacific Islander	84	(7%)
Black/Non-Hispanic	125	(11%)
Caucasian/Non-Hispanic	808	(70%)
Hispanic	28	(2%)
Others	109	(10%)
Class Size		
Small class ( $\leq 46$ )	584	(51%)
Large class ( $\geq 60$ )	572	(49%)
Source: Office of Institutional Research, Academic Affairs, UNC-Charlotte		

<b>Table 2</b>				
<b>Mean, Standard Deviation, Minimum and Maximum Values</b>				
Variable	Mean	Standard Deviation	Min	Max
Dependent				
3125GRADE	2.726644	0.9668171	0	4
Independent				
SIZE	0.641869	0.479659	0	1
GPA	3.010493	0.455163	1.95	4
PREGRADE	2.754542	0.6848949	0	4
2102GRADE	2.955882	0.7844539	0	4
MATHGRADE	2.68743	0.84530	0	4
PAUSE	1.616782	1.210071	0	8
GENDER	0.42301	0.49425	0	1
AGE	21.48270	2.874376	18	48

AGE: This demographic variable measures the student's age at the time of the managerial economics course. AGE is included in the regression because some studies have found that age of the student is a significant predictor of student success in economics. For example, Siegfried and Walstad (1990), Tay (1994) and Marcal et al. (2007) found age of student has positive effect on student performance in economics courses. Therefore, this study hypothesized that AGE has a positive effect on 3125GRADE. The mean and standard deviation for AGE are 21.28 and 2.87 respectively.

## REGRESSION RESULTS

Due to the categorical nature in the traditional letter grade system, this research uses ordered logistic estimation to examine the class size effect of the introductory microeconomics course on student performance in managerial economics.<sup>2</sup> The first regression results are reported in Table 3. With the exception of AGE, all the variables have the expected signs and are statistically significant at either the 5% significance level (SIZE, PREGRADE and PAUSE) or the 1% significance level (GPA). The coefficient of SIZE is negative and significant. This indicates that students in a large-sized introductory microeconomics class have a greater probability of scoring a lower managerial grade than students in a small-sized class. A logistic calculation can transform the SIZE coefficient (-.3409024) into the probability of making a certain letter grade in managerial economics.

**Table 3**  
**Regression Results**  
**3125GRADE = f(GPA, SIZE, PREGRADE, PAUSE, GENDER, AGE)**

	Coefficient.	t ratio
Size	-.3409024	-3.03***
GPA	2.204805	14.29***
Pregrade	.1909007	2.06**
Pause	-.1178678	-2.46***
Gender	-.3630465	-3.18***
Age	-.0032063	-0.16
Number of Observations	1156	
Log Likelihood	-1367.9307	
Chi squared	329.81***	
*** indicates significant at 1% significance level, ** at 5% significance level		

Table 4 reports the results by setting all other independent variables at their mean values. There is a 22% chance for students from small-sized principles of microeconomics classes to make an A and a 17 percent chance for students from large-sized classes. Students from large-sized introductory classes are 5% less likely to make an A compared with students from small-sized classes and approximately 3% less likely to make a B. The chance of making a C increases by about 6% when moving from a small class to a large class. There is a very minor increase in the probability of making a D or F when moving from a small introductory class to a large class.

**Table 4**  
**Probability of Principles of Economics Class Size Effect on 3125GRADE**

	P(A)	P(B)	P(C)	P(D)	P(F)
Small class	0.2207	0.4334	0.2995	0.0334	0.0130
Large class	0.1676	0.4058	0.3625	0.0459	0.0182

To further investigate the class size effect, a second regression is done by using actual class size instead of a class dummy among the independent variables. The mean and standard deviation for the actual introductory class size are 68.41 and 31.14, respectively and the minimum and maximum are 17 and 123, respectively. The regression results are reported in Table 5. Other than the coefficient values, all variables have the same signs and significances as

in Table 3. In particular, an increase in micro principles class size is likely to lower students' managerial grade.

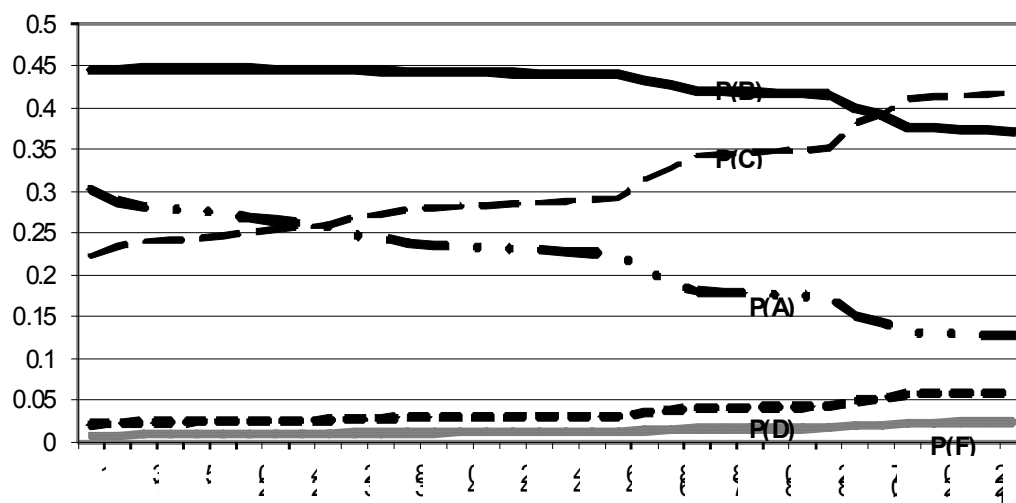
**Table 5**  
**Regression Results**  
**3125GRADE = f(GPA, SIZE, PREGRADE, PAUSE, GENDER, AGE)**

	Coefficient.	t ratio
Size(ACTUAL)	-.0089423	-4.97***
GPA	2.223482	14.36***
Pregrade	.1916868	2.07**
Pause	-.1436423	-2.97***
Gender	-.37090933630465	-3.24***
Age	-.0030177	-0.15
Number of Observations	1156	
Log Likelihood	-1360.0853	
Chi squared	345.50***	
*** indicates significant at 1% significance level, ** at 5% significance level		

By setting all other independent variables at their mean values, a logistic calculation can transform the SIZE coefficient (-.0089423) into the probability of making a certain managerial grade associated with a certain introductory class size. Figure 1 illustrates the results. The probability of earning an A or a B in managerial economics gradually decreases and the probability of making a C gradually increases as the introductory class size increases up to 46. We then see a larger change in the probabilities when the introductory class size goes beyond 46 students and an even larger change in the probabilities when the class size reaches 82 students. The increase in the introductory class size has minor impact on D and F students.

The coefficient of GPA is positive, large and highly significant. Thus, students with a higher GPA are more likely to receive higher grades in the managerial economics course. A higher average grade for all the prerequisites for managerial economics (PREGRADE) also helps students to get a higher grade in the course. The results also indicate the longer the pause between the completion of the introductory course and the beginning of the managerial course, the less likely a student will score a higher grade in the managerial course. Finally, the results show female students are likely to earn lower grades in the managerial class than male students. Among all the independent variables, PAUSE has the weakest impact on 3125GRADE.

Figure 1  
Probability of Principles of Microeconomics Class Size Effect on 3125Grade



One of the significant challenges facing instructors of managerial economics is the weak mathematical and statistical skills among the students. The managerial course covers the use of marginal analysis and regression analysis in business decision makings. Students are expected to have equipped with basic algebra, calculus and statistics when they walk into the managerial classes. To investigate the impact of students' mathematical skill on their performance in the managerial class, PREGRADE is broken into the micro principles grade (2102GRADE) and the math prerequisite average grade (MATHGRADE) in the third regression. The math prerequisite average grade is the average grade students earn from calculus, statistics and business computing. Both prerequisites are expected to have positive effects on 3125GRADE. The mean and standard deviation for 2102GRADE are 2.96 and 0.78, respectively, and for MATHGRADE are 2.69 and 0.85, respectively.

The regression results are reported in Table 6. Similar to the results in Table 3, AGE has neither the expected sign nor is significant. The variables - SIZE, GPA, 2102GRADE, PAUSE and GENDER have expected signs and are significant. Students' 2102GRADE has a significant impact on their managerial grades. However, MATHGRADE has the expected positive sign but is not statistically significant. One possible explanation is the differences in teaching methodologies across managerial economics instructors. Some managerial instructors might choose not to use a mathematically oriented approach and some might choose to skip the chapter on regression. If MATHGRADE does not have a significant effect, then what causes the female students to earn lower grades in the managerial class than the male students? Is it because of male students' inherently superior grasp of managerial economic concepts or because of other reasons? Ballard and Johnson (2004) pointed out that female students would learn better from a female professor. For future research, this study could investigate this possibility by professor's

gender among the independent variables. It will allow us to analyze the influence of matching gender for student and professor.

<b>Table 6</b> <b>Regression Results</b> <b>3125GRADE = f(GPA, SIZE, 2102GRADE, MATHGRADE, PAUSE, GENDER, AGE)</b>		
	Coefficient	t ratio
Size	-.2692308	-2.37**
GPA	1.96199	12.05***
2102 grade	.3967985	4.56***
Mathgrade	.081388	0.85
Pause	-.0930099	-1.92*
Gender	-.2884344	-2.50**
Age	-.0189688	-0.94
Number of Observations	1156	
Log Likelihood	-1357.4973	
Chi squared	350.68***	
*** indicates significance at 1% significance level, ** at 5% significance level, * at 10% significance level		

## CONCLUSION

This paper examines whether the Principles of Microeconomics class size has affected students' performance in Managerial Economics at the Belk College of Business, University of North Carolina at Charlotte. While class size is the independent variable of most interest to this study, other independent variables - the student's grade point average, Principles of Microeconomics course grade, average grade of other prerequisite courses for the managerial course, the number of semesters pause between the completion of the introductory course and the beginning of the managerial course, gender and age are also considered. The sample consists of observations of 1156 students who have completed both the introductory microeconomics course and the managerial course between Fall 2004 and Spring 2009. The logistic regression results suggest that for UNC-Charlotte, at least, the class size effect is negative and highly significant. Students in large-sized introductory economics classes are likely to earn lower grades in the managerial economics course than students in small-sized classes. This finding suggests that in order to improve students' performance in the large managerial classes, mandatory discussion sections for the large lectures might be useful. Students' GPA prior to enrolling in the managerial class has a significant and positive effect on the students' managerial grade. Students' average

grade for all prerequisites also has a positive effect on the managerial grade. However, although the effect of the average grade on all the mathematical requirements is positive, surprisingly it is not significant. The longer the period between students' completion of the introductory course and the beginning of the managerial course, the lower is the managerial grade. Further, female students are likely to earn lower grades in the managerial economics course than male students and students' age at the beginning of the managerial class has a negative effect, but the effect is not significant.

Finally, caution should be used in interpreting the negative introductory class size effect found in this study which might be underestimated due to the potential grade inflation problem resulting from the traditional letter grading system. For future studies, a better measure of student performance in the managerial economics course is necessary.

## NOTES

- 1 The eight studies are – Raimondo et al. (1990), Kopeika (1992), Hofmann et al. (1994), Hou (1994), Gibbs et al. (1996), Hancock (1996), Kennedy and Siegfried (1997), Borden and Burton (1999), and Noble (2000).
- 2 Refer to J. Scott Long (1997) for this estimation method.

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# **SCHOOL OF STUDY AND FINANCIAL LITERACY**

**Michael E. Hanna, University of Houston—Clear Lake**

**Robert R. Hill, University of Houston—Clear Lake**

**Grady Perdue, University of Houston—Clear Lake**

## **ABSTRACT**

*This study examines the financial literacy of students in several schools of a metropolitan university. Comparisons are made in terms of the students overall knowledge of personal finance matters and their knowledge in selected areas of personal finance. The research finds that the level of financial literacy is low in all of the schools studied, but that there are statistically significant differences in the level of literacy between the students in the various schools.*

## **INTRODUCTION**

Personal financial literacy is important to understanding the basic financial issues that most individuals and families must deal with in our modern society. Even if an individual has a defined benefit plan that will hopefully meet most of the financial needs of one's retirement years, that person still will spend a lifetime dealing with issues related to mortgages, insurance (including automobile, home, life, and health), personal credit management, income taxes, and all of the other financial considerations that are part of modern life in our society.

Regrettably many research studies report that the level of personal financial knowledge in the American population is substantially below the level that would be desirable. There seems to be a serious lack of understanding about topics ranging from investing to home mortgages—as has been demonstrated with the recent subprime mortgage crisis. Because of the low level of financial literacy in our society, there are nationwide efforts today to enhance financial literacy, and many states have even mandated financial literacy education requirements in the public school systems.

With financial literacy being recognized as so important in our society, it is reasonable to inquire about the level of financial literacy among university students and ask if they are all equally well prepared for life after college. Is there a difference between students based on school of study within a university in terms of the level of financial literacy of the students progressing towards graduation from the institution? If there is a difference, where do improvements need to be made?

## THE LITERATURE ON FINANCIAL LITERACY

A significant number of studies attempt to demonstrate how certain factors have an effect on financial literacy. Some of these studies focus on general financial literacy, and other studies focus specifically on knowledge related to investing or some other facet of personal finance.

The literature seeks to explore a variety of factors that might impact literacy. Gender is the variable most often explored in an effort to explain differences in financial literacy. Research by Anthes and Most, 2000; Applied Research & Consulting, 2003; Merrill Lynch Investment Managers, 2005; Worthington, 2006; Loibl and Hira, 2006; Mandell and Klein, 2007; supports the proposition that gender is a significant factor in explaining the level of financial literacy. For example research studies by Chen and Volpe (1996), Goldsmith and Goldsmith (1997) and by Alexander, Jones and Nigro (1998) tend to find that women are less knowledgeable than men about investments. In their study Chen and Volpe (1998; 2002) report that women are less knowledgeable than men in all the areas of financial knowledge that they test.

Other variables that have been analyzed for their impact on financial literacy include employment status (Chen and Volpe, 1998; Worthington, 2006), family and personal income (Chen and Volpe, 1998; Worthington, 2006), age of the individual (Kreinin, 1959; Chen and Volpe, 1998; Worthington, 2006), and motivation (Mandell and Klein, 2007).

An additional variable that is found to be significant is the level of education attained (Zhong and Xiao, 1995; Bodie and Crane, 1997; Waggle and Englis, 2000; Yao, Gutter, and Hanna, 2005; Dolvin and Templeton, 2006). But in these studies where educational attainment is found to be significant, all undergraduate degrees are treated as being the same. Differences in the various fields of study are not explored, so no difference is made between bachelor degrees in the fields of business versus education versus liberal arts.

## SURVEY AND DATA

In randomly selected classes across the institution, undergraduate junior and senior undergraduate students at a metropolitan university were asked to complete a survey measuring financial literacy. Student participation was entirely voluntary and students were not allowed to identify themselves by anything other than the demographic information that was requested in the survey for analytical purposes.

The financial literacy survey instrument consists of multiple choice questions. The introductory inquiries pose questions about each respondent's demographic information, with participants providing self-identification of their gender, age, and income data. As previous literature indicates these are variables should have an impact on financial literacy, we collect these data so we can control for these factors in our analysis. The survey then poses 40 questions beyond the demographic data exploring each individual's knowledge of personal finance. The

survey asks ten questions on each of the topics of investments, personal income taxation, credit and debt management, and insurance.

The survey is constructed consistent with the Hill and Perdue (2008) approach where the last potential multiple choice answer for each of the 40 questions on financial topics allows the responding student the opportunity to admit not knowing the answer to the question. The failure to use this approach would put survey respondents in a position where they must guess at answers to complete the survey. Guessing at answers by respondents potentially tends to overstate the percentage of correct answers, since some lucky guesses are almost inevitable.

Chen and Volpe (1998) make an interesting observation in their study that as a group, domestic students tend to earn higher scores than foreign students. This observation caused us to recognize that international students often do not have the cultural or personal experiences to correctly answer many of the financial literacy questions because of a lack of familiarity with U.S. society, including the tax laws and other considerations. After finding the same result in an initial analysis of our data, we elect to drop international student survey responses from the final data set.

Since Chen and Volpe (1998) use an individual's personal income and Worthington (2006) uses total household income in their respective studies, we ask for both personal income and estimated family income information in our survey. However, we only report results for personal income because that variable produces statistically significant results and estimated family income fails to have any statistically significant value in our findings.

Table 1 provides relevant demographic data from the 278 usable surveys. Students completing the survey are from the schools of business, education, and liberal arts, comprising 33 percent (91 students), 32 percent (90 students), and 35 percent (97 students) of the sample, respectively. The self-reported ethnic mix is rather diverse, with nine percent of the students describing themselves as African-American, 23 percent Hispanic, 59 percent non-Hispanic white, and nine percent of the students coming from other ethnic groups. The sample is 72 percent female.

The age and personal income characteristics of the surveyed population are interesting. The age distribution is not heavily skewed towards the younger students. Only 54 percent of the respondents are age 25 or younger. This is due to the nature of the particular university (and so this undergraduate population may be marginally different from any other given student group), with many students working while attending college or perhaps returning to school after a work or a family related absence. This characteristic of our data set gives us a better range of ages among our survey participants than might be present in many other student-based surveys.

The personal income distribution pattern is about what we would have expected for an undergraduate population. We observe in Table 1 that 63 percent of the students classify themselves as having a personal annual income of less than \$20,000, with only six percent indicating that they have a personal annual income of \$60,000 or higher.

**Table 1**  
**Demographic Description of Survey Participants**

	Business	Education	Liberal Arts	Total
Gender				
Female	48	83	68	199
Male	43	7	29	79
Ethnicity				
African-American	10	5	9	24
Hispanic	23	22	20	65
White, non-Hispanic	47	55	63	165
Other	11	8	5	24
Age				
20 or younger	3	7	5	15
21 to 25	50	44	42	136
26 to 30	21	11	16	48
31 to 40	10	21	16	47
Over 40	7	7	18	32
Personal Income				
\$0 to \$19,999	53	68	54	175
\$20,000 to \$39,999	19	17	23	59
\$40,000 to \$59,999	13	1	13	27
\$60,000 to \$79,999	4	0	4	8
\$80,000 or more	2	4	3	9
Total	91	90	97	278

## RESULTS OF THE STUDY

As we report in Table 2 respondents to our survey have an average overall correct response rate of approximately 16.08 out of 40 questions, which is 40 percent. These results are reasonably consistent with the results of other studies in the literature that survey the financial literacy of university students. In their respective studies of university students, Volpe, Chen and Pavlicko (1996) indicate an average correct survey response rate of 44 percent and Chen and Volpe (1998) report an average correct response rate of 53 percent for their participants. Also, the simple fact that questions on our survey are not the very same questions used by others inevitably means there should be somewhat different scores. But we did expect having marginally lower scores because of our decision to offer the “I don’t know” answer option for each question, as that would minimize the number of correct answers based on guessing.

Table 2 goes beyond the simple overall correct response rate to examine the average number of correct answers in each of the areas of investments, taxes, credit and debt, and insurance. We find that the questions about taxes prove to be the most difficult for the students, while questions about credit and debt prove to be the easiest.

Results of each personal finance topic area are analyzed by school of study. Clearly business students do better on the overall survey than do students from the other two schools, correctly answering on average 18.82 of 40 questions (47 percent). Business students have a relatively higher correct mean response rate for issues relating to investments, personal income taxes, and credit and debt management issues. Only in the area of insurance matters do the liberal arts students have a marginally higher mean score than business students. Education students consistently have a mean score lower than either the liberal arts or business students in every category.

After finding the financial literacy scores are not the same for the three schools, we use Tukey's pairwise comparison test to see which schools have statistically significant different correct response rates from the other schools. Students in the business school performed significantly better than the education majors and the liberal arts majors on the overall financial literacy score as well as on the mean scores by school for investment, taxes, and credit and debt. However, a significant difference between schools on the insurance scores cannot be found at the 0.05 level. The liberal arts majors score significantly better than education majors on the overall financial literacy score and also on the mean investment score, but there is no significant difference between these two schools in the other areas of financial literacy.

<b>Table 2</b>					
<b>Correct Responses by Topic</b>					
	Investments	Taxes	Credit and Debt	Insurance	Overall
School					
Business	5.297	3.077	5.868	4.802	18.82
Education	2.722	1.333	4.711	4.156	12.92
Liberal arts	4.052	1.711	5.289	4.856	15.91
All students	4.029	2.036	5.297	4.613	16.08

The primary purpose of this study is to explore the impact of school of study on financial literacy. But as discussed above there are other factors that influence financial literacy, and it is necessary to control for these additional factors. Therefore, we also consider age, gender, and personal income, as these variables have been raised in the literature as being potentially important. It is particularly important to control for gender, given the great range of gender mixes we report for the three schools in Table 1.

We perform analysis of variance tests considering each of these variables with the overall financial literacy score as well with the scores in each of the four specific areas of financial literacy. The results (p-values) for tests of hypotheses are shown in Table 3. When age and personal income are tested both of these variables are found to be statistically significant at the 0.01 level in the test for each of the four specific areas of knowledge as well as for overall literacy, as shown in Table 3. These results come as no surprise as age and income have been associated with higher levels of financial literacy (see Kreinin, 1959; Chen and Volpe, 1998; Worthington, 2006). Even in their work on motivation as a key variable in explaining financial literacy, Mandell and Klein (2007) cite literature using as examples older persons who are motivated to learn about matters that affect them.

However, when we test to see if financial literacy is impacted by gender, we find mixed results. We do find gender to be highly statistically significant with males exhibiting greater knowledge of investments, income taxation, and overall financial literacy. However, we do not find gender to be significant when measuring financial literacy in either the area of credit and debt or the area of insurance. There are no really good explanations for this phenomenon, which has been found by other researchers. However, it has been suggested by Goldsmith and Goldsmith (1997), that since males as a group are more quantitative (for whatever reason), males may be more attuned to knowledge areas that are perceived as being more quantitative. However, the debate on the impact on gender of nature versus environment is on-going in the literature and is not resolved here.

<b>Table 3</b>					
<b>P-values of ANOVA Tests for Demographics</b>					
	Investments	Taxes	Credit and Debt	Insurance	Overall
School	0.000	0.000	0.000	0.006	0.000
Age	0.005	0.000	0.000	0.000	0.000
Gender	0.000	0.000	0.787	0.353	0.001
Personal Income	0.000	0.000	0.000	0.000	0.000

We use a general linear model approach so we can include age, gender, and personal income in our analysis with school of study. Table 4 presents the p-values for the tests of significance for these four variables. We find that school of study is a highly significant ( $p < 0.001$ ) variable when looking at the percentage of correct answers on the overall financial literacy score. The reported results also indicate that there is a very significant difference among the students in the three schools on the investment questions, on the tax questions, and on the credit and debt questions. When testing for a significant difference between the schools in the



student scores on the insurance questions, the significance level of school of study is lower but is still significant at about the 0.10 level.

<b>Table 4</b> <b>P-values from General Linear Model Test</b>					
	Investments	Taxes	Credit and Debt	Insurance	Overall
School	0.000	0.000	0.000	0.065	0.000
Age	0.022	0.000	0.001	0.000	0.000
Gender	0.033	0.004	0.068	0.934	0.274
Personal Income	0.046	0.105	0.035	0.536	0.015

## SUMMARY AND CONCLUSIONS

Our primary finding is that school of study is statistically significant in explaining the level of financial literacy. In our comparison of undergraduate students from the business, education and liberal arts schools at a metropolitan university, business students as a group were found to be the most financially literate and education students were relatively the weakest.

Why do the business students perform so much better than students in the other two schools? There are some obvious explanations for this phenomenon, as discussed by Chen and Volpe (1996; 1998). The business majors have already had courses in economics and accounting, and some students may have already had a course in finance. This background would likely provide some exposure to a mindset that would help in thinking through and answering some personal finance questions. Also, students may have chosen business as a major due to their overall interest in financial issues and personal wealth attainment, and this same interest may have provided motivation to them to investigate on their own some of these areas of personal finance.

Yet while those answers might explain why business students as a group perform better than the education and liberal arts students, those answers do not explain why the liberal arts students performed better than the education students on the overall literacy score and in particular on the investment score. While our results clearly establish a difference in the financial literacy of students based on school of study, further research will be required to explain why these differences exist.

Meanwhile, a broad policy recommendation seems appropriate. Relatively speaking business students exhibit the greatest level of financial literacy on our survey. But their relatively higher score of 47 percent correct is really still a failing grade. It is just a higher “F” than the “F” for the students in the other two schools studied. It is a disservice to students to train them well to be good accountants or school teachers that can earn a living to support

themselves on their families, but leave the students ignorant as to the basics of investing, insurance, and home mortgages. It is our opinion that a personal finance class should be mandatory for all university students if academia is going to produce well-educated citizens prepared to live in our modern society.

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# **THE RELATIONSHIP BETWEEN MUSIC AND STUDENT ENJOYMENT OF ECONOMICS CLASS: HOW TO COMPETE WITH GRAND THEFT AUTO, CRACK AND CHLAMYDIA!**

**Simon Medcalfe, Augusta State University**

## **ABSTRACT**

*Making economics classes enjoyable and interesting is a challenge in today's world. One way to do so is through the use of music and lyrics. A survey of students in an Introduction to Economics class suggests that the use of music increases their enjoyment of economics. However, there is little evidence that it increases their interest in, or understanding of, economics.*

## **INTRODUCTION**

Instructors continually strive to make their classes interesting and enjoyable to students. Unfortunately, as Phil Jupitus said on the BBC radio show *The News Quiz*, they are “competing with Grand Theft Auto, crack, chlamydia, any number of exciting alternatives” (Lloyd, 2009).

One way to stimulate interest is through the use of music. For example, Hall and Lawson (2008) showcased the use lyrics in a writing assignment designed to improve economic reasoning and understanding. Students in an intermediate microeconomics course were given an extra credit assignment involving the full lyrics of five songs along with several questions. They reproduced some of the better student responses. Overall they conclude that, in their opinion, the assignment worked well in getting students to apply knowledge, that the assignments were fun and interesting to students, and that they generated discussions about economics outside of class. Raehsler (2009) reported the use of music in a consumer economics course. Two different assignments were used; in spring 2007, students were asked to analyze the lyrics to *Money* by Pink Floyd in a written assignment. They then had to select their own song and write a longer assignment analyzing the song and providing a band history. In fall 2008, students had to write their own song lyrics. No music assignments were given in fall 2006 or fall 2007. He found that the scores on the final examination were significantly higher for fall 2008 than for fall 2007, though there was no difference between fall 2006 and spring 2007. He also found that attendance was higher when music was included by about four to five percentage points on average. He also reported better student evaluations of the course and instructor when music was included in the course.

The focus of this paper however, is slightly different – we are interested in the students' thoughts on the pedagogy. To do so, students answered a survey independent of university course evaluations. This allowed the instructor to ask questions specific to the use of music in economics.

## METHODOLOGY

Augusta State University (ASU) is a member of the University System of Georgia (USG). It currently offers more than 50 programs of study leading to bachelor, masters and educational specialist degrees. In fall 2009, there were 7,061 students enrolled at the institution (6,421 in spring 2009). In fiscal year 2009, 608 bachelor's degrees were conferred. The freshman retention rate in 2007/2008 (the latest year data is available) was 69% within the institution and 73% within the USG. The six year baccalaureate degree graduation rate for the 2003 cohort was 21% within ASU and 28% in the USG.

Introduction to Economics is a course aimed at non-business majors. The core curriculum of all bachelor degrees at ASU requires 12 credit hours in social sciences. Students are required to take an American history and American government class and must choose one of four courses: Introduction to Economics, Cultural Anthropology, Introduction to General Psychology, or Introduction to Sociology (along with one other course). A broad range of majors are represented in a typical Introduction to Economics class including, but not limited to: engineering, nursing, sociology, history, English and education. Sixty seven percent of the students were freshmen or sophomores in spring 2009, and 73% were in the fall. The course is taught three times a year (fall, spring and summer) with one section each semester taught by the same instructor. Enrollment is normally limited to 50 students due to room limitations. However, actual enrollment was less (43 in spring and 41 in the fall). Only 10 students were enrolled in the summer, and were not surveyed for this paper. Those students were not surveyed for two reasons: first, the summer class is an accelerated 4-week course taught for 2 ½ hours per day four days a week requiring a different delivery of the course. Second, the low enrollment compared to traditional semesters suggests there may be some selection bias in who chooses to take summer classes.

The course taught in the spring of 2009 included music as part of the instruction while in the fall of 2009 the course was taught without music. Each class also used a variety of other teaching tools including a textbook, newspapers, internet, etc. In the spring a pop music video (usually from YouTube) was played in class and the accompanying lyrics were presented via a projector. Questions were then posed to stimulate discussion of the economic concepts conveyed in the lyrics. Sometimes the questions were taken from the website From ABBA to Zeppelin, Led: Using Music to Teach Economics (Lawson, Hall and Mateer, 2008). This website lists a variety of song lyrics that relate to economic concepts. The posts are searchable by economic topic, artist, song title, etc. Alternatively, they can be browsed by genre, JEL code, and key

(economic) word. Each post includes a selection from the song's lyrics, as well as links to websites that have the full lyrics and videos.

The presentation of the video in class depended on the nature of the lyrics and traditional class content. Some classes began with the video to introduce the topic, while others were used after the topic had been introduced and were used to solidify understanding or generate debate. For example, the lyrics to *Ghost Town* by The Specials (Dammers, J. 1981, track 1) were used after the introduction of supply and demand so students could apply shifts in demand and supply to nightclubs.

This town (town) is coming like a ghost town  
All the clubs have been closed down  
This place (town) is coming like a ghost town  
Bands won't play no more  
Too much fighting on the dance floor (A-la-la ...) Do you remember the good old days before the ghost town?  
We danced and sang as the music played in any boomtown

After the video had played and the lyrics had been presented, the instructor would ask what supply and demand factors had led to all the clubs closing down. Student answers include a decrease in demand from the recession compared to the "good old days" of the "boomtown." It was also suggested that the increased costs of hiring security to counter the "fighting on the dance floor" would shift supply to the left.

*Money for Nothing* by Dire Straits (Knopfler, M. & Sting, 1985, track 2) was used to introduce the concept of opportunity cost:

Look at them yo-yo's, that's the way you do it  
You play the guitar on that MTV  
That ain't workin', that's the way you do it  
Money for nothin' and your chicks for free  
Now that ain't workin', that's the way you do it  
Lemme tell ya, them guys ain't dumb  
Maybe get a blister on your little finger  
Maybe get a blister on your thumb

Here the instructor repeated Mark Knopfler's claim that rock stars get "money for nothing" and their "chicks for free" and asks if that is really true. Responses, including faculty at an online summit at Brenau University, usually correctly identify some opportunity cost of being a musician. These costs may include sexually transmitted diseases (chlamydia) and drug addiction (crack) from pursuing the rock star lifestyle!

Appendix A and B provide the survey questions for each class. In the spring of 2009 students (n=34) were asked about their enjoyment of music and lyrics in economics as well as whether that use increased their interest in the subject. They were also asked if their understanding of economics was helped by the use of music and whether the use of music should be expanded. Students were asked to answer the questions based on a 5-point Likert scale (1 =

strongly agree,..., 5 = strongly disagree). There were also two open-ended questions. In the fall, students (n=38) were asked only if they enjoyed the economics course and if it increased their interest in economics and their understanding of economic concepts.

## RESULTS

The mean, mode and median responses to these questions are presented in Tables 1 and 2. Student enjoyment was higher when music was included in the class. However, the questions may not be asking exactly the same thing. Students in the spring were asked if they enjoyed music and lyrics in economics, while students in the fall were asked if they enjoyed economics. The introductory course in economics did increase students' interest in economics, but the average responses were very similar between the spring and the fall. Similarly, students' (self reported) understanding of economics was almost identical between the course with music and the course without music. Students are not keen on expanding its use but enjoy the introduction of topics via popular music.

<b>Table 1</b> <b>MUSIC AND ECONOMICS</b> <b>Averages with music</b>			
	Mean	Mode	Median
I enjoyed the use of music and lyrics in ECON 1810	1.64	1	2
The use of music and lyrics in ECON 1810 increased my interest in economics	2.24	3	2
The use of music and lyrics in ECON 1810 helped me understand economic concepts	1.88	2	2
The use of music and lyrics in ECON 1810 should be expanded	2.39	3	3
<i>Note:</i> Likert scale (1= strongly agree,..., 5= strongly disagree)			

<b>Table 2</b> <b>MUSIC AND ECONOMICS</b> <b>Averages without music</b>			
	Mean	Mode	Median
I enjoyed ECON 1810	2.24	2	2
ECON 1810 increased my interest in economics	2.32	2	2
ECON 1810 helped me understand economic concepts	1.87	2	2
<i>Note:</i> Likert scale (1= strongly agree,..., 5= strongly disagree)			

To determine if there was any significant difference in student responses, the data was analyzed using ordered probit regression. Students' enjoyment, interest and understanding were used as dependent variables with an independent dummy variable equal to 1 if the student was in the spring class that utilized music. The results presented in Table 3 suggest that student enjoyment of the course was significantly higher with music than without. However, no such



association can be identified for student interest and understanding. This suggests that while music does increase student enjoyment, more traditional instructional techniques are still required for raising interest and understanding of economics.

<b>Table 3</b> <b>MUSIC AND ECONOMICS</b> <b>Ordered probit analysis</b>		
Dependent variable	Coefficient on music	Standard error
Enjoyed	-.671	.267
Interest	-.112	.251
Understand	.012	.261
<i>Note:</i> Likert scale (1= strongly agree,..., 5= strongly disagree)		

A question to students in the spring asked if the use of music should be expanded. Their responses (see row 5 of Table 1) suggest that one song a class is about right. Comments from students in the open-ended questions suggested that music was a good attention grabber and method to introduce economic concepts. Some students did want the use of music expanded either with assignments related to the music or greater economic analysis of the lyrics. Some drawbacks that students mentioned included some difficulty in hearing the lyrics due to some poor quality videos on YouTube. Also, perhaps reflecting the preferences of the instructor, students prefer current songs.

Although the aim of this paper is not to analyze students' understanding of economic concepts except in their own self reported way, some initial evidence from the spring 09 macroeconomics exam is relevant to the debate. Question 10 asked:

Which of the following persons would not be considered unemployed?  
 an auto worker vacationing in Florida during a layoff  
 a college student actively seeking a summer job  
 a construction worker who has given up looking for work after 18 months without a job  
 a retiree looking for part-time work to supplement his Social Security income

Sixty three percent of students responded correctly with answer (c). Question 41 of the exam asked a question based on a lyric that had not been presented in class:

"Is it worth the aggravation to find yourself a job when there's nothing worth working for?" These lyrics from Oasis suggest the singer is  
 a discouraged worker  
 cyclically unemployed  
 frictionally unemployed  
 structurally unemployed

Fifty seven percent of students responded correctly with answer (a). However, of those twenty students who correctly answered the music question correctly, 75% also got question 10 correct. Since this percentage is higher than the overall percentage for question 10 (63%), music does seem to increase a student's understanding of economic concepts.

## CONCLUSION AND DISCUSSION

Overall, students enjoy the use of music and lyrics in Introduction to Economics. However, there is little evidence that, in its current usage, music increases the students' own perceptions about their interest in or understanding of economics.

The current economic times may cause some selection bias: with economics again making headline news, students have become increasingly aware of the role of economics in their lives. This may lead to a small increase in the number of students who are in class because they are interested in economic events rather than because it is a required course.

Raechler (2009) found that music decreased absenteeism. While this survey did not track attendance in class specifically, there was one day when attendance was counted - on the day of the survey. The spring 2009 class with music had 43 registered students of which 34 completed the survey. However, in the fall 38 out of 41 registered students were in class on that day to complete the survey. Tracking of attendance throughout the semester would be needed to further confirm or deny the robustness of this observation.

The lack of any increase in student understanding of economics is in line with previous research. Raechler (2009) found that the average score of the final examination increased from fall 2007 to fall 2008, but not from fall 2006 to spring 2007. He admits that "all other conditions" may not be equal and future research should endeavor to include other variables that may be associated with higher exam scores.

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### **Appendix A: Student Survey**

#### **ECON 1810, Spring 2009**

Circle the response that best describes how far you agree with the following statements:

I enjoyed the use of music and lyrics in ECON 1810.

- 1 strongly agree
- 2 agree
- 3 neutral
- 4 disagree
- 5 strongly disagree

The use of music in ECON 1810 increased my interest in economics.

- 1 strongly agree
- 2 agree
- 3 neutral
- 4 disagree
- 5 strongly disagree

The use of music and lyrics in ECON 1810 helped me understand economic concepts.

- 1 strongly agree
- 2 agree
- 3 neutral
- 4 disagree
- 5 strongly disagree

The use of music and lyrics in ECON 1810 should be expanded.

- 1 strongly agree
- 2 agree
- 3 neutral
- 4 disagree
- 5 strongly disagree

Explain your answer to question 4. That is, how and why should music and lyrics be expanded? Why should it not? Please provide any other comments about the use of music and lyrics in ECON 1810 (continue on the back if necessary).

**Appendix B: Student Survey**  
**ECON 1810, Fall 2009**

Circle the response that best describes how far you agree with the following statements:

I enjoyed ECON 1810.

- 1 strongly agree
- 2 agree
- 3 neutral
- 4 disagree
- 5 strongly disagree

ECON 1810 increased my interest in economics.

- 1 strongly agree
- 2 agree
- 3 neutral
- 4 disagree
- 5 strongly disagree

ECON 1810 helped me understand economic concepts.

- 1 strongly agree
- 2 agree
- 3 neutral
- 4 disagree
- 5 strongly disagree

# **ATTITUDES OF ECONOMIC EDUCATORS TOWARD MARKETS IN EASTERN EUROPE & THE FORMER SOVIET UNION BY REFORM STATUS OF THE EDUCATOR'S COUNTRY**

**Barbara Phipps, University of Kansas**

## **ABSTRACT**

*This article assesses attitudes toward the market economy among educators of the Former Soviet Union and Eastern Europe before and after a one-week intensive seminar in economic education. Specifically, it looks at how attitudes differ, at the start of the seminar, by the reform status of the educators' countries and how those attitudes change after a week of market-based economics instruction. Analysis shows that attitudes do indeed vary by reform status, with educators from the more reformed countries showing much more positive attitudes at the start of the seminar than those from the less reformed countries. Additional influences on attitude include gender, education level, economics knowledge, years in education, and prior western-style economics education. After an intensive seminar in economic education, all educators show improved attitudes toward markets, with greater gains among those from the less reformed countries.*

## **INTRODUCTION**

From 1995 through 2006, the Council for Economic Education (CEE) in New York, through its Cooperative Education Exchange Program (CEEP), conducted a series of economics seminars for educators from Eastern Europe and the Former Soviet Union (EEFSU). The Cooperative Education Exchange Program (CEEP) is a program is funded by the U.S. Department of Education and is conducted in coordination with the U.S. Department of State. CEEP economics, a program of the National Council on Economic Education, brings together U.S. economic educators with their counterparts from central and eastern Europe, the former Soviet Union, and other transition and developing countries in Africa, Asia, Latin America, and the Middle East, and provides technical assistance and training to help educators and their students to better understand the global market economy. In-country teacher training conducted by U.S. faculty in Eastern Europe and the Former Soviet Union provided the dataset for this paper. "The in-country teacher training program emphasizes an active learning approach and introduces basic economic concepts to teachers with limited background in economics." (CEE,

2008). One CEEP component, a six-day introductory-level seminar for secondary teachers, was conducted in thirteen countries (Albania, Azerbaijan, Bulgaria, Croatia, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Poland, Ukraine, and Uzbekistan) by American university economics faculty. The introductory seminar covered basic and market economic theory and methods and material for teaching economics at the secondary or introductory post-secondary levels. A key underlying assumption of CEEP training and of this study is that, as the youth of EEFSU enter the newly reformed market economies they must understand and embrace the economic concepts that underlie the transformed economic order and that educators have a key role in this process. Both Watts and Walstad (2002) and Pleskovic, *et. al.* (2002), highlight the need for well-trained teachers who see the importance of teaching solid market-based economics in the primary and secondary grades, as well as at higher education levels, to assure a flow of citizens who can make informed decisions as voters and as policymakers.

Previous research has shown that formal economic education significantly increases knowledge of economics and yields a more positive attitude toward markets (Watts, Walstad, and Skiba, 2002; Walstad, 2002) or toward market economics as a subject (Walstad and Soper, 1989; Soper and Walstad, 1983). As experience is also a powerful teacher, one might speculate that attitudes of educators toward free markets and economic issues and policies might depend on, in addition to formal training, their own economic status and experiences. Over the years since the collapse of the Soviet Union, the status of reform has varied widely among the transforming countries (Åslund, 2002).

The purpose of this study is twofold: One, it is to look at attitudes of economic educators in the countries of EEFSU to determine if, before a one-week seminar in market economics and economic teaching methods, these attitudes vary by the reform progress of the educators' own nations and, if so, in just what ways. Second, it is to investigate if and how these attitudes change over the course of the one-week seminar.

Data from the CEEP introductory seminars contains pre- and post-seminar measures of cognitive economic knowledge, attitudes toward markets, and a variety of demographic variables, making this study possible.

## **SAMPLE AND DATA**

The primary data for this study were collected by the Education Development Center (EDC), the US-based organization that evaluated the CEEP from 1995 to 2001. The entire data set consists of information on participant background, their knowledge of economic concepts, and their attitudes toward markets and market concepts.

The sample for this study consists of 425 educators who enrolled in one of ten introductory economic education workshops conducted in nine countries by the CEEP in 1995-2001. The majority of educators were female (71.4%) and under age 40 (58.1%). The mean years they had worked in education was 11.8, and the highest level of education reported by the

majority of teachers was the bachelor's degree (78.1%). Twenty-six percent reported that their undergraduate major was economics. Seventy-four percent teach in primary or secondary school, 12% teach in academies or universities, and 18% teach at technical schools. Some teachers teach at more than one school, hence the cumulative percentages are greater than 100%.

The "Market Economy Attitude Survey" (MEAS) is the dependent measure in this study. It consists of 16 items addressing aspects of people's economic behavior and views related to free markets. The survey was compiled from surveys developed by Schiller, *et al.* (1991) and Boeva and Shironin (1992). MEAS was administered at the beginning and end of each seminar. The MEAS items are listed in the Appendix. In the present analysis, MEAS items 7, 8, and 11 were omitted from the summed scale and reliability estimates. Item 11 reflects cognitive knowledge more than affective factors. Items 7 and 8, questions about attitudes toward *nouveau riche* and conspicuous consumption, had large variances and were only weakly correlated to the remainder of the MEAS items. While the least correlated items in the 16-item survey were omitted from the calculation, these items were analyzed individually to gain additional insight into teacher attitudes. The Cronbach's alpha for the pre-seminar MEAS is .48 for the 13 remaining items (1-6, 9, 10, 12-16.) The relatively low value of alpha likely indicates that the scale is not uni-dimensional, rather it quite likely measures different dimensions of attitudes toward markets. In addition, this instrument was administered to a diverse population of educators from nine countries and was translated into the language of each country. The instrument is also short in length, so the reliability coefficient would typically be lower than for longer instruments.

The 46-item "Test of Economic Literacy, 2<sup>nd</sup> Edition" (Soper & Walstad, 1986) (TEL), measures the participants' pre- and post-seminar knowledge of economics. The mean score on the TEL (Form B) Pretest was 27.8 out of 46 items (60.4%), with a median of 28 and a range from three to 42. The mean post-test score (adjusted Form A) was 32.95 (71.6%), with a median of 33 and a range of 16 to 45.

Level of structural reform of the countries where the workshops were held is measured by the Structural Reform Index (SRI). The SRI, developed by The World Bank and the European Bank for Reconstruction and Development (EBRD) indexes structural reform yearly, specifically in EEFSU, and data are currently available from 1990-2001. The SRI is a weighted index of the EBRD's measures of liberalization of prices, trade, and foreign exchange, privatization, and banking reform normalized to a 0 to 1 scale and provides a theoretically justifiable measure of progress for all countries of EEFSU relative to one another (Åslund, 2002). The level of reform in the nine countries for the years of the training ranged from .54 to .82, with a mean of .67.

## ATTITUDES TOWARD MARKETS BEFORE CEEP TRAINING

At the start of the CEE seminar, educator attitudes tended toward pro-market. The mean MEAS index score was 10.41 (sd=2.03) of a possible score of 14. Respondents were most

positive on matters related to productivity-based pay, market-based prices, and private ownership of business. On the other hand, they were much less positive about the impact on their own households of the state's efforts to privatize state-owned enterprises.

The model tested in this study assumes that, at the start of the CEE seminar, educator attitudes toward market issues are a function of the actual economic systems in which individuals live, their knowledge of and experience teaching economics, and a series of demographic characteristics. In the empirical model, the attitude measure was regressed on the Structural Reform Index for the year of the training in the educators' country of residence (SRI), together with the educators' scores on the TEL pre-test (TELPR), their gender (GEN), highest level of education (EDLEV), years of teaching experience (TYR), previous western-style training in market economics (JA), and whether they were teaching economics at the time of the seminar (TECON).

Two variables in the model require further explanation. Years of teaching experience, a continuous variable, was strongly correlated to the age variable which was categorical (Pearson correlation coefficient = .784). Therefore, years of teaching experience (TYR), the "better" of the two variables also likely encompasses other age-related factors that may not be accounted for elsewhere. Previous market-economics training was operationalized as the educator having participated in Junior Achievement (JA) training programs. Of the previous training items on the Personal Information Form, JA is the only option that is fairly standard across countries. In fact, when others of the venue variables were included in the empirical model, they were not significant and did not improve the regression properties.

I expected educators' attitudes to be more positive toward markets when their countries' levels of structural reform were greater, due to more positive experiences with markets; when their knowledge of market economics was greater (Walstad, 2002; Phipps & Clark, 1992; Walstad & Soper, 1989); if they currently taught economics; if they had previous market economics training; and if they had been in education fewer years, an indication that the Marxist indoctrination might have been weaker (Watts & Walstad, 2002). I expected that women were likely to have less positive attitudes toward markets than men. Although there is limited prior information on this relationship, Blinder and Krueger (2004), in their study of policy opinions of the American public, found that women were more likely to see federal budget deficits as a problem, to favor an increase in the minimum wage, to favor universal health insurance, and to favor a tax increase to reduce a future Social Security deficit. On the other hand, they were less likely than men to favor partial privatization of Social Security. Although Blinder and Krueger (2004) found education levels to be a significant predictor of political opinions, education level did not seem to clearly predict if attitudes would be more or less pro-market, thus education level is included in the model, although without *a priori* expectations as to the direction of influence.

Two separate levels of analysis were undertaken in assessing educators' market attitudes at the start of the seminars. First, the pre-seminar MEAS responses were summed across the set of 13 items indicated above, yielding an overall market attitude score. A linear regression of



overall attitude toward markets on the set of predictors (TEL pre-test, SRI for the year of training, years in teaching, whether subject teaches economics currently, gender, education level, and prior training in market economics and methods) was estimated. The results are shown in Table 1.

<b>Table 1: Pre-Seminar Linear Regression Coefficients</b>				
Independent Variable	B	Std. Error	t	Sig.
(Constant)	5.662	1.064	5.321	.000
SRI	3.697	1.264	2.926	.004
TELPR	.074	.019	3.916	.000
GEN	-.854	.240	-3.563	.000
JA	.770	.258	2.988	.003
EDLEV	-.009	.004	-2.245	.025
TYR	.026	.012	2.072	.039
TECON	.277	.233	1.188	.236
Dependent Variable = MEAS Pre- Test Items 1-6, 9, 10, 12-16				

The  $R^2$  for this model was .21 and the regression is significant ( $F=11.46$ ;  $p \leq .000$ ). In addition, the SRI, the TEL pretest score, gender, and previous Junior Achievement training are significant at  $p \leq .01$ , and years of education and education level are significant at  $p \leq .05$ . Whether the educator is currently teaching economics is not a significant predictor of overall attitude. Of particular interest is that the home country's level of reform is a strong predictor of positive market attitudes, that is, those from more reformed countries have a more positive attitude toward markets than those from less reformed countries. As expected, the TEL pretest score is also a significant positive predictor. On the other hand, the longer educators had been teaching, the more positive their attitude toward markets. The range of 'years in education' was from less than one to 43, with a mean of 11.86 years, indicating that, on average, a teacher had begun his or her career within five years before the collapse of communism. Interpretation of this finding is difficult, with virtually no prior study of the phenomenon. A plausible explanation might be that more experienced teachers, having a longer exposure to the Soviet style of communism, had more practical experience with its failings, even though they had been teaching the prescribed doctrine for longer. That females had an overall less positive view of markets was consistent with expectations based on the Blinder and Krueger (2004) survey research. Previous participation by the educator in a Junior Achievement seminar, that is, fairly standard type of prior market economics training, might indicate that such training has already influenced the educator's attitude or may also reflect a selection bias. Educators who are already pro-market may tend toward participating in both JA and CEE seminars. The lack of significance of the educator currently teaching economics is unexpected and would require further investigation. It may reflect a lack of standardization of economics courses or the ways that teachers are selected to teach these courses among the countries. It may also be related to the economics training that these teachers had in the past.

**Table 2: Model Fit for Multinomial Logistic Regression Equations**

Model	-2 Log Likelihood	Chi-Square	df	Sig.	Nagelkerke Pseudo R <sup>2</sup>
MEAS1	329.53	38.30	7	.000	.160
MEAS2	212.32	54.86	7	.000	.273
MEAS3	395.05	69.26	7	.000	.245
MEAS4	217.73	40.90	7	.000	.211
MEAS5	121.60	12.92	7	.074	.113
MEAS6	453.79	14.40	7	.044	.055
MEAS 7	255.83	22.81	7	.002	.115
MEAS8	424.13	38.33	7	.000	.143
MEAS9	437.02	36.44	7	.000	.134
MEAS10	275.93	12.16	7	.096	.061
MEAS11	Not estimated				
MEAS12	133.19	25.69	7	.001	.194
MEAS13	459.52	17.33	7	.015	.065
MEAS14	455.46	10.96	7	.140	.042
MEAS15	308.81	34.47	7	.000	.150
MEAS16	591.61	51.63	14	.000	.166

In attempt to gain further insight into the nature of educator attitudes toward markets at the start of the seminar, fifteen of the separate pre-seminar MEAS items were analyzed using multinomial logistic regression (MLR). Each of these MEAS items was regressed on the same set of independent variables as the overall MEAS index. The chi-square goodness of fit and Nagelkerke pseudo r-square statistics are presented in Table 2.

The MLR model fits well ( $X^2$  significant at  $p \leq .01$ ) in twelve of the 15 estimated equations, with Nagelkerke pseudo r-square ranging from .055 to .273. Table 3 presents the MLR parameter estimates and significance levels for 11 of the 15 equations. Because the Wald test, an approximation of Z, tends to be conservative, I have used a  $p \leq .10$  as the cutoff for significance of the individual predictors.

The Structural Reform Index is a significant predictor of a market-oriented response in eight of the equations. Of special note, it is highly significant ( $p \leq .01$ ) in regard to issues of price flexibility in the face of changing supply and demand factors (MEAS2 & 3), and the perception that profit is not a negative phenomenon (MEAS9). In addition, the SRI is related negatively ( $p \leq .01$ ) to educators' likelihood of conspicuous consumption and of being admired and congratulated for being newly rich (MEAS7 & 8). That is, the more reformed the country, the less likely individuals are to say that they would like to consume conspicuously in the face of sudden riches or would be congratulated by family for newly gained riches. Interestingly, this may reflect a prevalent suspicious attitude in the transitional countries that the newly rich are culturally and educationally inferior. In the MEAS13 & 15 equations, SRI is a significant predictor, however it is of the unexpected sign. That is, individuals from less reformed countries are more likely to think that they would be better off if the government privatizes state enterprises or if farms are privately owned or operated than are those from more reformed countries. Perhaps the experiences in the more reformed countries where privatization is

complete, or nearly so, show that results of privatization can be mixed, while those from less reformed countries still see the inefficiencies of some of the government-owned enterprises.

Table 3: Multinomial Logistic Regression Coefficients (significant NOMREG equations)												
Dependent	Independent Variables (Likelihood of a Market-Oriented Response)											
	SRI		TYR		TELPR		GEN (female)		TECON		JA	
	B (s.e.)	Wald (sig.)	B (s.e.)	Wald (sig.)	B (s.e.)	Wald (sig.)	B (s.e.)	Wald (sig.)	B (s.e.)	Wald (sig.)	B (s.e.)	Wald (sig.)
MEAS1	1.16 (.155)	.56 (.46)	-.028 (.017)	2.65* (.10)	-.03 (.023)	1.90 (.17)	-.64 (.335)	3.61* (.06)	.80 (.291)	7.62*** (.01)	.72 (.392)	3.31* (.07)
MEAS2	11.68 (2.27)	26.50*** (.00)	.03 (.023)	1.85 (.17)	.11 (.030)	13.35*** (.00)	.53 (.389)	1.85 (.174)	.91 (.419)	5.00** (.03)	-.640 (.48)	1.77 (.18)
MEAS3	6.97 (1.46)	22.70*** (.00)	.03 (.015)	3.00* (.08)	.08 (.021)	14.31*** (.00)	.05 (.27)	.03 (.86)	.58** (.26)	4.92** (.03)	.69 (.31)	4.81** (.03)
MEAS4	.59 (2.06)	.08 (.78)	-.02 (.020)	1.14 (.27)	.15 (.03)	23.68*** (.00)	-.39 (.38)	1.09 (.30)	.00 (.37)	.00 (.99)	-.51 (.50)	1.05 (.31)
MEAS 7 <sup>a</sup>												
Congratulatory	7.70 (2.51)	9.30*** (.00)	-.00 (.02)	.00 (.97)	.04 (.00)	1.46 (.23)	.12 (.42)	.08 (.77)	.03 (.41)	.01 (.94)	.53 (.43)	1.52 (.22)
Contemptuous	-.47 (4.81)	.01 (.92)	.07 (.04)	4.1** (.04)	-.11 (.06)	3.50* (.06)	.71 (.72)	.99 (.32)	-.88 (.78)	1.27 (.26)	.66 (.84)	.61 (.43)
MEAS8 <sup>b</sup>	3.69 (1.35)	7.41*** (.01)	-.07 (1.02)	19.16*** (.00)	.03 (.02)	1.89 (.17)	.40 (.27)	2.19 (.14)	.39 (.26)	2.25 (.13)	-.03 (.28)	.01 (.91)
MEAS9	4.98 (1.36)	13.42*** (.00)	.01 (.01)	.15 (.70)	-.02 (.02)	1.30 (.25)	-.25 (.26)	.97 (.33)	-.33 (.25)	1.69 (.19)	1.08 (.28)	14.53*** (.00)
MEAS 12 <sup>c</sup>	.81 (2.67)	.09 (.76)	-.03 (.03)	1.11** (.29)	-.07 (.04)	3.15* (.10)	.37 (.54)	.47 (.49)	1.93 (.66)	8.52*** (.00)	1.13 (1.07)	1.13 (.29)
MEAS13	-3.69 (1.32)	7.75*** (.01)	.01 (.01)	.83 (.36)	.01 (.02)	.12 (.73)	-.64 (.26)	6.21*** (.01)	-.33 (.243)	1.83 (.18)	.052 (.27)	.037 (.85)
MEAS15	-4.31 (1.72)	6.28*** (.01)	.03 (.018)	3.51* (.06)	.03 (.025)	1.08 (.29)	-1.30 (.41)	9.83*** (.00)	.92 (.32)	8.41*** (.00)	-.24 (.36)	.44 (.51)
MEAS16 <sup>d</sup>												
50% or greater	-4.24 (1.81)	5.47** (.02)	-.00 (.018)	.03 (.857)	-.07 (.03)	.72*** (.01)	.02 (.34)	.01 (.94)	-.27 (.34)	.65 (.42)	.15 (.41)	.13 (.72)
25%	-7.15 (1.67)	18.43*** (.00)	-.02 (.018)	1.1 (.29)	.04 (.03)	2.57 (.11)	-.342 (.33)	1.08 (.30)	.54 (.31)	3.00* (.08)	-.85 (.34)	6.42*** (.01)
***Significant at $p \leq .01$ ; **Significant at $p \leq .05$ ; *Significant at $p \leq .10$												
<sup>a</sup> Reference response is quiet & indifferent.												
<sup>b</sup> Reference response is respondent would be likely to engage in conspicuous consumption if she became rich.												
<sup>c</sup> Reference response is entrepreneurs should run enterprises.												
<sup>d</sup> Reference response is 0%												

Among the results of several of the individual logistic regressions for the MEAS survey items and of the aggregated MEAS scale, the association between attitude and prior Junior Achievement merits discussion. Junior Achievement is one of the few other sources of western, market-based economic education available consistently across most of the transitional countries, and may be serving as a proxy for self-selection, as well as prior training. That is, those teachers most interested in teaching market economic concepts are more likely to enroll in the CEEP seminars. It is also possible, as shown in the individual MEAS regressions, that JA training

instills a positive attitude regarding certain market phenomena. In particular, items involving simple supply and demand analysis in the product market and items related to acceptability of profit and views about property rights and tax rates on wealth. On more complex topics such as price controls and impacts of market reforms and internationalization on individual well-being, the Junior Achievement effect does not show up.

### ATTITUDES TOWARD MARKETS AFTER CEEP TRAINING

Mean posttest score for the MEAS was 11.40 (sd=1.78; n=279). There was a highly significant gain pre- to post-seminar in the mean 14-point MEAS Index (mean difference=.989;  $t=9.272$ ;  $p\leq .000$ ). Multiple linear regression, with the TEL change score pre- to post-seminar (TELCHG) substituted for the TEL pretest score as an explanatory variable and the Post MEAS Index as the dependent measure, indicated that reform status of the educators' countries still influenced their attitude but to a lesser extent than before the one-week seminar ( $B=2.03$ ;  $sd=1.11$ ;  $t=1.826$ ;  $p< .10$ ). Being female was still a highly significant negative predictor of attitude at  $p\leq .000$ , and having had JA training was positively significant at the level of  $p< .01$ . The remaining predictors, including change in cognitive knowledge, were not significant. The regression results are reported in Table 4.

Table 4: Post-Seminar Linear Regression Coefficients				
Independent Variable	B	Std. Error	t	Sig.
(Constant)	10.368	.800	12.961	.000
SRI	2.029	1.112	1.826	.064
TELCHG	.007	.019	.338	.736
GEN	-1.033	.229	-4.517	.000
JA	.621	.235	2.988	.003
EDLEV	-.001	.004	-.229	.819
TYR	.006	.012	.522	.302
TECON	.145	.217	.670	.504
Dependent Variable = MEAS Post-Test Items 1-6, 9, 10, 12-16				

Tests of pre- to post-seminar mean difference for paired samples were calculated for each of the MEAS items and for the MEAS Index and are reported in Table 5. Overall, attitudes toward markets were significantly more positive after the seminar than before. Among the individual items, attitudes became significantly more pro-market on nine of the 15 items. Specifically, there were significant gains in views on price flexibility, profit, willingness to charge a friend interest on a loan, and issues of privatization.

**Table 5: Paired Sample T-Tests Pre to Post Seminar**

	All Countries						Less Reformed Countries (SRI ≤ .67)				More Reformed Countries (SRI > .67)			
ITEM	Pre Mean	Post Mean	Mean Diff. (Post Pre)	t	Sig. 2-tailed	N	Mean Diff.	t	Sig. 2-tailed	N	Mean Diff.	t	Sig. 2-tailed	N
MEAS1	.78 (.41)	.89 (.31)	.11 (.40)	5.17	.00**	353	.14 (.42)	4.39	.00**	160	.08 (.34)	2.98	.00**	19
MEAS2	.88 (.32)	.92 (.28)	.03 (.38)	1.70	.09	350	.06 (.50)	1.59	.11	159	.01 (.23)	.63	.53	19
MEAS3	.61 (.49)	.78 (.41)	.17 (.47)	6.79	.00**	353	.18 (.50)	4.59	.00**	160	.161 (.45)	5.01	.00**	193
MEAS4	.89 (.32)	.93 (.26)	.04 (.37)	2.03	.04*	350	.08 (.31)	3.08	.00**	159	.01 (.41)	.35	.73	191
MEAS5	.95 (.22)	.99 (.12)	.04 (.22)	3.19	.00**	353	.03 (.24)	1.68	.10	159	.04 (.20)	2.88	.00**	194
MEAS6	.44 (.50)	.57 (.50)	.13 (.466)	5.18	.00**	347	.12 (.46)	3.44	.00**	161	.13 (.47)	3.86	.00**	186
MEAS7	1.83 (.46)	1.84 (.44)	.02 (.37)	.87	.39	350	.00 (.36)	.00	1.00	161	.03 (.40)	1.10	.27	189
MEAS8	.41 (.49)	.44 (.50)	.03 (.41)	1.17	.24	344	.02 (.46)	.52	.60	157	.03 (.37)	1.18	.24	187
MEAS9	.53 (.50)	.66 (.47)	.13 (.55)	4.30	.00**	345	.17 (.67)	3.21	.00**	157	.09 (.42)	2.93	.00**	188
MEAS10	.86 (.35)	.90 (.31)	.03 (.36)	1.78	.08	349	.10 (.32)	3.94	.00**	157	.02 (.38)	.76	.45	192
MEAS12	.95 (.22)	.97 (.17)	.02 (.30)	-1.64	.10	357	.04 (.22)	2.15	.03**	161	.01 (.29)	.50	.62	196
MEAS13	.57 (.50)	.70 (.46)	.12 (.51)	4.62	.00**	355	.16 (.46)	4.46	.00**	159	.09 (.54)	2.39	.02*	195
MEAS14	.62 (.49)	.69 (.47)	.07 (.53)	2.39	.02*	354	.16 (.53)	3.92	.00**	159	-.01 (.53)	-.27	.79	196
MEAS15	.79 (.41)	.84 (.36)	.05 (.43)	2.20	.03*	357	.08 (.43)	2.22	.03*	161	.03 (.44)	.97	.33	196
MEAS16	1.49 (.70)	1.50 (.69)	.01 (.57)	.20	.84	349	.03 (.61)	.524	.60	157	.04 (.52)	.95	.34	151
MEAS INDEX	10.41 (2.03)	11.40 (1.78)	.99 (1.78)	9.27	.00**	279	1.3 (1.70)	9.27	.00**	144	.64 (1.81)	4.14	.00**	135
*significant at $p \leq .05$ ; **significant at $p \leq .01$														

On three of the remaining items (MEAS2, 10, & 12), attitudes were strongly pro-market at the start of the seminar, with 89 percent opposing government price controls, 86 percent believing that market forces cause price changes, and 95 percent believing that entrepreneurs should run businesses. The mean differences were all positive pre- to post-seminar. In the case of MEAS7, regarding new riches, there was a nearly significant drop in the percentage who believed their relatives' responses would be congratulatory ( $p \leq .10$ ).

Mean differences were also calculated for two subgroups, educators from the more and less reformed countries, separated at the mean SRI (.67). Table 5 shows that educators from less reformed countries showed greater gains in attitude toward markets (mean MEAS gain = 1.18;  $p < .000$ ;  $n = 158$ ) than those from more reformed countries (mean MEAS gain = .54;  $p < .002$ ;  $n = 191$ ). It is of note that the educators from the less reformed countries showed significant movement toward a more pro-market attitude on issues of privatization (MEAS items 13-15). For the less reformed countries, the average of these three items moved from .67 at the start to .80 at the end of the seminar. On the other hand, the average of these items for educators from more reformed countries was .65 at the start and .69 at the end of the seminar. In other words, those from the more reformed countries had a slightly less positive opinion that privatization was beneficial to them at the start of the seminar than those from the less reformed countries, and their opinions did not change significantly during the seminar. Conversely, those from less reformed countries changed their opinions about the benefits of privatization very significantly in a positive direction.

## DISCUSSION & CONCLUSIONS

This data set is unique in that it was collected from educators in a broad range of transitional countries and covers an extended period of time during the transition process. The findings verify that, even among a sample that could be considered self-selected and relatively pro-market, the environment in which one lives is an important factor in attitude toward the economic system. The relationship between reform progress and citizens' attitudes toward free markets is a topic of limited prior study, yet it may be reasonable to expect that positive attitudes of these citizens is important in a country's ability to progress with restructuring.

It may also be reasonable to expect that the attitudes of those who teach a nation's youth may be especially important in developing a citizenry willing and able to participate fully in a market economy. Both Watts and Walstad (2002) and Pleskovic, *et. al.* (2002), highlight the need for well-trained teachers who see the importance of teaching solid market-based economics in the primary and secondary grades, as well as at higher education levels, to assure a flow of citizens who can make informed decisions as voters and as policymakers. Walstad (2002) has given tentative credence to the assumption that teachers' attitudes and knowledge affect the learning and attitudes of their students, although this topic is a fertile area for further study.

As this study was limited to the data collected in the CEEP teacher training programs, it should be acknowledged that there is much we do not know about the educators in this sample that might also influence their attitudes. With additional information, we might uncover factors that would further explain the differences in market attitudes among economic educators. Moreover, an attitude index with stronger psychometric properties would further verify the findings and conclusions in the present study.

Further research would also permit delving into two anomalies of the present study. First, Watts and Walstad (2002), summarizing the progress of economic education at primary, secondary, and higher education levels in several countries of EEFSU, indicate that while some younger teaching staff at universities have learned modern economic theories and teaching, many older faculty members still adhere to the Marxist-Leninist ideology and continue to teach it. In contrast, this study found that teachers with more years of experience had more positive attitudes toward markets. Given the self-selected nature of this sample and the fact that these educators were more often teaching at the secondary level, Watts and Walstad's hypothesis may not apply to this group. The educational background of and type of courses taught by the teachers in this sample, both before and after the collapse of communism, likely differ from that of university-level teachers.

Second, the lack of a significant relationship between teaching economics and attitudes toward markets suggests that further investigation into cross-country curricula might be fruitful. What constitutes teaching economics may be different among the countries studied. According to Watts & Walstad (2002), secondary-level economic education in the transitional countries has tended to follow one of three paths: New courses in market economics were quickly mandated following the start of the transition; short, formal courses on Marxism were replaced by short, formal courses in market economics; or mandates for market economics courses were not yet implemented. In addition, mandated courses do not necessarily contain standard content across all countries.

The present study offers an exploration into changes in educators' attitudes toward markets as a result of specific training in market concepts. Research based on this dataset of educators has the potential to help us better understand the target groups of educators and the impact of programs aimed at improving economic education in transitional economies. The results of this study suggest that educators from less reformed countries change their attitudes toward markets more as they learn market economics than do those from more reformed countries. This finding indicates that training of educators in market economic principles impacts attitudes among those who may benefit most.

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**APPENDIX**  
**Market Economy Attitude Survey (MEAS)**

- MEAS1      On a holiday, when there is a great demand for flowers, their prices usually go up. Is it fair for flower sellers to raise their prices like this?
- MEAS2      Regarding the prices for flowers, should the government introduce limits on the increase in prices of flowers, even if it might produce a shortage of flowers?
- MEAS3      A small factory produces kitchen tables and sells them at \$250 each. There is so much demand for the tables that it cannot meet it fully. The factory decides to raise the price of its tables by \$20, when there was no change in the costs of producing them. Is this fair?
- MEAS4      Regarding the production of tables, apart from fairness, should the factory have the right to raise the price in this situation?
- MEAS5      Do you think that people work better if their pay is directly tied to the quantity and quality of their work?
- MEAS6      Suppose you have agreed to lend a friend some money for 6 months, so that he will not miss a good opportunity to buy a summer home. Suppose banks are offering interest rates of 3% per year. Would you charge him interest on the loan?
- MEAS7      Suppose that as a result of successful business dealings, you unexpectedly became rich. How do you imagine it would be received by your relatives at a holiday family gathering? Would they congratulate you and show great interest, or would they be judgmental and contemptuous?
- MEAS8      If you ever became rich, would you really like to spend some of the money by purchasing really fashionable clothes, expensive cars, or other extravagant items that make an impression on people?
- MEAS9      Do you think that those who try to make a lot of money will often turn out to be not very honest people?
- MEAS10     If the price of coffee on the world market suddenly increased by 30%, what do you think is likely to be the blame?
- MEAS11     Suppose the price of electricity rises fourfold, from 10¢ per kilowatt hour to 40¢. No other prices change. Suppose also that at the same time your monthly income increases by exactly enough to pay for the extra cost of electricity without cutting back on any of your other expenditures. Please evaluate how your overall material well-being has changed.
- MEAS12     Who should run businesses, the state or entrepreneurs?
- MEAS13     What effect will it have on your own family situation if/when the government sells state enterprises to private owners?
- MEAS14     What effect will it have on your own family situation if/when the government allows foreigners to buy shares in state enterprises?
- MEAS15     What effect will it have on your own family situation if/when most farming is done by private owners or on private land?
- MEAS16     What inheritance tax rate for really wealthy people do you think we should have? A tax rate of 0% means that they can pass all of their wealth to the children, making them as rich as their parents. A rate of 50% means that they can pass half to their children. A rate of 100% means that they can pass none at all onto their children.

# PRICE INFLATION AND GDP GROWTH-WHAT MATTERS MOST? EVIDENCE FROM EGYPT AND INDIA

Dina Abdel Moneim Rady, Ain Shams University, Egypt

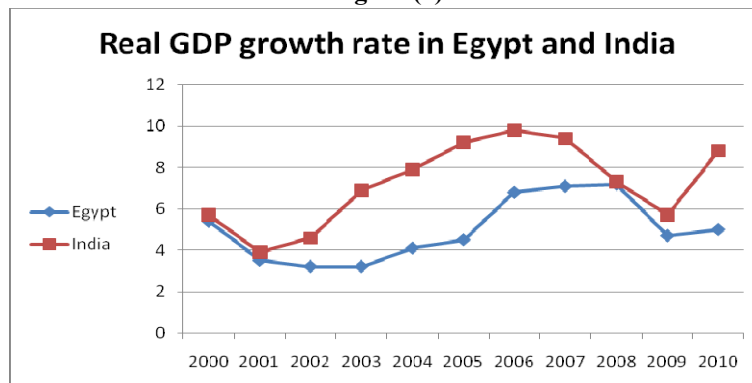
## ABSTRACT

*Egypt and India are both emerging developing countries which share some common economic features; their rate of economic growth has approximately the same trend while they both begin series of economic reform process in the same period of time (early 1990's) while passing through high inflation rates. This paper analyses the Indian distinguished high economic growth rates while having higher inflation rates in comparison with Egypt in the period 2000-2010. The paper concludes that India's inflation was accompanied by an increase in labor productivity, at the same time focusing on successful sectors in the economy, boosting savings and investments. The paper recommends that emerging countries while applying economic reforms process do not focus on inflation targeting, but rather let the market correct itself and focus on real production and productivity since growth in labor and capital productivity is the key engine of economic growth.*

## INTRODUCTION

Analyzing GDP growth rates trend between the two countries during the period; it is shown that it is higher in India though both countries almost have the same trend.

Figure (1)

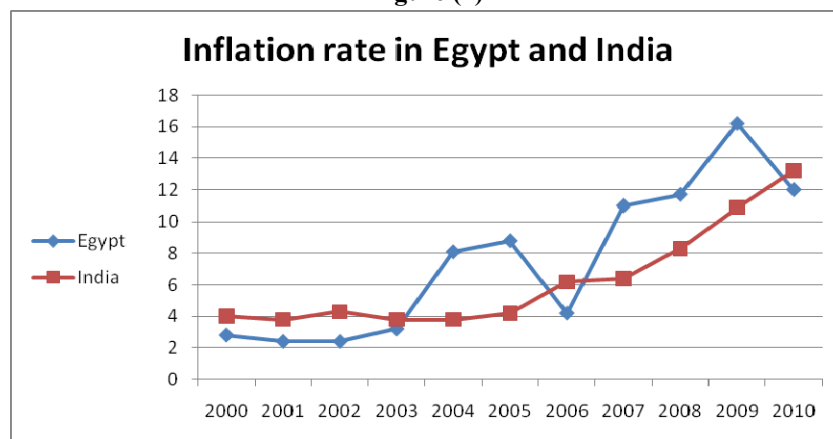


Source: international monetary fund data and statistics

The two countries started by a decline in the GDP growth rate during the period from 2000 to 2001, then showed an increase through the period 2001 to 2007, India then decreased from 9.4 to 7.3, while Egypt went up from 7.1 to 7.2 (2007 to 2008), the two countries went down following the global financial meltdown in 2008. India jumped to 8.8% in 2010 while Egypt achieved only 5%.

India's GDP growth rate recovered faster than Egypt after the 2008 financial crisis, although the two countries suffered high rates of inflation, which reflects the underlying strengths of the Indian economy.

**Analyzing inflation rate trends between the two countries during the period**  
**Figure (2)**



Source: international monetary fund data and statistics

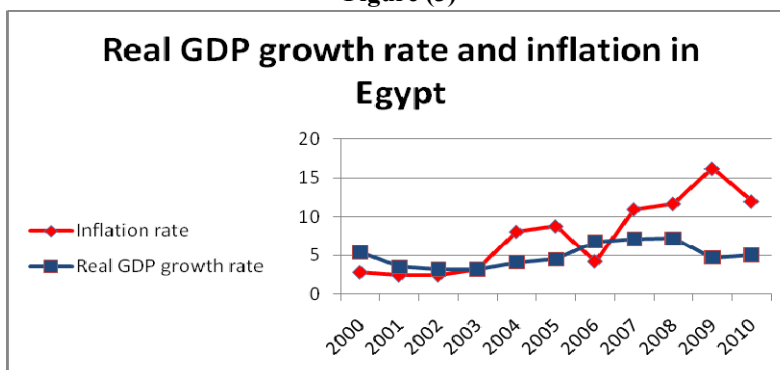
As shown in figure ( 2 ), inflation rates in Egypt in general is higher than those in India during most of the period except for the first three years, after which India witnessed a continuous increasing rate of inflation, while Egypt had sharp trends of increase in inflation rates till it reached its highest level in 2009 (16.2%).

The two countries had periods of sharp rise in inflation rates, but India passed Egypt in the GDP growth rates, in the following sections, the paper will examine the major factors that were fostering India's growth rate despite the high inflation rates.

## METHODOLOGY

The paper examines data from Egypt and India through the period from 2000-2010. Since exploring the inflation dynamics following a statistical approach does not capture the behavioral structure of the economy, therefore we use the inductive methodology in tracking the position of vital macroeconomic variables of the two countries during the period of study. The data involve mainly real GDP growth rate, price inflation rates, GDP composition (demand side), taxes as a percentage of GDP, foreign domestic investments and labor productivity growth.

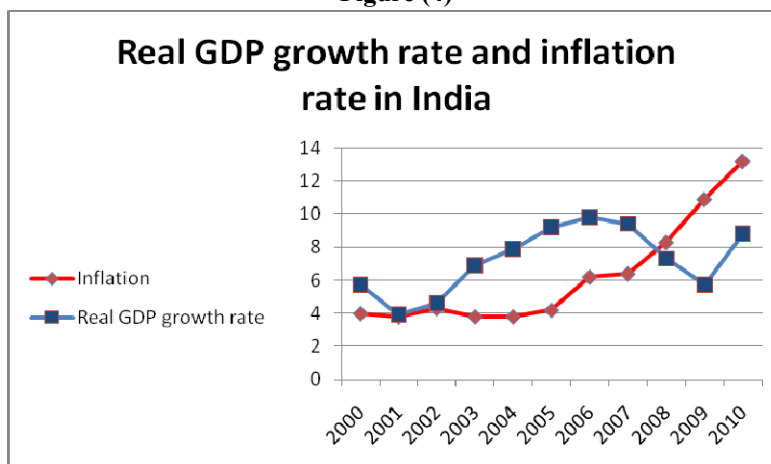
**Analyzing real GDP growth rate and inflation in Egypt**  
**Figure (3)**



Source: international monetary fund data and statistics

As shown in figure (3 ), when inflation was at its lowest rates (2000-2003) GDP growth rates were decreasing and when inflation started to boost from 3.2% to 8.1% (2003-2004); GDP growth rate escalated until it went down to 4.7% in 2009 at the same time inflation reached its highest level in the period (16.2%).

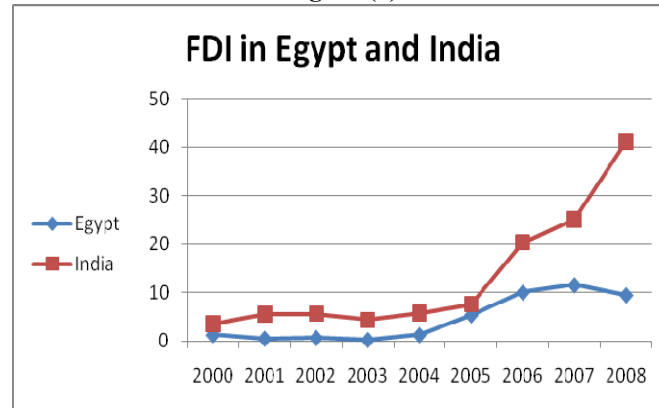
**Analyzing real GDP growth rate and inflation in India**  
**Figure (4)**



Source: international monetary fund data and statistics

Figure ( 4 ) shows that GDP growth rate continued to increase at the same time the inflation rate was increasing, that was obvious in the last two years when GDP growth rate boosted from 5.5% to 8.8% at the same time inflation rate increased from 10.9% to 13.2%.

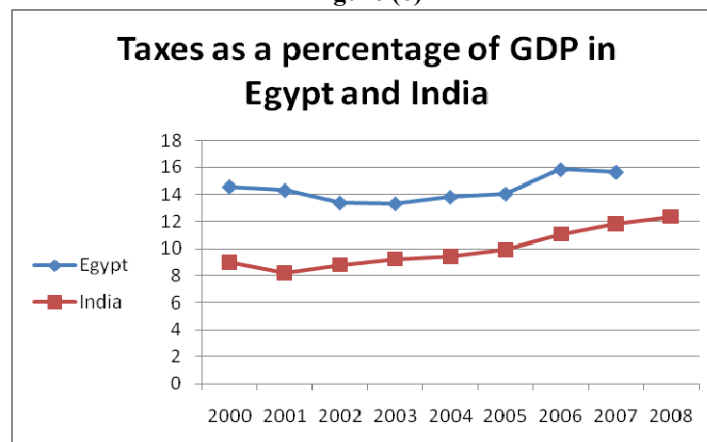
**Foreign direct investment as a percentage of GDP in Egypt and India**  
**Figure (5)**



Source: international monetary fund data and statistics

Figure (5 ) shows that foreign direct investment as a percentage of GDP is much higher in India than Egypt with an enlarging gap. FDI's % of GDP in India reached 41.17% in 2008 versus 9.49% in Egypt.

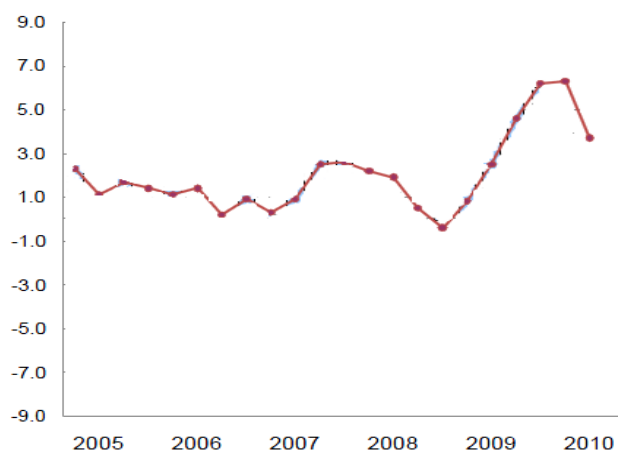
**Taxes as a percentage of GDP in Egypt and India**  
**Figure (6)**



Source: international monetary fund data and statistics

Figure ( 6 ) shows that taxes as a percentage of GDP in India have lower levels than Egypt which encourages profit margins and boosts investments.

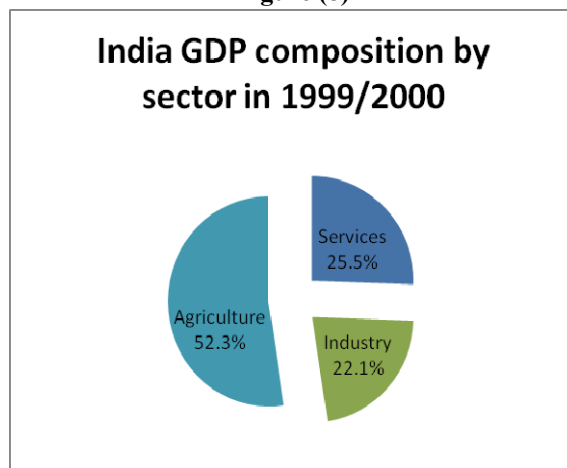
**Figure (7)**  
**Output per hour, nonfarm business, all persons, percent change**



Source: productivity and costs, "US department of labor, Bureau of labor statistics, USDL-10-1211.

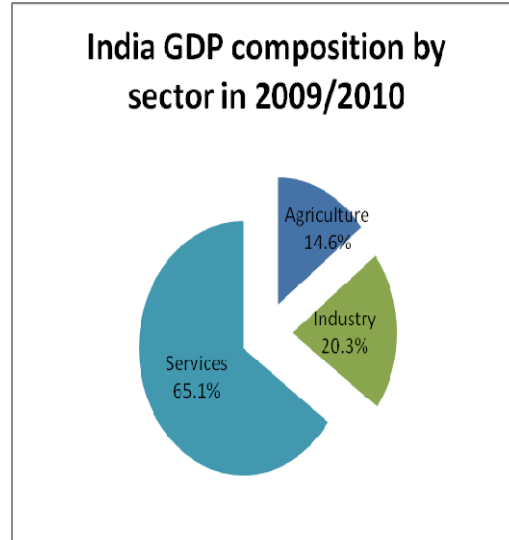
Figure ( 7 ) shows the progress of growth in India's nonfarm business productivity which increased at an average annual rate of 2.5% in the period (2000- 2009). In 2009, Egypt grew in its industrial production by 6.4% from previous year (2008) while India grew by 10.3% in the same period, despite the financial crisis of 2008.

**India GDP composition by sector in 1999/2000**  
**Figure (8)**



Source: Reserve bank of India, monetary policy statements

**Figure (9)**

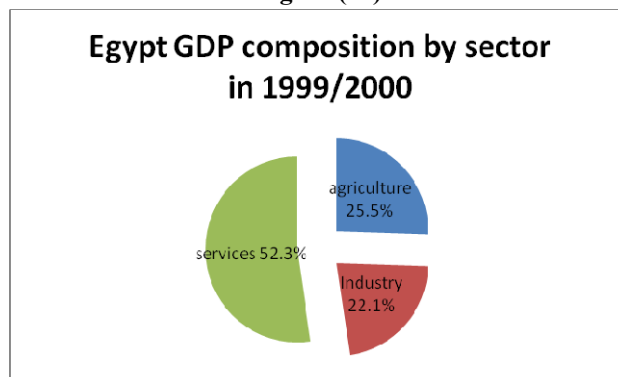


Source: Reserve bank of India, monetary policy statements

As shown in the above figures, India's economic reforms that began in 1991 helped transforming its economy from one depending on agriculture to an open and progressive one that depends on services.

**Egypt GDP composition by sector in 1999/2000**

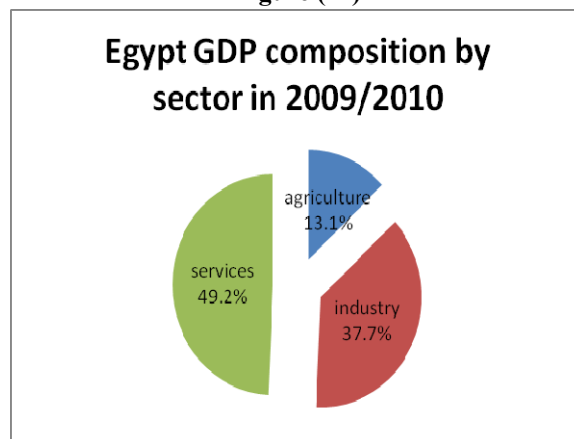
**Figure (10)**



Source: Reserve bank of India, monetary policy statements



Figure (11)

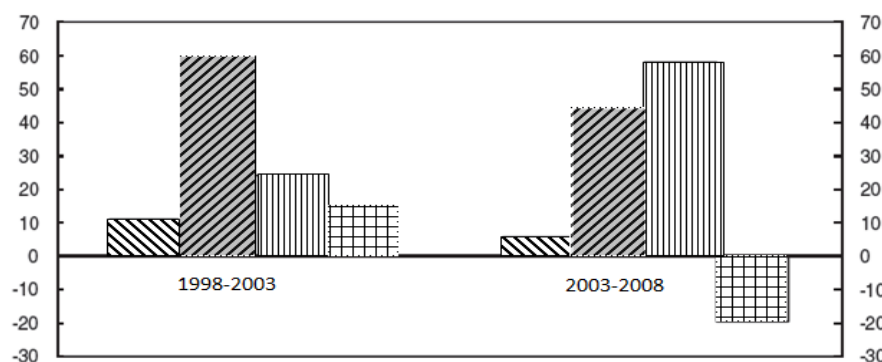


Source: Reserve bank of India, monetary policy statements

The above figures show that Egypt's progress in expanding its industrial sector share in GDP was limited (from 22.1% to 37.7%) in 10 years. The service sector's share in GDP decreased from 52.3% to 49.2%). The share of agriculture decreased to 13.1% from 25.5%.

Figure (12)

**Contributions to GDP growth 1998-2003 and 2003-2008 in India**



Source: L. de Mello, "Growth and sustainability in Brazil, China, India, Indonesia, and south Africa", OECD, 2010

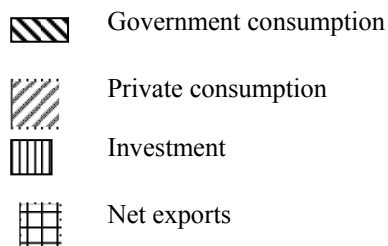
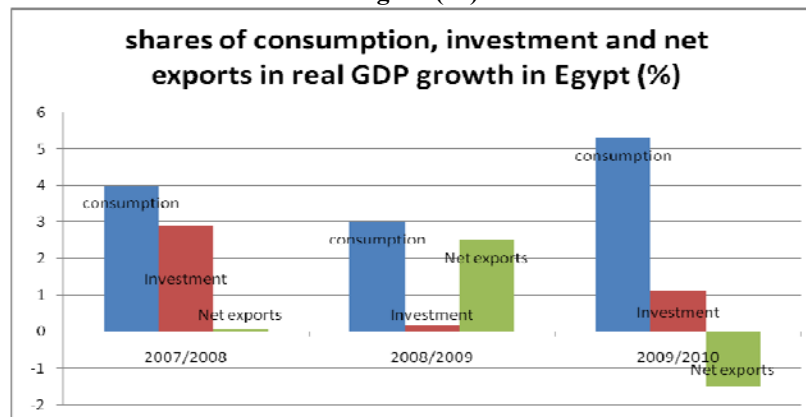


Figure ( 12 ) represents the contribution to GDP growth in India, which shows that investment is the biggest contributor to GDP growth. India succeeded to boost its investment at the expense of consumption.

**Shares of consumption, investment and net exports in real GDP in Egypt (%)**

**Figure (13)**



Source: central bank of Egypt annual economic review, different issues

Figure ( 13 ) shows that Egypt in the last 3 years (2007-2010) had increased its consumption's share in GDP growth (from 4% to 5.3%), decreased its investment's share in GDP growth (2.9% to 1.1%) and shifted its net exports share to GDP growth to negative (-1.5). This will not help Egypt to rely on real savings and domestic sources resulting from investment in its economic progress, which will have its effect on the strength of the economy.

## CONCLUSION

Tracking Egypt and India's price inflation trends, Egypt has experienced short bursts of high inflation, but India had acceptable rates during the first 5 years (ranged from 3.8% to 4.2%). A low or moderate inflation for long periods provides a favorable environment for growth. The duration of keeping lower rates of inflation for a long time helps driving trust in the government's commitment of lower inflation thus fostering investments and high expectations. The long run solution to the real inflation problem depends on the ability of the government to provide adequate supply and stabilize domestic demand. Therefore, a government that is producing high inflation is a government that has lost control of macroeconomic management. Macroeconomic stability exists in a country if it manages to resolve the macroeconomic crisis that emerged within a year or two, which was the case of India.

Some studies argue that it is not clear whether applying inflation targeting leads to better performance of the economy, the performance of these countries after applying the inflation target policies are different than before applying them in containing inflation for only short terms. Therefore targeting policies might have lower short run effects in countries fighting

inflation, if they do not have negative recessionary impact on the economy. India fostered its real GDP growth rates while having high inflation rates by applying policies that focused on real production and productivity, shifting its economy towards successful sectors that generates income in the short run (industry and services), at the same time having acceptable tax rates, hence boosting investment and generating more income. Then; what matters most is GDP growth rate, emerging countries should focus on productivity and investment rather than inflation targeting and let the market correct itself.

*The author would like to thank Prof Dr. A.M. Rady, Prof Dr. Safa El fouly, and Prof Dr. Tamer Rady for their valuable comments on earlier drafts of this paper.*

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# **COMPARATIVE ANALYSIS OF THE LEVELS OF FINANCIAL LITERACY AMONG STUDENTS IN THE U.S., BELARUS, AND JAPAN**

**Sergey Borodich, Drury University**  
**Svetlana Deplazes, University of Kansas**  
**Nadzeya Kardash, University of Kansas**  
**Alexander Kovzik, University of Wisconsin Oshkosh**

## **ABSTRACT**

*This paper examines levels of financial literacy across students in the US, Belarus, and Japan. A cross country comparative analysis of the levels of financial literacy was conducted using descriptive statistics, correlation analysis, and hypothesis testing. We find that Japanese students, overall, outscored all others in the sample regardless of coursework in personal finance or grade level. Belarusian high school students performed on a par with US high school students without a separate personal finance class and both were outscored by Belarusian college students.*

*Students across all three nations demonstrated highest achievement on the topic of Earning Income and lowest achievement on the topic of Saving. Results by cognitive levels demonstrate that both Belarusian and Japanese students performed better at the knowledge level while American students generally scored higher at the application level.*

## **INTRODUCTION**

Financial literacy is very important for any society to be successful and competitive in a global community. Financially and economically literate people will make informed decisions as consumers, producers, investors, and citizens. This topic becomes especially urgent in times of economic and financial turmoil and uncertainty. It's a well known fact that lack of financial knowledge and skills have contributed to the latest economic and financial crisis. Many people, young in particular, have limited understanding of such important personal finance topics as budgeting, investment, credit, and spending which leads to making wrong financial decisions and aggravating the crises. These issues are wide spread all over the world, as well as in Belarus, and we find it interesting to conduct research on the status of financial education and the level of personal finance knowledge and skills. In particular, we wish to examine the skill level across

countries as compared to Belarus in order to raise awareness of the importance of education on these vital financial issues.

Evidently, effective management of money and finances requires special training. Economic and personal finance education is highly debated in developed countries. There is much research (see Mandell 1998, 2002, 2004; Fetterman and Hansen, 2006; Walstad and Rebeck, 2005; Jump\$tart Coalition for Personal Finance, 2008; Orton, 2007 among others) that suggests there is an urgent need for wide-ranging financial training and education of the general public. Numerous educational and business organizations put their forces together to develop personal finance curricula for secondary and college levels and try to disseminate the materials that can help teach young people to be financially literate, to make better decisions about earning income, managing finances, spending and saving, borrowing and investing.

The authors collected baseline information on financial literacy among both high school and college students in Belarus, a country with transitional economy and an underdeveloped financial sector, using existing test instruments and methods and, then, compare those results with results from the U.S. and Japan.

## **LITERATURE REVIEW**

The need for personal finance education has been identified in many countries and is well-documented by current research in the field. For instance, it is widely reported that many young people do not feel prepared for the financial challenges they will face, such as financing their education, buying a car, using credit, saving and investing, or purchasing a home. Recent analysis shows that sixty percent of young people in their 20s “feel they're facing tougher financial pressures than young people did in previous generations. And thirty percent say they worry frequently about their debt” ([www.nefe.org](http://www.nefe.org)). High credit card debt and relatively low savings rates have become a national concern in many developed, as well as developing, countries.

U.S. President's Advisory Council on Financial Literacy (2009) summarized the results of multiple surveys and tests on financial knowledge and reported consistently low average performance of teenagers. Jump\$tart coalition (2008) also reported the lowest scores of 48.3% demonstrated by the 12<sup>th</sup> graders for over a decade of testing in personal finance.

Even a brief overview of the previously conducted research on the topic demonstrates the evidence of palpable lack of financial competency among the young people in various countries. For example, Larry Orton (2007) provides a thorough overview of the major reasons for increased importance of financial education such as, changing demographics, growing complexity of the financial sector, declining personal savings along with rising indebtedness. International experience drawn on such countries as United Kingdom, the United States, and Australia shows similarities in poor results on recently conducted surveys to evaluate personal finance literacy. They also proved existing correlation between the levels of education and

income as well as overall overestimation of the level of personal finance knowledge by the majority of respondents (Orton, 2007).

## RESEARCH INSTRUMENT AND METHODS

A reliable test instrument that allows evaluating the level of personal finance literacy at secondary and college levels was developed by professors W. Walstad and K. Rebeck in 2005. The Financial Fitness for Life High School Test (Walstad & Rebeck, 2005) (further called FFFL test) includes 50 questions categorized into five content themes: The Economic Way of Thinking, Earning Income, Saving, Spending and Using Credit, and Money Management. The test items are also classified by cognitive levels as knowledge, comprehension, and application questions. The FFFL test is a valid and reliable instrument for analysis and, thus, was chosen for the purposes of this research. It was translated into Russian by the authors of the paper and was administered in Belarus in May of 2007 following standard test administrative procedures. The FFFL test examiner's manual contains data on comparing results demonstrated by high school students without prior financial training to those who took a course in personal finance. In Belarus, personal finance courses are not part of high school curricula while university students get some basic financial knowledge through the required courses on general principles or introductory economics that allows analyzing the role of personal finance training in raising the level of financial literacy. The U.S. data serve as a point of reference for the comparative analysis among the countries. Our design is consistent with the existing research conducted in Japan using the same test instrument for high school and university students.

Data in Belarus was collected using cluster sampling. There are currently 31 state universities in Belarus. Only three of them have traditionally been classic universities, while the other 28 are former technical or pedagogical institutes, which have been granted the new title of 'University' only recently as part of educational reform. We invited colleagues from the three classic universities, Belarusian State University, Grodno State University, and Gomel State University, to participate in our project and received administrative permission from the first two. To control for regional differences, we sent out invitations to 30 high schools also from the areas surrounding Minsk and Grodno and got positive responses from 13 (43% response rate). Two state universities and 13 secondary public schools participated in the project, 790 total subjects, including 219 university and 571 high school students.

We empirically address the following questions:

- \* What is the level of personal finance literacy of high school and university students in Belarus?
- \* What was student performance by specific personal finance themes and by cognitive levels identified in the test instrument?
- \* On what personal finance themes and items did students demonstrate better (above 67%) or worse (below 33%) achievement?

\* What were the differences and/or similarities in student performance in the U.S., Japan, and Belarus based on the data published in FFFL–HS Test Examiner’s Manual (2005) for the U.S. sample; reported at the NCEE Annual conference in 2005 for the Japanese sample (Yamaoka, et. al. 2005), and obtained for the Belarusian sample in 2007.

## DATA ANALYSIS

Aggregate statistics for Belarusian, USA, and Japanese samples are presented in Table 1. As seen in Table 1, university students in Belarus showed higher degree of personal financial literacy than high school students (51.9% and 45.5% of correct responses respectively) while both Japanese university and high school students showed almost identical (57.2% and 57.3%) results on the test.

<b>Table 1</b> <b>Aggregate Statistics</b>						
	Belarus		USA		Japan	
	High School	Universities	HS w/o PF	HS with PF	High School	Universities
Number of Institutions	13	2	14	14	10	13
Number of students	571	219	335	524	1434	1074
Mean score, raw	22.7	26	22.3	27.8	28.6	28.6
Mean score, %	45.5	51.9	44.7	55.7	57.3	57.2

The results of Belarusian and U.S. high school students without personal finance training are similar which is somewhat unexpected given that Belarus is a country in transition with a relatively undeveloped financial system and some test items are U.S. specific. Japanese high school students did significantly better than both Belarusian and U.S. groups. The U.S. students who had a personal finance course did better than those who didn’t have any special personal finance training (55.7 % and 44.7%) and also performed better than Belarusian university students and slightly worse than the Japanese university students.

Table 2 shows the distribution of the mean percentage of correct answers by themes for the samples from Belarus, Japan, and USA.



<b>Table 2</b> <b>Mean Scores (%) by Theme</b>							
Themes		Belarus		USA		Japan	
		HS	University	HS w/o PF	HS w/PF	HS	University
1.	Economic Way of Thinking	51.0	56.3	53.3	63.8	57.7	58.2
2.	Earning Income	55.6	63.1	52.2	64.2	73.3	74.4
3.	Saving	37.4	41.7	35.4	44.2	46.3	41.5
4.	Spending and Using Credit	42.4	49.6	37.9	53.2	55.9	56.9
5.	Money Management	40.8	49.0	44.7	53.0	53.5	54.7

As seen in Table 2, the “Saving” theme appeared to be the most difficult part of the test for all students across the three countries with the average percent of correct answers being less than 50%. The best results were demonstrated on the theme “Earning Income” also being consistent for all three countries. This could be explained by the fact that students usually have either part-time jobs or temporary summer jobs, providing them with first-hand experience in these areas; they are interviewed for those jobs, pay taxes and social security contributions, and all these experiences can help answer questions related to the theme of “Earning Income”. Students of that age may also be in the process of deciding what career to pursue or what major to chose, thus, they most likely discuss questions related to entrepreneurship, lifetime income, competitive job markets, and human capital with their parents, teachers, and friends.

On the other hand, savings is a more complicated concept because students usually have low disposable incomes, and their propensity to save is close to zero. They keep some of the money in checking accounts but they do not have sufficient skills in investing money in stocks, bonds, or real estate; managing saving accounts and calculating compound interest. Even if some of those topics are discussed in class, students do not feel any urgency in comprehending liquidity risk or criteria for successful investments. In addition, it may also be the case that students are not exposed to household discussions of this issue as frequently as they may be exposed to such discussions of other financial topics. Thus, we probably can conclude that theme “Earning Income” is more appealing to high school and university students while “Saving” is not quite relevant for those age groups.

In Table 3 the numbers of items with lower and higher percentage of correct answers among the three countries are summarized. We see that Belarusian high school students demonstrated results similar to American students who did not receive personal finance instruction; Japanese high school students outperformed both American and Belarusian groups. The test results of Belarusian university students were somewhat similar to the results of Japanese university students. The sample of American students who received personal finance training had the lowest number of scores below 33% and 50%. High school and university

students in Belarus had respectively 11 and 12 mean scores below 33%. The largest difference within the country groups in performance above 67% was in the Belarusian sample. Japanese university and high school students answered approximately the same number of questions above 67% which is substantially higher than in the other two countries.

<b>Table 3</b> <b>Number of Questions with Lower and Higher Percentage of Correct Answers</b>						
Percent Correct by Question	Belarus		USA		Japan	
	HS	University	HS w/o PF	HS w/PF	HS	University
Below 33%	11	12	14	3	10	8
Below 50%	30	21	32	18	20	20
Above 67%	6	15	6	13	20	19

While the differences in performance among Belarusian and the U.S. students may be a result of economic or financial training, the comparable performance of Japanese high school and university students is an interesting phenomenon that the Japanese researchers hypothetically attribute to student learning through mass media and family sources (Yamaoka et. al., 2005). The following two tables present test questions grouped by the percentage of correct responses below 33% and above 67% across all test themes and countries.

<b>Table 4</b> <b>Test Questions with the Mean Score Below 33%</b>						
	Belarus		USA		Japan	
Themes	High school	University	High School w/o PF	High School w/PF	High school	University
Economic way of thinking	5	3, 5	1, 3, 5	3	1, 3, 10	1, 3, 10
2. Earning Income	13	13				
3. Saving	21, 24, 26, 29	21, 26, 29	21, 22, 23, 24, 26, 28	21, 28	24, 26, 28	22, 24, 26, 28
4. Spending and Using Credit	34, 36, 38, 40	34, 36, 38, 40	33, 34, 38, 40		32, 34, 38,	38
5. Money management	49	44, 49	49		47	
Total # of Qs	11(22%)	12(24%)	14(28%)	3(6%)	10(20%)	8(16%)

**Table 5**  
**Test Questions with the Mean Score Above 67%**

	Belarus		USA		Japan	
Themes	High school	University	High School w/o PF	High School w/PF	High school	University
Economic way of thinking	6, 7, 9	4, 6, 7, 9	2, 4, 6, 7	2, 4, 6, 7	2, 4, 5, 7, 9	2, 4, 5, 7, 9,
2. Earning Income	14, 20	14, 15, 16, 18, 20	11, 14	11, 14, 17, 20	11, 12, 13, 14, 17, 18, 20	11, 12, 13, 14, 17, 18, 20
3. Saving		30		27, 30	25, 30	
4. Spending and Using Credit	31	31, 32, 37, 39		31, 39	31, 33, 39, 40	31, 33, 39, 40
5. Money management		41		45	43, 45	43, 45, 46
Total # of Qs	6 (12%)	15 (30%)	6 (12%)	13 (26%)	20 (40%)	19 (38%)

Data in Table 4 show that the number of questions in this category drops substantially (from #14 to #3) for the US students with and without Personal Finance instruction but stays approximately the same in Belarus and Japan and highly correlates between university and high school students. Questions on opportunity cost (#3), the rule of 72 (#24), liquidity risk (#26), credit bureau (#34), and unauthorized use of credit cards (#38) were the most difficult for high school and university students in all three countries except for the U.S. students who took a personal finance course.

Test results revealed that there are specific questions particularly challenging for each country. Belarusian students had difficulties answering questions related to job interviews (#13), common stocks (#29), risk of loan default (#36), and debit cards (#44). It may sound surprising that 62.7% of high school and 59.8% (Table 6) of university students believe it is appropriate for an employer to ask job applicants about disabilities but it reflects the reality in Belarus. Relatively high percentage of students doesn't see the connection between interest rates and nonpayment of a loan or the difference between debit and credit cards that may be explained by the specifics of the country's financial instruments and practices. The majority of Belarusian students have a misconception that common stocks secure dividends while only about 20% of the U.S. students think this is true. This may be explained by immaturity of the stock market in Belarus.

Table 5 shows that Japanese high school and university students demonstrated noticeably better results (20 and 19 respectively, with 17 identical questions) with both U.S. and Belarus students in the "above 67%" category. Further, Belarusian high school students and the U.S. students without FFFL training had only 6 out of 50 correct responses with the average score

above 67% although Belarusian university students and the U.S. students with FFFL course demonstrated much better results (15 and 13 questions respectively).

Though the increase in the number of correct answers is about the same, the composition is different. Analysis of the questions content reveals that in Belarus, university students did better on concepts introduced in economics courses, i.e. marginal benefits and marginal costs (#4), human capital (#15), demand for labor and wage determination (#16), cost of credit (#37), disposable income (#41) while the U.S. students who took personal finance courses performed better on questions related to specific financial knowledge, for example, areas of fast growing jobs (#17), risk and reward relationship (#27), and checking account management (#45). This could imply that economics courses can improve financial literacy but personal finance training is essential for learning some specific concepts.

Questions on opportunity cost of dropping high school (#7), characteristics of entrepreneurs (#14), net pay and tax deductions (#20), investment criteria (#30), advantages of using credit (#31), and pyramid schemes (#39) did not create many problems for the students in any of the three countries.

Data in Table 6 is introduced to analyze similarities and differences of students' responses for each question by countries. We show more specific information about the distribution of responses to each test question.

Comparison of percentages of correct answers shows similarity in student responses within countries but relatively big differences across countries. Correlation coefficients of correct responses between groups are:  $r_b = 0.92$  for Belarus,  $r_j = 0.97$  for Japan, and  $r_u = 0.91$  for the U.S. Cross country correlation coefficient between percentages of correct responses for Belarusian university students and US students with personal finance is  $r_{bu} = 0.48$ ; for Belarusian and Japanese university students is  $r_{bj} = 0.45$ ; and for U.S. students with personal finance and Japanese university students is  $r_{uj} = 0.56$ . These results suggest that country differences play a considerable role in the response pattern and, furthermore, the distribution data give some insights about the misconceptions students have on various personal finance topics.

For example, students from all three countries had difficulties identifying opportunity cost (#3) and referred to all forgone opportunities rather than the best one which shows incomplete understanding of the concept. However, 44% of Japanese university students and 39% of high school students demonstrated complete confusion by selecting the good itself as its opportunity cost.

Before administering the test we identified a number of questions (#12, 13, 19, 34, 38, 40, and 44) potentially knotty for the Belarusian group because of their U.S. specific content, such as functions of credit bureaus, types of financial institutions, usage of checks, or social security contribution. Analysis of the response distribution supports our expectations for all questions but #12 (ways of finding out about job opportunities) and #19 (who pays social security contributions).

Table 6: Percentage Response to Each Alternative

Table 6: Percentage Response to Each Alternative																						
Alternatives						Alternatives						Alternatives						Alternatives				
##		1	2	3	4	##		1	2	3	4	##		1	2	3	4	##		1	2	
1	BU	15.5	57.1	20.5	6.8	14	BU	3.2	86.3	8.2	2.3	27	BU	4.6	54.8	13.2	27.4	39	BU	4.6	11.4	
	BHS	21.5	43.8	29.3	5.4		BHS	5.8	79.3	11	3.9		BHS	8.2	50.1	16.3	25.4		BHS	7.5	19.3	
	US+PF	24	58	12	6		US+PF	4	86	9	2		US+PF	11	69	9	11		US+PF	7	17	
	US-PF	46	17	29	8		US-PF	6	76	13	5		US-PF	10	51	21	18		US-PF	13	22	
	JU	37.1	27.1	32.8	3		JU	4.7	77.1	15.4	2.4		JU	11.5	56.2	11.9	19		JU	2.1	3.5	
2	JHS	42	23.8	31.2	3.1	15	JHS	4.7	80.9	12.2	2.2	28	JHS	8.1	63.8	10.3	17.8	40	JHS	2.9	3.6	
	BU	15.1	32.9	43.8	8.2		BU	4.1	80.4	1.4	14.2		BU	41.1	12.3	30.1	16.4		BU	13.2	58.4	
	BHS	19.4	24	49.4	7.2		BHS	10.5	55.7	4	29.8		BHS	40.8	18.1	26.8	14.3		BHS	13.7	40.9	
	US+PF	1	4	94	1		US+PF	13	54	8	25		US+PF	22	18	37	23		US+PF	25	19	
	US-PF	3	8	88	1		US-PF	16	42	6	35		US-PF	20	25	34	20		US-PF	30	25	
3	JU	4.3	13.4	79.4	2.7	16	JU	12.1	66.8	8.1	12.5	29	JU	25.3	14	46.2	12.4	41	JU	6	6.1	
	JHS	4.6	13.8	79.5	2		JHS	10.8	65.1	9.9	14.1		JHS	32	13.6	42.5	11.9		JHS	7.5	7.4	
	BU	5.9	16	25.6	52.5		BU	11	6.4	72.6	10		BU	15.5	10.5	58.9	15.1		BU	3.2	12.3	
	BHS	11.4	22.4	33.1	33.1		BHS	13.8	10.3	58.5	17.3		BHS	22.8	18.2	42.9	16.1		BHS	11	23.3	
	US+PF	7	12	30	50		US+PF	21	15	56	9		US+PF	55	17	17	10		US+PF	24	23	
4	US-PF	15	25	14	46	17	US-PF	25	16	49	11	30	US-PF	48	15	21	16	42	US-PF	27	23	
	JU	3.8	44.1	14.2	36.8		JU	25.1	15.4	47	11.8		JU	41.1	15.3	35.7	6.4		JU	29.5	14.9	
	JHS	3.6	38.7	13.5	44.2		JHS	18.3	12.1	59.3	10.3		JHS	43.8	9.8	41.4	5		JHS	26.6	19.5	
	BU	70.8	6.4	9.1	13.7		BU	38.8	6.4	0	54.8		BU	10.5	6.4	73.1	10		BU	9.1	10.5	
	BHS	52.9	10.3	13.8	22.9		BHS	47.6	15	4.2	33.2		BHS	14.3	16.4	55.3	14		BHS	14.9	15.6	
5	US+PF	82	6	7	6	18	US+PF	71	7	9	12	31	US+PF	10	6	74	10	43	US+PF	9	13	
	US-PF	80	7	10	3		US-PF	57	13	17	13		US-PF	18	13	54	15		US-PF	12	14	
	JU	85.2	4	4.2	6.5		JU	76.8	5.1	6	11.6		JU	8.1	13.1	64.1	12.7		JU	8	11.5	
	JHS	85.1	3.8	5.7	5.4		JHS	81.3	4	7.2	7.5		JHS	6.8	14.4	67.9	10.9		JHS	8.5	10.8	
	BU	5.9	54.8	10.5	28.8		BU	8.2	5.9	11.9	7.4		BU	4.1	1.8	4.6	89.5		BU	25.6	37.9	
6	BHS	10.9	43.8	20.5	24.9	19	BHS	5.8	9.3	20.5	64.4	32	BHS	7.5	10.5	9.1	72.9	44	BHS	19	36.1	
	US+PF	14	27	19	41		US+PF	8	12	27	54		US+PF	6	12	7	75		US+PF	17	61	
	US-PF	15	23	30	31		US-PF	11	15	32	42		US-PF	11	19	10	61		US-PF	26	44	
	JU	3.1	14	14.7	67.6		JU	5.1	4.1	10.1	79.5		JU	3.3	6.1	5.1	84.4		JU	9.1	81.8	
	JHS	3.4	11	14.3	71.6		JHS	8.2	6.7	11.9	73.2		JHS	3.5	7.8	4.8	83.9		JHS	10.2	82.1	
7	BU	9.1	1.4	12.8	76.7	20	BU	8.7	11.4	66.7	13.2	33	BU	21	3.7	72.6	2.7	45	BU	15.5	32.9	
	BHS	8.1	3	14	75		BHS	12.5	13.7	48.9	24.9		BHS	29	13.4	51.5	6.1		BHS	13.5	37.3	
	US+PF	7	4	9	80		US+PF	23	12	50	16		US+PF	22	9	63	6		US+PF	8	62	
	US-PF	6	4	7	83		US-PF	27	9	37	28		US-PF	25	16	51	8		US-PF	10	51	
	JU	2.6	3.3	32.1	61.8		JU	15.1	20.7	59.7	4.1		JU	46.9	8	38.4	5.5		JU	29.2	34.6	
8	JHS	3.5	4.5	29.6	62.3	21	JHS	15.5	31.2	48.8	4.4	34	JHS	51.7	10	31.4	6.8	46	JHS	30.6	34.2	
	BU	78.1	4.1	2.7	15.1		BU	77.2	12.8	4.6	5.5		BU	1.4	61.6	11.4	25.6		BU	23.3	5	
	BHS	79	5.5	3.7	11.8		BHS	74.6	13.6	6.5	5.3		BHS	8.4	54.5	17.4	19.7		BHS	18.9	19.2	
	US+PF	84	5	6	5		US+PF	78	8	7	6		US+PF	7	34	38	22		US+PF	18	7	
	US-PF	78	7	9	6		US-PF	66	13	10	11		US-PF	9	16	43	31		US-PF	23	8	
9	JU	87.5	3.4	4.7	4.4	22	JU	77.4	10.1	6.1	5.5	35	JU	2.1	88.4	7.1	1	47	JU	8.5	8.8	
	JHS	81.6	6.2	5.6	6.5		JHS	77.5	10.8	6.7	4.9		JHS	3.1	86.9	8	1.9		JHS	11.3	8.3	
	BU	19.2	6.8	61.2	12.8		BU	3.2	9.1	15.1	72.6		BU	34.7	28.8	26.5	10		BU	48.9	23.3	
	BHS	22.1	13.3	40.8	23.8		BHS	7.2	13.9	19.1	59.8		BHS	31	28.6	29.9	10.5		BHS	42.9	24.2	
	US+PF	4	17	62	17		US+PF	7	13	32	49		US+PF	28	16	41	16		US+PF	60	22	
10	US-PF	7	18	56	19	23	US-PF	11	17	23	50	36	US-PF	30	16	27	27	48	US-PF	57	18	
	JU	15.1	18	50.7	15.9		JU	8.1	16.9	33.4	40		JU	7.7	39.9	33.3	17.2		JU	67.7	7.4	
	JHS	18.3	18.5	50.1	13.1		JHS	7.3	20.9	36.1	35.7		JHS	6.6	38.2	32.7	22.5		JHS	59.2	11.9	
	BU	5.5	73.5	11.9	9.1		BU	1.8	15.5	28.8	53.9		BU	55.7	10.5	17.8	16		BU	2.3	22.4	
	BHS	8.6	67.8	7.4	16.3		BHS	7.2	24.7	23.6	44.5		BHS	49.6	13.7	23.1	13.7		BHS	11	32.9	
11	US+PF	15	52	12	20	24	US+PF	9	33	24	33	37	US+PF	64	19	7	10	49	US+PF	5	19	
	US-PF	8	38	21	32		US-PF	13	37	27	23		US-PF	57	19	14	10		US-PF	9	20	
	JU	4	80.2	4.4	11.3		JU	17.2	28.6	20.8	33.4		JU	52.1	40.4	2.7	3.2		JU	8.4	26.4	
	JHS	5.1	77.7	5	12.2		JHS	10.7	24.1	19.9	45.3		JHS	51.8	39.7	4.5	4		JHS	10.6	26.5	
	BU	6.4	12.8	33.8	47		BU	17.4	13.7	11	58		BU	21	11.9	26.9	40.2		BU	16.4	24.7	
12	BHS	7.5	19.1	29.9	43.4	25	BHS	23.7	19.2	16.8	40.3	38	BHS	23.2	23.2	27.3	26.3	50	BHS	15.6	25	
	US+PF	8	8	28	56		US+PF	23	24	9	44		US+PF	13	19	53	14		US+PF	6	27	
	US-PF	10	10	33	48		US-PF	28	29	11	32		US-PF	13	25	44	18		US-PF	9	25	
	JU	8.2	17.1	45.6	28.4		JU	10.6	41.8	4	42.3		JU	18.3	14.5	49.9	15.3		JU	11.1	44.8	
	JHS	7.6	10.8	50	31.6		JHS	8.7	37.7	5.4	48.2		JHS	14.2	17.2	49.8	18.8		JHS	11.2	46.2	
13	BU	63.5	27.9	5.5	3.2	26	BU	18.3	33.8	41.6	6.4	39	BU	10.5	68.9	5.5	15.1	51	BU	22.8	5.9	
	BHS	63.6	25.9	6.3	4.2		BHS	16	32.4	43.9	7.7		BHS	15.8	53.9	15.1	15.2		BHS	22.9	16.3	
	US+PF	76	6	2	15		US+PF	22	34	36	8		US+PF	15	46	19	21		US+PF	35	18	
	US-PF	68	6	4	22		US-PF	21	25	40	14		US-PF	19	36	22	23		US-PF	25	23	
	JU	93.5	3.5	1.1	1.5		JU	13.4	26.2	48.4	10		JU	13.3	47.7	9.6	27.5		JU	57	6.7	
14	JHS	89.5	5.4	2.6	2.4	27	JHS	15.2	28.3	46.8	9.7	40	JHS	12.6	44.4	11.9	31.2	52	JHS	58.3	9.8	
	BU	22.4	2.3	28.3	47		BU	5.5	55.7	18.7	20.1		BU	3.7	21	21.5	53.9		BU	27.4	54.8	
	BHS	16.2	8.2	35.6	39.9		BHS	8.8	52.4	21.1	17.8		BHS	10.2	25.7	28.6	35.5		BHS	18.7	44.1	
	US+PF	8	20	21	52		US+PF	11	45	29	15		US+PF	48	13	26	14		US+PF	15	55	
	US-PF	6	22	33	39		US-PF	7	48	28	16		US-PF	16	16	43	25		US-PF	15	49	
15	JU	2.4	2.3	4.6	90.2	28	JU	5.3	76.3	8.3	8.7	41	JU	26.9	31.8	9.3	29.9	53	JU	13.3	64.3	
	JHS	3.2	3.2	7	86.6		JHS	5	78.1	9.1	7.8		JHS	24.8	37.6	8.5	29.1		JHS	14.5	60.8	
	BU	12.3	3.7	24.2	59.8		BU	16	19.2	16.4	48.4											
	BHS	8.9	4.7	23.6	62.7		BHS	16.6	20.7	17.2	45.5											
	US+PF	4	3	65	27		US+PF	36	16	19	29											
16	US-PF	9	3	46	41	29	US-PF	30	19	17	34	42										
	JU	2	2.5	75.8	19.5		JU	18.4	15.4	4.5	60.5											
	JHS	4.5	5.6	70.4	19.4		JHS	19.5	15.2	4.6	60.7											

As seen from Table 6, 58.4% of Belarusian university and 40.9% of high school students think that commercial banks charge the highest interest rates (#40). Since the distribution of answers between the other three options is quite even, we infer that this could be interpreted as a lack of basic knowledge about the U.S. financial institutions, such as payday loan companies or credit unions, which do not exist in Belarus. Moreover, 34.7% of university and 31% of high school students answered that a credit bureau extends loans to qualified buyers (#34) mistaking it for a banking institution.

The most revealing example is question #38 that addresses issues of liability for fraudulent charges on a credit card. Only 3.7% of university students (the lowest percentage of correct answers for all groups of students) and 10.2% of high school students chose the correct answer that the liability is limited to \$50, while respectively 53.9% and 35.5% of them think that credit card holders are fully liable for the stolen amount.

Having said that, we still feel it was reasonable not to modify and adjust FFFL test for administering to Belarusian students for several reasons. Firstly, these topics are discussed in translated economics textbooks widely used in Belarus. Secondly, these issues are becoming more applicable as Belarus is being integrated into international financial systems. And, finally, it allows conducting cross country comparisons.

<b>Table 7: Difference in Percentages of Correct Answers between the Groups (t-statistics in parenthesis)</b>			
	Belarus	USA	Japan
Mean	6.50**(4.93)	11.04**(10.38)	-0.18 (-0.26)
Median	5.20	10.00	0.20
St.Dev.	9.28	7.52	4.92
Range	33.50	44.00	24.29
Minimum	-8.82	-3.00	-13.30
Maximum	24.67	41.00	10.90
Negative sign means high school students without personal finance training had higher percentage of correct answers than university students or students with personal finance training. ** Value is statistically significant.			

Descriptive statistics for further analysis of the differences in percentages of correct answers for high school students without personal finance and university students and U.S. high school students with personal finance training for the three countries is presented in Table 7.

Data in Table 7 show positive mean difference of the percentage of correct answers between groups for two countries but Japan. On the average, university students and high school

students with personal finance training have higher percentage of correct responses. The highest average mean difference of 11.04% of correct answers is for the U.S. samples. It is statistically significant. Mean difference for the Belarusian groups is 6.5%, which is also statistically significant. Unlike the other two countries, mean difference of -0.182 for the Japanese samples is negative and not statistically significant. In spite of the similarities between Belarusian and U.S. groups in positive mean differences we would like to emphasize nonexistence of correlation for the test items. Correlation coefficients between differences by items for Belarus and U.S. is  $r_{bu} = -0.003$ , for Belarus and Japan is  $r_{bj} = 0.06$ , for USA and Japan is  $r_{uj} = 0.10$ . Belarusian university students and U.S. high school students with personal finance outperformed high school students in their countries but on different test questions. Mean difference of 11.04% of correct answers for American groups is significantly higher than 6.5% mean difference for Belarusian students. These statistics support our assumption that teaching specific personal finance topics will increase the level of financial literacy more than teaching general economic courses that are mandatory in Belarusian universities. Maximum positive differences for Belarusian and American students are 24.67% (human capital, #15) and 41% (becoming a millionaire, #1) respectively. Maximum negative differences are -8.82% (lifetime income, #17) and -3% (choice, #6 and market price risk, #25).

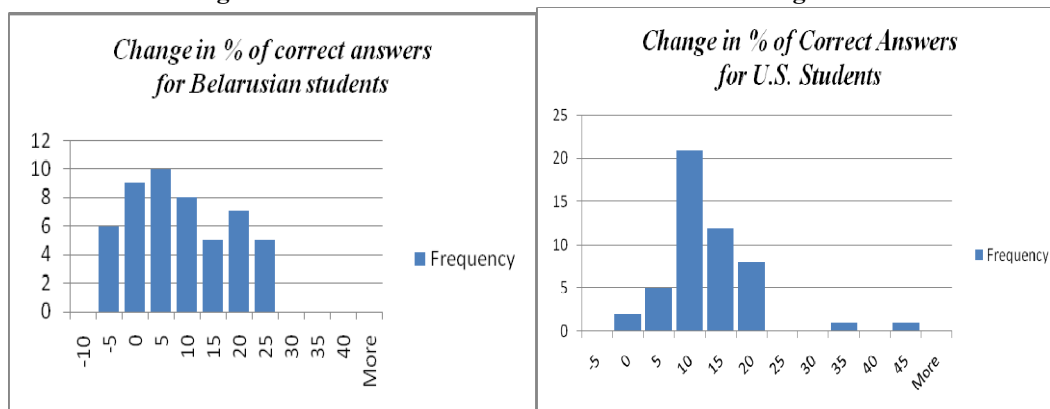
Table 8 includes frequency distributions of the differences in percentage of correct answers for Belarus and U.S. respectively. Figures 1a and 1b present histograms of these distributions.

<b>Table 8</b>			
<b>Frequency Distributions of the Differences in Percentage of Correct Answers for Belarus and USA</b>			
Belarus		USA	
Change in % of correct answers	Frequency	Change in % of correct answers	Frequency
[-10, -5)	6	[-5, 0)	2
[-5, 0)	9	[ 0, 5)	5
[ 0, 5)	10	[5, 10)	21
[5, 10)	8	[10, 15)	12
[10, 15)	5	[15, 20)	8
[15, 20)	7	[20, 25)	0
[20,25)	5	[25, 30)	0
		[30,35)	1
		[35,40)	0
		[40,45)	1

As seen from Table 8 and Figures 1a and 1b, Belarusian high school students had higher percentage of correct answers than university students on 15 questions (#2, 3, 7, 11, 17, 21, 26, 29, 34, 36, 38, 40, 44, 48, and 49). For all questions but two (#7 and 11) the students of both levels showed results below 50%. On 6 questions (#2, 3, 17, 29, 38, and 40) out of the given

above 15 questions the difference was more than 5%. For questions 7 and 11 mean difference is negligible. U.S. students without personal finance outperformed students with personal finance training only in 2 cases out of 50 (#6 and 25) and the difference was only 3%. On the two questions about becoming a millionaire (#1) and unauthorized use of credit cards (#38) difference in percentage of correct answers for American students was greater than 30%. Both of them require special knowledge that students most likely get through a special course on personal finance.

**Figures 1a and 1b**  
**Percent Changes of Correct Answers for Belarusian and U.S. Students**



Results by cognitive levels, themes and countries are presented in Table 9. The mean percentages of correct responses of Belarusian students are very similar at the knowledge and application levels: 43.8%, 54.9% and 48.3%, 54.3% correspondingly. These results are somewhat comparable to the U.S. results but rather different from the results of Japanese students. In summary, results of Belarusian university students by cognitive levels can be expressed as follows: Knowledge  $\geq$  Application > Comprehension.

For American students with personal financial instruction, according to Japanese researchers (Yamaoka et. al., 2005), cognitive levels ranking is Application > Comprehension > Knowledge, while for Japanese university students the results are different: Knowledge > Comprehension > Application. Both Belarusian and Japanese university students showed the best results at the knowledge level. Their scores are even higher than demonstrated by the U.S. students with personal finance instruction. On the other hand, American students were better at the application level. Belarusian high school students showed the following results: Application > Knowledge  $\geq$  Comprehension demonstrating substantially lower scores on the test items classified as knowledge level compared to the university students but higher than the U.S. counterparts.



**Table 9**  
**Test Results by Cognitive Level**

##	Themes and Items	Knowledge						Comprehension						Applications					
		BHS	BU	USA - PF	USA +PF	JHS	JUN	BHS	BU	USA - PF	USA +PF	JHS	JUN	BHS	BU	USA - PF	USA +PF	JHS	JUN
	<b>The Economic Way of Thinking</b>	43.4	47	48	56	31.6	28.4	50.3	56.9	52.2	64.5	60.8	51.1	55	58.2	55.3	65.3	60.1	62.3
1	Becoming a Milliner							43.8	57.1	17	58	23.8	27.1						
2	Financial Success							49.4	43.8	88	94	79.5	79.4						
3	Opportunity Cost													33.1	25.6	14	30	13.5	14.2
4	Cost and Benefit													52.9	70.8	80	82	85.1	85.2
5	A Free Lunch							24.9	28.8	31	41	71.6	67.6						
6	Choice							75	76.7	83	80	62.3	61.8						
7	Opportunity Cost													79	78.1	78	84	81.6	87.5
8	Scarcity							40.8	61.2	56	62	50.1	50.7						
9	Human Resource							67.8	73.5	38	52	77.7	80.2						
10	Decision-making Process	43.4	47	48	56	31.6	28.4												
	<b>Earning Income</b>	51.3	61.4	43.4	56.2	71	74.6	55.5	58	63.3	75.7	80.3	82.1	66.6	74.9	57.5	67	68.4	62.2
11	Getting a Job							63.6	63.5	68	76	89.5	93.5						
12	Looking for a Job	39.9	47	39	52	86.6	90.2												
13	Job Interview							23.6	24.2	46	55	70.4	75.8						
14	Entrepreneur							79.3	86.3	75	86	80.9	77.1						
15	Human Capital	55.7	80.4	42	54	65.1	66.8												
16	Competitive Job Market													58.5	72.6	49	56	59.3	47
17	Lifetime Income	47.6	38.8	57	71	81.3	76.8												
18	Net Pay	64.5	74	42	54	73.2	79.5												
19	Social Security Contributions	48.9	66.7	37	50	48.8	59.7												
20	Deduction and Net Pay													74.6	77.2	66	78	77.5	77.4
	<b>Saving</b>	48.1	57.1	37	48	49.9	44.7	33.6	35.9	38.7	46.8	48.2	44.6	38.5	43.9	24	33.5	36.8	29.1
21	Opp. Cost of Cmpnd %							19.1	15.1	23	32	36.1	33.4						
22	The Power of Cmpnd %													44.5	53.9	23	33	45.3	32
23	The Power of Cmpnd %							40.3	58	32	44	48.2	42.3						
24	The Rule of 72													32.4	33.8	25	34	28.3	26.2
25	Market Price Risk							52.4	55.7	48	45	78.1	76.3						
26	Liquidity Risk							16.6	16	30	36	19.5	18.4						
27	Risk and Reward							50.1	54.8	51	69	63.8	56.2						
28	The Real and Nominal RR	40.8	41.1	20	22	32	25.3												
29	Common Stock							22.8	15.5	48	55	43.8	41.1						
30	Criteria of Investment	55.3	73.1	54	74	67.9	64.1												
	<b>Spending and Using Credit</b>	42.3	44.1	21.5	37.5	59.8	60.8	46.2	55	45.5	57.5	55.1	57.7	31.3	38.9	32	57.5	54.4	50.8
31	The Advantage of Using Credit							72.9	89.5	61	75	83.9	84.4						
32	Loan Transaction							51.5	72.6	51	63	38.4	31.4						
33	Judging of Creditworthiness	54.5	61.6	16	34	86.9	88.4												
34	A Credit Bureau	30	26.5	27	41	32.7	33.3												
35	Paying Back a Loan							49.6	55.7	57	64	51.8	52.1						
36	Risk of Loan Default							27.3	26.9	44	53	49.8	49.8						
37	The Cost of a Loan							53.9	69	36	46	44.4	47.7						
38	Unauthorized Use of a Credit													10.2	3.7	16	48	24.8	26.9
39	A Pyramid Scheme													52.4	74	48	67	84	74.7
40	A Payday Loan Company							21.9	16.4	24	44	69.2	73.5						
	<b>Money Management</b>	43.7	53.1	43	51	62.9	63.6	35	42.6	40.5	49	44.8	47.3	46.8	53.9	57.5	65	52.3	51.9
41	Disposable Income	56.4	74.9	37	42	44.1	44.5												
42	Net Worth	39.4	50.7	34	41	66.2	60.3												
43	Pay Yourself First	36.1	37.9	44	61	82.1	81.8												
44	A Debit Card							37.3	32.9	51	62	34.2	34.6						
45	Balance at a Bank													50.3	64.9	59	69	70	70.5
46	A Type of Insurance (TI)	42.9	48.9	57	60	59.2	67.6												
47	A TI for Autos							35.7	59.8	37	44	25.9	33.2						
48	A Deductible													43.3	42.9	56	61	33.3	34.7
49	Another TI for Autos							22.9	22.8	25	35	58.3	57						
50	Life Insurance							44.1	54.8	49	55	60.8	64.3						
	<b>Mean % Correct Answers</b>	43.8	54.9	39.6	50.8	61.3	61.9	43.5	49.2	46.8	57.4	56.2	56.6	48.3	54.3	46.7	58.4	54.9	52.3

As pointed out in our comments to Table 7, the mean difference for the U.S. data was 11.045% and 6.5% for Belarus. Data in Table 9 show that for the U.S. students the mean differences are 11.2% by knowledge level, 10.6% by comprehension level, and 11.7% by application level while for Belarus corresponding numbers are 11.1%, 5.7%, and 6%. These data reflect the well-known fact that Belarusian university education is traditionally oriented to teaching at the knowledge cognitive level that continues to resemble the ex-soviet approach of teaching theoretical rather than practical skills.

At the knowledge level, Belarusian university students outperformed American students with personal financial instruction on all themes but “The economic way of thinking”. However, this theme includes only a single question (#10) which doesn’t provide ample grounds for the analysis. Furthermore, Japanese students also demonstrated low performance (28.4%) on this question related to decision making process though, in general, they showed substantially higher results at the knowledge level (61.3% and 61.9%).

At the comprehension level, American students achieved considerably higher results compared to Belarusian students for all themes. At the application level, Belarusian students performed better than American on the themes “Earning income” and “Saving”. For the other three themes American students demonstrated higher results than Belarusian. The data from Table 8 also suggest that theme “Saving” was the most complicated for the students of all three countries. The best performance students showed for the theme “Earning income”. It is worth mentioning, though, that uneven distribution of test questions across cognitive levels imposes certain limitations on the statistical analysis.

## CONCLUSIONS

Financial education is essential for preparing young people to solve and analyze real world problems. To address the challenges of rapid globalization, internationalization of the world business communities it is particularly important for a transitional country with underdeveloped financial system to offer high quality personal finance education programs. The findings of the study provide information that can be useful for educators while developing recommendations on how to improve student performance in personal finance and economics, and to empower them with the knowledge and skills necessary to efficiently function efficiently in the global community.

We have shown that, on average, Belarusian university students performed better than high school students and Belarusian high school students demonstrated similar level of achievement with American high school students without personal finance instruction which was somewhat unexpected given that Belarus is a country in transition with a relatively undeveloped financial system and some test items are quite U.S. specific. Japanese university and high school students showed almost identical results on the test and outperformed both Belarusian and American students. The U.S. students with FFFL instruction did better than those who didn’t

have any special personal finance training, better than Belarusian university students and slightly worse than the Japanese university students.

Students across the three countries demonstrated the highest achievement on topic Earning Income and the lowest achievement on topic Saving. We identified questions of equal difficulty and found that they were similarly challenging for students regardless of their country of origin. We found stronger correlation of student correct responses within countries and rather low correlation across countries.

Data analysis at cognitive levels showed that Belarusian and Japanese students had higher scores at the knowledge level while U.S. students showed better results at the application level. On the contrary, the application level questions were the most difficult for Belarusian and Japanese students while the knowledge level questions created the most problems for the U.S. students.

These results suggest that country differences, type of instruction, and relevance of test questions play considerable role in the response pattern. Our research analysis suggests the necessity of personal finance training at both secondary and higher levels of education; it also confirms that targeted training in personal finance contributes to improvement of test performance regardless of the student grade level. Taking into account that general economic education courses are mandatory at Belarusian universities, adding requirements for personal finance training would help increase the level of both economic and financial literacy. We believe that economic and personal finance instruction should complement rather than substitute each other in this process.

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# VICTIMS AND VICTORS: FACING THE CHALLENGES OF CHANGING TIMES

Thomas H. Stevens, Carland College

## ABSTRACT

*There is much we can learn from the textile industry, which has been particularly hard hit by globalization. This article first explores the history of the industry in America, revealing a pattern of exploiting cheap labor, circumventing regulation, and leveraging Government actions to its benefit. Next the events precipitating the textile crisis are discussed and related to events of the past. Finally, the outcomes are considered, calling into question the efficacy of corporate strategies and of government measures taken to support an industry teetering on the brink of obsolescence.*

*The most important message conveyed herein, however, is not found in the stories of the victims of change, but in those of the victors over change – the entrepreneurs whose vision focused not on the past, but on the endless possibilities of the future.*

*Oppugn thee not the winds of change,  
Pray they billow thy sails unfurled.  
Lest eternal shoreless doldrums  
Be thy lot in tomorrow's world.*

Tom Stevens

## PROLEGOMENON

*It is not necessary to change. Survival is not mandatory.*

W. Edwards Deming

Andy Grove, former CEO of Intel, stated “Success sows the seeds of its own destruction” (Grove, 1999). In essence this reveals one of the most insidious side effects of success – a sense of innate superiority. Grove’s comment regarding industry applies equally to the individual and to nations as well. It strikes youth with particular ferocity because the young have a staunch but

unproven belief in self coupled with an air of invulnerability. This combination is both a vital asset and a fatal flaw.

There are countless examples of individuals and corporations with great promise that have met early demise due to this phenomenon, self-evident truths that requires no further exposition. Among the nations of the modern era, the United States of America provides the iconic example.

Within only a few centuries – moments on the time scale of civilization – this nation rose from a motley crew of idealistic rebels to become an invincible power, creator of wondrous technological innovations, architect of a new economic order, and premier example of the potential of a free society. Sadly, we have lost sight of that which brought us such greatness and have taken it to be our birthright.

In total, the changes we brought to the world have been of benefit to the advancement of our species. We can rightfully claim a pivotal role in jump starting a new era of evolution, setting in motion unprecedented changes on a global scale full of promise for a better future for all of mankind. It is profoundly regrettable that we now resist that which we have set in motion, that pride for what we have wrought has given way to false pride in what we once were.

Periods of transition are marked by chaos and fear. There are many who would have us follow Miss Havisham's path; jilted by an unscrupulous world interested only in our wealth, we retreat into a delusional place apart from the world, a place wherein we stop the hands of time. We are on a mezzanine; either we rise to the challenge or we retreat to wither away in our decaying mansion.

On the Devil's behalf, in light of our explosive advancement and what had been the continual betterment of each successive generation, it is understandable that we came to believe in limitless wealth for everyone willing to work for it. Our ignorance of the finiteness of our resources and of the impact our actions would have on future generations may once have excused the culture of consumption, the possession based value system, and the sense of entitlement engendered by our success. But we can no longer afford to feign such ignorance; to stay the course in the name of progress is inexcusable.

The endless rhetoric decrying the unfairness of globalization is moot. Globalization is here and cannot be undone. Our world and its people are evolving; it is a process not to be resisted but embraced and cherished. Extinction is a necessary part of that process; it clears away yesterday's debris to make room for whatever is next to come. Yet extinction is not inevitable; it is but a product of the choices we make and our ability to adapt to a changing environment. Our nation was forged with the entrepreneurial spirit and that spirit took us to greatness. We must once again call upon entrepreneurs to guide us through these times of change.

## INTRODUCTION

*Coming together is a beginning; keeping together is progress; working together is success.*

Henry Ford

It is not the intent of this paper to debate government's role in the free market; that debate has continued for decades and is not to be won or lost on these few words. However, an overarching premise is in order to provide clarity and structure; for this paper it shall be:

*With proper oversight and regulation a free global market will produce the most stable and healthy economy in the long term. Proper oversight and regulation in this context consist only of those actions necessary to curtail predatory business practices and to prevent exploitation of consumers. Furthermore, to minimize the threat of precipitous changes in the market, it may be necessary and acceptable to impose restrictions, provided such restrictions are equitable, of the smallest magnitude possible to be effective, and of the shortest reasonable term.*

The evolution towards a global economy has been fraught with many painful experiences for Americans. For decades, as we led the world forward we fell ever deeper into complacency. We came to believe that our place in the world order was our birthright and that we are entitled to direct the course of world economics.

In this new era the ability to quickly and proactively respond to market changes will determine whether corporations survive; artificial supports can only impede that ability. In all areas of human endeavor – social, political, and economic – the time has come for us to expand our vision, to redefine ourselves in the broader scope of a global community, and to assume the role of a true leader - one that leads by example and not by dictates and threats.

The deeply emotional reaction to the textile crisis is understandable, however. The industry is tightly woven into the tapestry of our history. Much has been lost, and the price we have paid is dear; we have had to learn many hard lessons. But stories of hope and promise abound as well; surely many chapters are yet to be written before this story ends.

Today we face the greatest challenges in our history, but the opportunities presented to us are greater still. All we need do is accept these changing times for what they are, and channel our every resource into the boldest of ventures - building tomorrow.

## NEW ENGLAND: THE BIRTH OF THE INDUSTRY

*If you would understand anything, observe its beginning and its development.*

Aristotle

In the early years America was a land of vast potential, its seemingly boundless resources waiting only for wealth and manpower to exploit them. In Virginia and Maryland early settlers set out to build their empires on tobacco, a crop native to the land that had become immensely popular abroad. To reap their fortunes, however, demanded “labor which was cheap but not temporary, mobile but not independent, and tireless rather than skilled” (Jordan, 1968). The solution was slavery, and its success in maximizing profit soon spread to other crops.

The first slaves “were brought by Captain William Pierce of the Salem ship *Desire* in 1638” and soon “a brisk trade got under way”, which “proved to be the salvation of New England’s economy” (Jordan 1968). Robert Dabney, in *A Defence of Virginia*, neatly summarizes the chain of events that gave rise to our textile industry:

The shipping which first earned wealth for its owners in carrying the bodies of the slaves, was next employed in transporting the cotton, tobacco, and rice which they reared, and the imports purchased therewith. And when the unjust tariff policy of the United States allured the next generation of New Englanders to invest the swollen accumulations of their slave trading fathers in factories, it was still slave grown cotton which kept their spindles busy. (1867, 42-43).

With the success of industrialization in the North came an understanding that a stronger federal government was vital to sustaining economic growth. A cause was needed around which the government could rally support, and because slave labor had been producing diminishing returns for several years, abolition was ideal for the purpose. While the ensuing war was adding momentum to industrialization in the North it was laying waste to the agrarian economy of the South.

## THE INDUSTRIALIZATION OF THE SOUTH

*If hard work were such a wonderful thing, surely the rich would have kept it all to themselves.*

Lane Kirkland

The growth and diversification of northern industry produced a large pool of skilled labor, which consequently led to ever escalating labor costs. At the same time the cost of inputs to the textile mills was also rising as a result of emancipation and the devastation of southern plantations during the war. Northern investors were quick to see opportunity amidst the ruin, and to exploit the tattered southern economy.



Thus textile mills throughout New England began to close their doors as the industry migrated southward. There mill owners found a unique opportunity to set up shop free of the constraints imposed in the north – they would build entire towns for the sole purpose of serving their mills.

The immediate lure of the South was the abundance of cheap labor. These were the “yeomanry,” “impoverished, landless or small-holding whites on the verge of leaving their farms” (Moore, 1999). Because this was a rural population, mill towns could be built distant from existing urban centers where they would otherwise have to compete for available labor. Building a stable and productive workforce with these people, however, was not without its challenges.

The southern working class was perceived to be lazy and shiftless by northern investors and the southern elite alike. In truth, these were people defeated in a war of principles, people who had lost almost everything to the northern invasion and who now faced losing their way of life as well. Worse yet, they were called upon by the elite among their own to work as the slaves had worked. Understandably these were people without a purpose; unless that changed, little could be expected of them.

To that end a campaign was launched to teach southerners “that the path to regional and personal redemption from defeat and poverty lay in physical labor, and that such labor was not the domain of blacks but of Christian whites” (Moore, 1999). The campaign’s rhetoric was both colorful and bountiful, typified by an 1880 editorial in the *Raleigh News and Observer*, cited by Moore:

We must have less politics and more work, fewer stump speakers and more stump pullers, less tinsel and show and boast, and more hard, earnest work. We must make money – it is a power in this practical business age. *Teach the boys and girls to work and teach them to be proud of it.* [emphasis the author’s] (1999).

The final sentence became the mill owners’ rallying cry because it not only made working for wages a social issue, it gave them means to avert charges of exploitation (Moore, 1999). [That the editor’s intent was to promote child labor, however, is highly questionable.]

The campaign to elevate southern workers also gave mill owners a perfect forum for currying public favor for their towns. Platitudes were plentiful, such as these, cited by Moore: “Our mills shall be run not only to make cotton cloth, but to make the right kind of men and women as well.” And, “We make American citizens, and run cotton mills to pay the expenses” (Moore, 1999). Motivating these people to go to work, however, was only the first step.

Discontent still ran deeply through the population, drawing great numbers to the Farmers’ Alliance, a politically active “fraternal organization of white farmers and other rural southerners, including teachers, ministers, and physicians” whose agenda “included demands for the free coinage of silver, a graduated income tax, the direct election of U.S. senators, and governmental ownership of the means of communication and transportation.” The alliance also “introduced the subtreasury plan, which called for the federal government to give farmers low-interest loans

against nonperishable crops, which were to be stored in government-built warehouses" (Hild, 2007).

Although the Alliance failed to achieve much of its agenda, its popularity was of considerable concern to those in power. Clearly these were people willing to fight for a cause, and the one cause that mill owners feared the most was the labor movement.

## **MILL TOWNS: CULTURE FORMING THE SOUTHERN WORKER**

*The enemy came. He was beaten. I am tired. Goodnight.*

Vicomte Turenne

In the final two decades of the 19<sup>th</sup> century there were 23,000 strikes against 117,000 businesses in the United States, many of which were violent (Davis, 2003). The mill owners felt the key to preventing that from happening in the South was control – “control of housing and community institutions such as churches and school”. The mill towns “produced a place-based form of worker identity” that proved to be “an obstacle to effective labor organization” (Moore, 1999). In addition, the mills provided many other amenities – such as medical care and facilities for recreation – to foster loyalty and high productivity among their workers. (Davis, 2003). But welfare capitalism, as this practice came to be known, had a sinister side as well.

Control of the churches allowed the mills to preach the doctrine of work as a spiritual end, by which they “hoped to maintain the old hierarchies in the brave new world of Southern industrial capitalism” (Moore, 1999). Control over schools allowed them to filter what was taught and it gave them the power to hire teachers whose beliefs were in alignment with those of the mill owners. Thus the mill owners were free to mold both children and adults (by providing them with evening classes) into their perception of the ideal worker. Finally, control of housing gave them a most effective weapon against strikes – the ability to cast a worker and his family onto the streets if he chose to strike (Davis, 2003).

None-the-less, the mill town system succeeded overall in meeting the needs of both workers and owners in the years before the Great Depression, and the southern textile industry boomed. The unions thus far had failed to get a foothold in the South, a fact that likely had as much to do with lingering anti-northern sentiment as it did with worker satisfaction. Union organizers descending from the north were bound to be less than welcome, even to a workforce that was experiencing growing discontent. But the bubble was about to burst.

In the first two decades of the 20<sup>th</sup> century investors from the North and other regions fueled tremendous growth in the southern textile industry. “Workers in the region, they claimed, faced longer hours, less pay, raised much of their own food, were protected by fewer labor laws, and even needed less clothing than their counterparts in Northern states” (Graham, 2004). As the

industry grew, so did competition, and when the economy fell into rapid decline in the late 1920s, the mills had to scramble to cut costs.

Although many mills began to introduce modern management techniques, their primary cost cutting measures were directed squarely at their workers. Employers pushed for ever greater productivity, “increasing individual workers’ responsibilities while banning restroom trips and other breaks,” a practice the workers called “stretch-out” (Murray, 2010). While discontentment waxed, loyalty waned, particularly in the mills predominantly owned by northern interests.

“In the spring of 1929 there were 18,000 textile workers on strike in 15 different communities in North Carolina.” Because the strikes took place in company towns, “strikers were evicted from their homes, their children thrown out of schools; the company-controlled newspapers and preachers ranted and raved against the strikers” (Resistance, 2010). For the National Textile Workers Union (NTWU), the time was ripe to gain a foothold in the south. They would start “with one mill in North Carolina, in hopes that a single strike would inspire sympathetic walkouts at other mills throughout the state”. They chose the Loray Mill in Gastonia for the effort (Graham, 2004).

The Loray Mill was ideal for the purpose; it was one of North Carolina’s largest mills and it was owned by Yankees. When workers began to join the NTWU, the company sent out a warning by firing five union members. Shortly thereafter, 1,800 workers went on strike. The company refused to negotiate, however, and after a month, having no means to continue, many strikers were forced to give up the effort and go back to work. Still, a few hundred workers kept the strike alive, living in a tent city provided by the union after the company had evicted them from their homes (Graham, 2004).

A little more than two months after the strike began deputies were called to disburse a picket line manned mostly by women and children. That done, they proceeded to the tent city to confront the union leaders; a gunfight erupted and Orville F. Aderholt, the Gastonia chief of police chief, was shot and killed. The trial of sixteen union members charged with the murder ended in a mistrial in September 1929 (Graham, 2004). At about the same time, another tragedy would bring this chapter to a close.

Ella Mae Wiggins was a revolutionary strike leader and dedicated champion of working women. She was also a singer and songwriter whose music gave support and comfort to strikers wherever they congregated. On September 14, 1929 shots were fired into the truck carrying her and some strikers to a rally; she was struck in the heart and fell dead (Resistance, 2010). It was widely believed that the men responsible had been hired by the mill. [See Appendix A for the lyrics of one of her songs, *A Mill Mother’s Lament*, which was played at her funeral.]

Even though Wiggins’s death attracted much attention and garnered sympathy for the workers’ cause, the union ultimately failed to take hold. Perhaps it was due to the strong distaste for northern meddling in southern affairs; or perhaps it was a strong mistrust of the politics involved. Vera Weisbord, one of the strike’s organizers and one of those charged with Aderholt’s murder, was also one of the leading communist radicals of the 1930’s (Resistance, 2010).

Despite the intensity and violence of the strikes of 1929, they were but a prelude to the Great Strike of 1934. Although the workers' grievances remained unanswered, this strike was born of their disenfranchisement in the New Deal.

Following the passage of the National Industrial Recovery Act (NIRA) in 1933, Franklin D. Roosevelt created the National Recovery Administration (NRA) by a separate executive order. The intent of the NRA's industrial regulatory committees was to "represent the interests of consumers, workers, and business owners alike" (Murray, 2010). However, George Sloan, the chair of the Textile Industry Committee, also represented the industry's trade organization. This conflict of interest effectively precluded representation of both workers and consumers on the committee (Murray, 2010).

Thus it was not surprising that the 1933 Cotton Textile Code created by the committee, despite its veneer of wage and hour reform, greatly favored the companies. The true impact on the workers was a reduction in wages of nearly 25%. As a result, the ranks of the United Textile Workers (UTW), the industry's largest union, swelled nearly tenfold to 270,000 between 1932 and 1934 (Murray, 2010).

Even with their new found strength the UTW was unable to bring the industry to the bargaining table. The only option left, they reasoned, was to stage a general strike. To underscore their purpose, textile workers across America went on strike on Labor Day, 1934.

In North Carolina, 65,000 textile workers walked off the job, bringing the state's textile industry to a standstill. Fittingly, the strike centered in Gastonia, where thousands joined in a Labor Day parade. The initial fervor soon faded, however, as Governor John Ehringhaus called in the National Guard to protect the mills from strikers.

Meanwhile, an excess of supply left no motive for the mills to bargain with the union, which did not have the resources to sustain a prolonged strike. The federal government took no action on the behalf of the workers, even though a mediation panel appointed by President Roosevelt had concluded the situation called for further study. In the end, the panel served only to urge strikers back to work; by the end of the month, Roosevelt added a personal appeal to end the strike. It was over, nothing had been gained, and the UTW had been declawed (Murray, 2010). To this day unions have failed to make inroads into North Carolina's mills. "As of 2003, only 3.1 percent of North Carolina's workers were members of unions, the lowest representation in the United States" (Graham, 2004).

In 1935 the Supreme Court invalidated the NRA. Although wages in the mills fell slightly after that action, "they recovered quickly and continued to trend upwards until the early 1950s," due in great part to the 1938 Fair Labor Standards Act, which was "aimed at the low-wage South" (Moore, 1999). To compensate for the rising cost of labor and to counter the growing trend towards radicalism amongst the workers, mill owners began to rethink their philosophy of the mill town. The task, as the industry saw it, was to reinvent their workers.

## FORDISM, CONSUMERISM, AND THE END OF THE MILL TOWN

*Be glad that you're greedy; the national economy would collapse if you weren't.*

Mignon McLaughlin

The decades old campaign extolling the virtue of labor with its emphasis on communal life was too close a parallel with the emerging communist philosophy. Furthermore, as noted by textile magnate Caesar Cone Jr., “with all [the] village tenants working for one employer, it is easy for them to condemn little things that may come up since they have little access to neighbors who work for others” (Moore, 1999, Cited). Selling the mill owned housing to the workers, they reasoned, would not only generate capital to help offset higher wages but would spark the transformation of workers into Fordist consumers as they purchased homes and made them unique through improvements and added amenities (Moore, 1999).

Another goal of selling the village houses was to bring diversity to the community as people working outside the textile industry moved into village neighborhoods. Likewise, by breaking their identity with work, “community institutions such as schools, churches and local sports teams” would become “more heavily commodified and more thoroughly integrated into the larger community.” (Moore, 1999).

Although diversification of the community was not fully realized and the towns “remained centers of a simmering anti-town, anti-elite sentiment,” the strategy resulted in improved work conditions and a higher standard of living for the workers. Consequently it became ever more difficult to rally workers along class lines, giving the mills, “at least in the short term, a more stable economic and political system through which to pursue profit” (Moore, 1999).

Throughout the 20<sup>th</sup> century the textile industry continued to grow despite steadily rising production costs. At first this could be explained by the Fordist model of growth: As production increased and mills realized economies of scale, prices fell. At the same time increased wages fueled higher demand, driving production even higher. Clearly such a cycle cannot go on indefinitely. By the 1950s many industries, including textile mills, had matured to the point where “the advantages of the Fordist models were already exhausted” (Valli, 2009). Further reductions in the cost of production would come only through increased productivity.

## THE CALM BEFORE THE STORM

*The great menace to the life of an industry is industrial self-complacency.*

Joyce Carol Oates

In order to increase productivity mills turned to technology, replacing men with machines. James Cowan, CEO of Stonecutter, a once highly successful North Carolina mill, observed that such advances had been steadily eliminating textile jobs since 1947 but the industry's growth had compensated for the loss. Technological advances also made the mills more agile, able to produce a broader range of goods and to respond quickly to customers' demands (Caudle, 2004). As the country entered the final decade of the 20<sup>th</sup> century, the industry was going strong and the perils of globalization were yet to be discovered. Many had in fact rushed into the global market hoping to capitalize on what they perceived to be miraculous growth in emerging economies.

At the time such growth was generally attributed to export-led development strategies, which "at times led to complacency and distracted attention from fundamental structural weaknesses in economic and political conditions." Furthermore, significant presence of American investors in foreign markets "may have discouraged official scrutiny" (*The Asian...*, 2006, p4). With fears thus allayed and bolstered by the belief that technology would secure their place in the future, management of most companies felt no need to rethink their strategies.

For many mills the strategic flaw lay not in *how* they produced, but in *what* they produced. Patrick Conway, professor of economics at the University of North Carolina, concludes in his research that "mills like Stonecutter were set up to run large quantities of a basic product and those basic products are now coming from overseas" (Caudle, 2004, cited). As the garment industry shifted from New York to abroad, the mills lost their primary advantage – the ability to deliver quality raw materials more quickly than could offshore competitors. Huge looms filling the floors of vast mills, representing millions of dollars in capital, fell idle.

Even as the industry was losing the garment segment, many companies producing other finished goods were forging ahead, oblivious to the changing market. In North Carolina, PillowTex was setting course towards what would become the state's largest textile failure.

When Chuck Hansen became CEO of PillowTex at the end of 1992, he had bold plans for the company. After taking PillowTex public the following year he embarked on an acquisition spree, intending to position the company at the top of the industry. Rushing headlong into the blanket segment, PillowTex quickly bought Tennessee Woolen Mills, Inc. and Manetta Mills, Inc.; one year later the company acquired the segment's leader, Beacon Manufacturing Company. Among the other early acquisitions were two pillow/comforter manufacturers and Newton Yarn Mills, a North Carolina cotton yarn spinning factory that was purchased to help control input costs (Pillowtex: FundingUniverse).

At first the strategy was very successful and the future looked bright for Pillowtex. In the company's 1996 annual report the firm confidently announced its "next major milestone: \$1 billion in annual sales" (Pillowtex: FundingUniverse, 2010). Then, in September 1997, in a cash and stock transaction valued at over \$700 million, including refinancing \$200 million of debt, PillowTex purchased Fieldcrest Cannon. It was expected that this much heralded merger would catapult sales to \$1.5 billion (PillowTex to acquire ..., 1997).

Shortly after the acquisition, however, PillowTex lost Fieldcrest Cannon's biggest account - Wal-Mart. Although the retailer was the target of many venomous accusations regarding the incident, the decision was most likely due PillowTex's inability to match the prices of overseas competitors. (Cannon Mills Company: Wikipedia, 2010).

Three years later, PillowTex filed under Chapter 11 and, despite reemerging briefly in 2002, the company closed its doors forever on July 30, 2003. The permanent layoff of 7,650 people was the largest in North Carolina's history (Cannon Mills Company: Wikipedia, 2010).

Stories such as these abound, and much energy has been wasted pointing fingers and casting blame to account for them. Three of the major events that precipitated the industry's decline, however, were far from predictable, outcomes of a new game in which only a very few understood the rules. But the one event most targeted by public outcry - China's entry into the world market - was another story entirely.

## THE GLOBAL SCHOOL OF HARD KNOCKS

*Economic progress, in capitalist society, means turmoil.*

Joseph A. Schumpeter

The much decried end to quotas in 2004 brought to an end three *decades* of restrictions, sufficient time, one would think, for an industry to prepare. In fact, many in the industry *had* prepared, but they had gravely underestimated China's potential. And China wasn't the only challenge; other events far less predictable came together in the 1990s to help bring the crisis to a head.

Many point to the North Atlantic Free Trade Agreement (NAFTA) as the beginning of the end for the textile industry. However, when the agreement was launched in 1994 many companies had hurried to profit from its advantages because they "perceived that with NAFTA, Mexico's long-term prospects for stable economic development were likely to improve" (*Mexico's Financial Crisis*, 1996, p4). As Connolly points out, "They could ship cut fabric offshore for sewing and bring it back as finished garments at a very advantageous tariff rate" (Caudle, 2004, cited). Many sought even further advantage by opening factories in Mexico, a questionable heavy investment of capital for uncertain times, but they had been given no cause for concern. Then, in December 1994 Mexico devalued the peso, ushering in "a crisis in

Mexico's financial institutions and markets that continued into 1995" (*Mexico's Financial Crisis*, 1996, p2).

Over night the mills' investment in Mexico was severely devalued and the advantage had clearly switched over to Mexican producers. Although there were clues throughout the year that the Mexican peso was in trouble, American investors had no clear warning because Government officials "were undecided about the extent to which the peso was overvalued and if and when financial markets might force Mexico to take action. Moreover, Federal Reserve and Treasury officials did not foresee the magnitude of the crisis that eventually unfolded" (*Mexico's Financial Crisis*, 1996, p6). But as costly as the Mexican crisis was for many companies, its impact paled in comparison to that of the events of 1997.

In early May, 1997, Japan signaled the possibility of an increase in interest rates to protect the yen. That never occurred, but it created concern among global investors and precipitated a selloff of Asian currencies. By the middle of August the value of the Thai, Malaysian, Indonesian, and Philippine currencies had fallen dramatically; a month later the Asian stock markets plunged. Late in October speculation hit the Hong Kong dollar and despite aggressive defense of the currency, the Hong Kong stock market buckled. Within a week the crisis spread to South Korea as the won began falling in reaction to a selloff of Korean stocks. (*The Asian...*, 2006, p16). Ripples from the crisis were soon to be felt across the globe.

As Asian currencies plummeted so did the cost of their goods, which soon flooded American markets. The effect on the textile industry was sudden and as Conway described, severe: "The executives I've interviewed invariably point to nineteen ninety-seven as the end of life as we know it. This was an earth-shaking event" (Caudle, 2004, cited). Again, American industry and government had been blindsided.

The crisis "served as a wake-up call for the United States and its international partners," revealing "the unprecedented level of global financial interdependence that had been growing steadily over decades, a trend whose implications were not well understood within the U.S. Government at the time" (*The Asian...*, 2006, p3). This "crash course in globalization" proved the fallacy of assuming "that the U.S. can control events and outcomes in the international system" and raised doubt "that the United States government—in policy or intelligence—is equipped to respond swiftly or effectively if faced with another financial challenge of this—let alone greater-complexity and magnitude" (*The Asian...*, 2006, p4).

There is great irony in the machinations leading to the crisis in the textile industry. The stimulus was basic - the demand for ever lower prices. Even Sam Walton, champion of "Made in America", eventually had to accept the cold economic truth: Because offshore goods were available for about half the price of domestic goods, and because most Americans are more concerned with a garment's price tag than the tag revealing the garment's origin, it was necessary to import in order to profitably satisfy the market. The same forces that caused the demise of the textile industry in New England in favor of southern mills were now driving the industry offshore.



Much of that which has been written lately leaves the impression that malicious deeds of foreign powers had inflicted a sudden and disastrous collapse on a vital and unsuspecting segment of our economy. To a society conditioned to respond to fear, the cry resonates on a familiar note – *they* are out to get *us*. If we didn't act swiftly, countless American jobs will be lost along with all that we hold dear. Those who had faithfully manned our once proud mills, it would seem, were now unwilling martyrs in a lopsided global war.

There is, of course, some truth in the rhetoric, but the crisis was neither sudden nor completely unpredictable, and its long-term impact on the economy has fallen far short of the doomsday predictions. One cannot fail to see the hypocrisy in the rhetoric; government favoritism and human rights violations, including forced labor and child labor – cornerstones of the condemnation of China – have a very familiar ring. Furthermore, the textile corporations were not without a role in bringing the situation to a head, nor were they left without options once the inevitable became clear.

It is possible that many in the textile industry could have survived the flood of cheap imports by playing on the prevailing American nationalistic sentiment. However, as the century closed recession was setting in. Scarce dollars were being spent cautiously and the temptation of cheap imports became too hard to resist. The floodgates were open, and China stood poised to break down the dam.

## THE DRAGON TAKES FLIGHT

*When there's an elephant in the room introduce him.*

Randy Pausch

With industry reeling from events of the 1990s, America was in desperate need of a scapegoat. China, the sole surviving Communist super power and emerging economic giant, fit the need perfectly. Although China has been accused of every form of trickery and malfeasance imaginable in its bid to dominate world markets, there has been little concrete evidence to support the claims – at least insofar as their practices being more egregious than those of other nations. The real threat came from “China's enormously efficient and low-cost clothing makers” (Blustein, 2005), in other words, from a competitor's distinctive competency.

China's emergence into the world market has in fact been gradual and structured under the terms of its accession to the World Trade Organization (WTO). Included in those terms a system of safeguards was made available to China's trading partners to prevent Chinese imports from disrupting their markets. These caps could limit the annual growth of imports to as little as 7.5% and could be implemented until 2008 (Blustein, 2005).

With the expiration of the quota system looming, the U.S. textile industry rushed to petition for safeguards in several categories in 2004. Because the petitions were based only on fear that imports *might* be disruptive in the absence of quotas – and not evidence of disruption as called for in the terms – the petitions languished in the courts. Because the Government is not prone to sit back patiently while due process take its course, an Executive order came down to “self-initiate” the process, a decision based solely on preliminary data that indicated a steep increase in imports of several categories of apparel (Blustein, 2005). Karl Spilhaus, president of the National Textile Association praised the decision stating that it “sends a signal that the U.S. government is willing to proactively do something about the crisis in the textile industry” (Blustein, 2005, cited). However, Laura E. Jones, executive director of the U.S. Association of Importers of Textiles and Apparel, countered: “There is no reason to believe that imports of these products from China are causing market disruption. The data [the panel] is supposedly relying upon shows only that February was a peak month for imports. The imports are down in March by comparison” (Blustein, 2005, cited).

Never-the-less, the U.S. consistently took advantage of the safeguards, which had been available since 1995. In addition, China allowed the U.S. to continue using their “current anti-dumping methodology, which treats China as a non-market economy” (WTO Textiles, 2010). The series of safeguards culminated with The Memorandum of Understanding Between the Governments of the United States of America and the People's Republic of China Concerning Trade in Textile and Apparel Products (Bilateral Trade Agreement, 2010). Under the agreement the U.S. stipulated 21 absolute quotas covering 34 categories of apparel (China Textile Safeguard, 2010). With the Bilateral Trade Agreement set to expire in 2008, the U.S. had succeeded in protecting the industry for the absolute maximum amount of time allowed by the WTO. Whether such protection was benign or malignant, however, is highly debatable. A more meaningful query might be whether such protection was even necessary.

Certainly China's spectacular growth, which began in 1978, had been no secret. Measured in terms of purchasing power parity (PPP), China's average yearly growth over the next 30 years was 8.2 in real GDP, 7.1 in real per capita GDP, and 6.5 in real labor productivity – numbers that eclipse even those of Japan during its explosive growth between 1953 and 1970 (Valli, 2007). China's application for admission to GATT/WTO in 1987 likewise left no doubt as to their intentions. The world had nearly 15 years to adjust before accession was granted on December 11, 2001.

In the final analysis China cannot reasonably be held responsible for the enormous number of displaced American workers. Instead, as Siekman concludes, “These people are the victims of shortsighted textile companies that chose protection over adjustment to the global economy – and of the federal and local officials who abetted them (2006). “The reality,” Cowan says, “is that goods will trade for what they're worth, and they will move around the world. This is evolution, and there's no way to stop it. No way at all” (Caudle, 2004, cited).

## THE DUST SETTLES

*What separates the winners from the losers is how a person reacts to each new twist of fate.*

Donald Trump

Undeniably the number of jobs lost in the textile crisis is staggering: between 1992 and 2002 nearly one million workers in the garment industry and in factories supplying it lost their jobs, due mostly to the impact of cheap imports. However, of the Southern textile states - Alabama, North Carolina, South Carolina, Georgia, Mississippi, Tennessee, and Virginia - all had lower unemployment rates in 2004 than in 1992, with the exception of South Carolina where the rate was essentially the same. Furthermore, despite the number of highly visible closings, mills have not disappeared. In North Carolina, for example, the number of textile plants in 2004 was nearly the same as in 1994; as old mills closed, new ones designed to meet the needs of the 21<sup>st</sup> century opened to replace them (Caudle, 2004).

This has been a case of pure evolution, both in the workplace and the workforce. The new mills depend on highly skilled and educated workers; the old mills were part of a whole class of southern industries, Conway says, "that relied on low-skilled labor so you could drop out of high school and still get a job" (Caudle, 2004, cited). Such a workforce is clearly unsustainable in a mature economy.

Early in 1999 Cowan had known the end was in sight for Stonecutter Mills. "We could go to the bank and borrow money and start the death spiral," he said, "or we could walk away with our heads up. So that was our decision" (Caudle, 2004, cited). It was a very difficult decision to make, but a timely one as well. By selling off what assets it could, Stonecutter was able to pay off its debts and distribute \$30 million to employees (Caudle, 2004). With around \$40,000 each in severance pay, Stonecutter's workers fared far better than those of mills that chose to hang in and fight the losing battle.

Some owners of companies that couldn't afford to retool for new products saw another option: continue producing what they had always produced, but make it with new high-tech materials. Carolina Glove, a family owned company in business since 1946, took the idea one step further. Their domestic production is now dedicated to specialty and safety gloves made of materials ranging from leather to latex and from canvas to Kevlar®. But they also continue to market the products on which they had built their reputation, offering "a full line of imports for the price conscious buyer" (Carolina Glove, 2010)

Alexander Fabrics, another family owned business, also realized that there was no future for the business under the old model. This company opted to remove their knitting machines and fill a niche created by the economics of global marketing. The key for them was understanding that global traffic of goods is dependent on the existence of large markets. Richard Witmeyer, Alexander's vice president for business development, had a vision: Import grey goods -

unfinished fabric – then “add the color, the chemical finish, or whatever’s necessary to make that product specific to a smaller, end-use market” (Caudle, 2005, cited).

It wasn’t only family companies that reinvented themselves to survive the textile crisis. Founded in 1920, the Dixie Group had grown into a highly successful textile business. In the early 1990s, however, the company knew it had to change strategy to survive. In 1993 they acquired their first carpet manufacturing company, adding two more in 1994 and 1996. In 1999 the company shed its remaining textile operations and became a floor covering only company. Then, in 2003, the company completed its metamorphosis by selling off its Georgia operations to become a leading marketer of high-end industrial and residential carpeting (The Dixie Group).

Stories such as these are endless, but the products these companies make represent but a fraction of the industry. The broad view of the textile industry encompasses everything made from fibers; with that perspective we see an industry bursting with innovation and limitless prospects for the future. Carbon fibers, for example, are found in products ranging from fishing poles to jetliners. 3TEX, founded in 1996 by Mansour Mohamed, a North Carolina State University researcher, has developed a new process to improve on another ubiquitous textile – fiberglass. Only one layer of the thick fiberglass cloth that 3TEX weaves is required to form the hull of a boat, replacing the traditional process of repeatedly layering cloth and resin. The end product is one that is lighter and cannot delaminate – and is labor saving as well. (Siekman, 2006).

Most of the mills in America, however, no longer weave their products. Instead they produce nonwoven textiles, the most recognizable and abundant use of which might be diapers. Other products include carpet backing and medical attire – scrubs and the dreaded hospital gown, to name two. In total, the U.S. currently accounts for one third of global production of nonwoven fabrics, production worth nearly \$5 billion (Siekman, 2006).

That does not mean to imply that the more traditional woven fabric segment is dead, however; quite to the contrary, it is a hotbed of innovation where research is leading to wildly exotic and futuristic products. Often a single development will quickly lead to many applications, creating a brand new segment of the industry.

One such development is electrically conductive polymers, which makes it possible to create electronic textiles. The concept might seem strange – even bizarre – at first, but the practical applications are limitless. For instance, one startup, Sensatex, has successfully tested a shirt worn under a firefighter’s clothing that monitors and transmits the ambient temperature along with the firefighter’s movement and vital signs (Siekman, 2006).

Among the more fanciful – yet entirely achievable – concepts being researched are textiles that open and close the weave in response to changes in body temperature and a shirt that monitors blood sugar and injects insulin when necessary. More mundane but highly practical examples abound as well, including odor killing fabrics and a process that makes ordinary fabric non absorbent (and therefore very spill-resistant) while maintaining the fabric’s original feel (Siekman, 2006).

The bulk of current capital investments, however, is in nonwovens. This segment of the industry is virtually in its infancy; existing applications for this extremely versatile product barely scratch the surface of what is possible. Due to the very nature of the fabrics, however, products made with them quickly become commodities. Furthermore, the constant pressure to produce more product in less time for less money has reduced the useful life of the mills' capital equipment to just a few years.

The similarities between the garment industry of the 20<sup>th</sup> century and the nonwoven products industry of this century are inescapable. As we observe how the latter evolves we will discover if anything was learned from the textile crisis.

## CONCLUSION

*To keep our faces toward change and behave like free spirits in the presence of fate is strength undefeatable.*

Helen Keller

In terms of its evolution, the textile industry is in no way unique. Labor intensive segments of any industry will always gravitate to wherever labor is cheapest; To meet the demands of those businesses, their suppliers soon follow. The inescapable reality, especially in this era of globalization, is that mature economies will eventually lose labor-based industries to emerging economies. However, the advantage in technology and innovation held by mature economies will more than offset the disadvantage in labor costs – but only if industry proactively exploits that advantage. Conversely, when companies persist with business as usual, relying on artificial support to stay alive, they squander the very resources that are essential to their survival.

Survivors of the textile crisis followed many paths. Some chose to exit early, minimizing their losses as they set out in search of new industries to conquer. Many sought out new applications for their existing physical assets. Others applied the specialized skills of their workforce to entirely different products. And a few combined all of their resources to invent and manufacture high-tech products, products which are likely to be immune from offshore competition for many years to come.

Regardless of the path that survivors take, all share some essential traits. First, they are keenly aware of the universe in which they operate. Through persistent and diligent observation of their environment they perceive the complex interplay of seemingly minor and unrelated events. They continually apply their knowledge and intuition to understanding the implications of their observations, thereby becoming aware of impending change at the earliest possible moment.

Next, survivors accept and embrace change, and they are staunchly resolved to prevail over it. With strong entrepreneurial spirit they envision their new destination and plot a course that will take them to it. Finally, and most importantly, survivors have an unwavering belief in their vision, an unshakeable faith that they will realize their vision, and the unbending resolve to carry their businesses forward through the hardships of changing times.

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## APPENDIX A

### MILL MOTHER'S LAMENT

by Ella Mae Wiggins

We leave our homes in the morning,  
We kiss our children good-bye,  
While we slave for the bosses  
Our children scream and cry.

And when we draw our money,  
Our grocery bills to pay,  
Not a cent to spend for clothing,  
Not a cent to lay away.

And on that very evening  
Our little son will say:  
"I need some shoes, mother,  
And so does sister May."

How it grieves the heart of a mother  
Now everyone must know.  
But we can't buy for our children,  
Our wages are too low.

It is for our little children,  
That seems to us so dear,  
But for us nor them, dear workers,  
The bosses do not care.

But understand all workers,  
Our union they do fear.  
Let's stand together, workers,  
And have a union here.

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