

# Economics

## Department Alumni Newsletter

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Indiana, PA 15705 (724) 357-2640

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Bob Stonebraker, editor

### *Graduations*

Department graduation ceremonies are pleasant affairs. Everyone is happy. Graduates fantasize about a future with no exams. Younger siblings eagerly anticipate claiming that piece of furniture they've always wanted from your bedroom. Parents, having survived four or more years of tuition payments, dream of using their income to support themselves rather than IUP.

Faculty? We greet your families, pretend that you were outstanding scholars, and ignore the fact that you will forget almost everything we taught within a few short years. We give speeches, make awards, and munch doughnuts.

Although every graduation is unique, last May's was memorable. It began calmly. Chairperson Donald Walker introduced the program and rattled off an array of economist jokes. Alumnus Carl Hisiro ('76), fighting the pain of a herniated disk, followed with a very fine address about the value of an IUP degree in economics [Thankfully, Carl reports significant improvement. He's walking upright once again.].

However, graduate Erich Reuter stole the show; upstaging even Dr. Walker's best marginal utility quips. After capturing both the Wall Street Journal Award for the highest grade-point-average in economics and the McGraw-Hill Award for the Outstanding Student in Economics, Erich launched into a gracious "thank you" speech. Without warning, apparently overcome by the raw passion of our discipline, Erich abandoned the podium and strolled back among the assembled families and friends. He took the hand of his friend Monica...knelt down...and proposed marriage. Monica, to the relief and applause of all, answered with a resounding *YES!* A real show stopper.

In a less dramatic way, we stand steadfast in our struggle to beat back the dark forces of economic ignorance. We continue to develop new programs and ideas. Our fledgling joint major in Economics/Mathematics now has three students, and two new courses are slated for next semester. Willard Radell's *Visual Economics* should enable students to prepare, analyze, and critique graphic displays of information, while *The Economics of Sports*, taught by Nick Karatjas and Arthur Martel, will shine the cold light of economic analysis on stadium taxes and college athletics.

Alas, much remains to be done. Recent surveys reveal remarkable public ignorance on the most elementary concepts. For example, most Americans believe monetary policy is set by the President and Congress rather than the Federal Reserve System, and are unaware that the U.S. unemployment rate has dropped steadily for five years. A large majority of Americans identify excessive foreign aid as a significant cause of U.S. economic woes -- obviously unaware that such aid totals less than one percent of the federal budget. So much to do, so little time.

Bob Stonebraker, editor

## *Up. Up, and Away...*

*The Chris Johnston spin on market trends...*

The bulls have rampaged through Wall Street for ten years. Even the Crash of 1987 is a dim memory, a short-term blip in the relentless march to prosperity. Hubba hubba.

What's behind the bull run? Will it last? Can we sustain it? A Vice President with a major financial firm like The Delaware Group...someone like Chris Johnston ('90)... should know the answers. Right?

Chris returned to IUP for Homecoming and, always looking for cheap labor, I convinced him to discuss the impact of macroeconomic variables on financial markets for my EC 421 class. Fearing that I might ask him to reproduce a multi-quadrant graph of long-run financial equilibria in international markets with pegged exchange rates, Chris asked that I keep my questions at an elementary level. Anything too technical, he explained, "*and I'll excuse myself for a diet Coke.*"

Fair enough. I tossed him an "easy" one: *What has been driving the stock market, and will the boom continue?* Wow. He leapt on that one like a squirrel on a bird feeder. Chris replied -- and this was two weeks *before* the October tumble -- that market volatility might rise, but the boom will continue. The same three demand factors that have been feeding the market over the past decade will continue into the next.

### **1. Baby boomers.**

The early boomers are edging into their fifties -- prime years for saving. Their children are getting ready to graduate and their homes are almost paid off. According to Chris, when tuition and mortgage payments end, many of those funds will flow into the stock market instead. Continued demand means a continued boom.

### **2. 401k pensions.**

The spread of pensions means mandatory contributions every pay period. With fresh dollars streaming into their coffers each week, pension funds have little choice but to plow those dollars into purchasing stock. What's the alternative?

### **3. Low interest rates.**

Bonds are an alternative, but the recent drop in interest rates has damaged their appeal. Bonds are much more attractive at a real interest rate of six percent than at three percent. Blame it on Congress. With a falling deficit, the federal government no longer needs to borrow as much; it no longer needs to issue as many bonds. As the government demand for funds in the bond market falls, the price of those funds - the interest rate -- also falls.

It's a nice scenario -- a growing demand for stocks from baby boomers and pension funds seeking an alternative to low-yield bonds. Is it realistic? Should we believe him? Or, should we send him out for a diet coke?

## **Is it Real...or is it Nominal?**

Ah; those heady days of the early 1980's.... days when interest rates soared into double digits;

days when savers could sit back and savor the funds flooding into their flush financial folios. FDIC-insured CD's earning 15 percent; Treasury Bills at 16 percent. Life was good.

Borrowers never shared this enthusiasm for high rates of interest, but they were exhilarating days for savers. And they're gone. Interest rates have tumbled back to earth. The bloom is off the rose.

Savers accustomed to living off interest income have tightened their belts. Those unable or unwilling to eat into principal have reduced spending. College endowment income has plunged and fund officers are scrambling to find ways to boost returns -- often by increasing the risk of their portfolios. Indiana's Mack Foundation reports that lower returns have forced it to slash charitable grants to community charities. A local church trimmed support for foreign missionaries when its endowment income dropped.

*Hold it!* Did you catch the flaw? Did you see the confusion between *real* and *nominal* rates of interest? Of course you did. You were economics majors. Econ majors would never miss such a fundamental error. Yes. Nominal or stated interest rates *have* plunged since the early 1980's. But *real*, inflation-adjusted rates have not. Remember, in a world of 10 percent inflation, savers need a 10 percent nominal return just to break even in real, purchasing-power terms. Check out the data below. I've listed both nominal and real interest rates for the last thirty years. The nominal rates are the average yields on U.S. Treasury Bills each year; the real rates are the nominal rates minus that year's rate of inflation. In other words, a nominal rate of 7.0 percent with an inflation rate of 5.0 percent translates into a 2.0 percent real return.

| Year | Nominal Rate | Real Rate | Year | Nominal Rate | Real Rate |
|------|--------------|-----------|------|--------------|-----------|
| 1967 | 4.3          | 0.8       | 1982 | 10.7         | 4.5       |
| 1968 | 5.3          | 1.2       | 1983 | 8.6          | 4.3       |
| 1969 | 6.7          | 2.0       | 1984 | 9.6          | 5.9       |
| 1970 | 6.5          | 1.0       | 1985 | 7.7          | 3.9       |
| 1971 | 4.3          | -0.6      | 1986 | 6.0          | 3.5       |
| 1972 | 4.1          | -0.3      | 1987 | 5.8          | 2.7       |
| 1973 | 7.0          | 1.3       | 1988 | 6.7          | 3.1       |
| 1974 | 7.9          | -0.9      | 1989 | 8.1          | 3.9       |
| 1975 | 5.8          | -3.8      | 1990 | 7.5          | 3.2       |
| 1976 | 5.0          | -0.7      | 1991 | 5.4          | 1.4       |
| 1977 | 5.3          | -1.2      | 1992 | 3.5          | 0.7       |
| 1978 | 7.2          | 0.0       | 1993 | 3.0          | 0.4       |
| 1979 | 10.0         | 1.4       | 1994 | 4.3          | 2.0       |
| 1980 | 11.5         | 2.3       | 1995 | 5.5          | 3.1       |
| 1981 | 14.0         | 4.6       | 1996 | 5.1          | 3.1       |

Look back at those rates in the 1970's. Real returns dove into the red for six out of seven years when nominal rates failed to adjust quickly to faster-than-expected inflation. By the end of the decade, savers had begun to wise up. They began to demand higher nominal interest rates to protect the purchasing power of their returns. When inflation pressures eased in the 1980's, nominal interest rates eased as well, but only with a lag. Burned badly in the 1970's, savers were cautious in protecting real

returns.

From 1980 through 1984, inflation plunged from 9.2 to 3.7 percent. However, because the nominal rates on Treasury Bills fell only from 11.5 to 9.6 percent over the same period, the *real, inflation-adjusted* returns on Treasury Bills actually rose from 2.3 to 5.9 percent. During one of the 1984 campaign debates, incumbent President Reagan boasted that his administration had successfully lowered interest rates. A few minutes later, his challenger Walter Mondale insisted that interest rates were at their highest point in decades. While these seemingly contradictory claims confused most viewers, economic students around the world knew both candidates were correct. Nominal rates *were* down -- just as Reagan had claimed -- while *real* rates were up -- just as Mondale had countered.

Non-economists are often less savvy about real versus nominal interest rates. Savers living off their interest and foundations and endowment funds which were reluctant to dip into principal were mistaken. Those high interest payments were never *real* payments at all. Anyone spending his or her 14 percent interest in 1981 *was* eating into principal. With 1981 inflation at 9.4 percent, those spending all 14 percent nominal interest were allowing the *real* value of their principal drop by 9.4 percent. Only those savers who restricted their outlays to *real* interest returns were able to protect the real value of their principal. Everyone else was victimized by what macroeconomists call *money illusion*.

### **Inflation-Indexed Bonds**

Happily, help has just arrived; an antidote for money illusion. The U.S. Department of Treasury began issuing inflation-indexed bonds in late January. The principal on these ten-year, marketable bonds rises and falls with prices. In a year of 3.5 percent inflation, the principal value automatically rises by 3.5 percent. In a year of 2.0 percent deflation (*the U.S. hasn't experienced deflation since 1949*), the principal value will fall 2.0 percent.

In other words, there should be no more confusion between nominal and real returns. All interest payments on these bonds are real payments. Of course, the IRS will take its share. Any inflation-induced increase in principal will be taxable.

Bonds in the initial offering went for yields of about 3.5 percent. Although this was approximately what Department of Treasury officials had expected, the yield was high by historical standards. Over the last seventy years (1926 - 1996), investors would have earned a real return of 7.6 percent on stock investments in the S&P 500, but only a 2.0 percent real return on long-term government bonds. By these standards, the 3.5 percent yield looks like a good deal.

Is anyone ready to buy?

## ***The Economics of Cheating***

Memorization stinks. A waste of time. Things memorized are soon forgotten without frequent use. And things used frequently need not be consciously memorized; they become habitual.

I loved singing in school choirs, but hated being forced to memorize music. Subjects that involved logic (like economics) were right up my alley, but those requiring memorization (Latin and German) rated on a par with gutting rancid fish. Mathematics was a mixed bag. Ask me to derive a formula and I was home free; ask me to memorize one and I was dead....which was no problem except on exams. On exams I had too little time to derive the needed formulas from scratch, and too little brain to memorize.

What to do? Cheat?

Hold it a minute...*Mother, please stop reading now. You do not want to know the rest.....* Sorry, my mom's on the newsletter mailing list. Are the rest of you still with me?

Yes. I cheated. Not often. Very rarely in fact. But, I cheated. Especially with those trig functions in calculus. I mean, really. Why should anyone have to memorize that  $(d/dx) \cotangent u = - \operatorname{cosecant}^2 u$  ( $du/dx$ )? I could never remember that one. I always confused it with the derivative of the cosecant. Or was it the derivative of the arctangent? I can't remember. I never could. The solution was simple....just write it in pencil (very lightly) on the edge of the desk prior to the test. It would be there if needed, and could easily be smudged out quickly in a pinch. If the desk didn't work, there was always the ankle (under my sock). Or the wrist (under my watchband).

Are you shocked? Should a professor admit to such crimes of his youth? Perhaps not. Cheating was not my finest hour. Am I proud of it? No. Was it wrong? Yes. Do I recommend it to others? No. But, professors...even economics professors....are people too.

Don't worry, it's all come back to haunt me. I've spent the last three years on the University Senate Academic Committee leading a drive to rewrite IUP's policy on academic dishonesty. Irony? Penance? It is deadly stuff -- eight pages of single-spaced legalese about due-process-this and hearing-board-that. I've endured interminable discussions, plowed through a dozen different draft versions, all of which are still stored in various states of disorder on my computer; consulted with every constituency group under the sun [about 100 assorted e-mail messages on the topic are still clogging my account]; and tried to work with a university attorney who considers this about as important as the derivative of cosecants.

### Why do we cheat?

The early debates were the worst. A former committee member, a non-economist, would launch into moralizing that drove me right under the table. The laments about moral decay brought visions of the chorus in a Greek tragedy; actors standing to the side wailing and beating their breasts. I did not want to hear moral invective. Morals are not the primary issue. Students do not cheat because they are moral incompetents, they cheat because the marginal benefit of cheating exceeds the marginal cost. Yes. Costs and benefits.

Wait. Costs and benefits? Not morals? Is there any hard evidence to support this? Yes. Economists Cliff Nowell and Doug Laufer reported on a recent experiment with 311 college students. The students were given multiple-choice quizzes which were collected and secretly photocopied. The originals were returned at the next class. Students were instructed to grade them and report their score to the instructor. The instructors would then grade the photocopies and compare results. Did anyone cheat? Had any students changed answers while grading their own quizzes? Yes. Even though the quizzes accounted for only ten percent of the course grade, one-fourth of the students cheated at least once.

Nowell and Laufer then used demographic data collected at the beginning of the semester to analyze which students cheated and why. Their results, which are broadly consistent with those of other studies, are exactly what an economist would predict: students with the highest expected benefits and lowest expected costs were the most likely to cheat. In particular:

#### 1. Grades:

Students with the highest grades prior to the quiz were the least likely to cheat. With a high grade already intact, the benefit of cheating was minimal.

## 2. Academic class:

Freshmen were more likely to cheat than seniors. One increased grade will have a much greater impact on a freshman's overall grade average than on a senior's overall average. Getting an "A" rather than a "B" in a single course would scarcely dent a senior's GPA. The benefit of cheating to seniors is small.

## 3. Jobs:

Students holding down jobs were more likely to cheat than those without jobs. Students working 40 hours per week were more likely to cheat than those working part-time. A major benefit of cheating is to reduce necessary study time. Students working the most hours gain the most benefit from such a time saving.

## 4. Class size:

Students in large classes cheated more often than students in small classes. Because it is harder to monitor cheating in a larger classroom, the chance of being apprehended -- and, therefore, the cost of cheating -- is smaller.

In other words, students often cheat, and they make rational choices about when and where to cheat. Studies which search for correlations between cheating and measures of morality or religiosity often come up empty. Those which relate cheating to costs and benefits do not. Seniors with high grades and no outside jobs who are taking courses with small class sizes cheat less than others. Is it because they are morally superior? Or, is it because they face different costs and benefits?

## What should be done?

Of course, cheating is *not* socially efficient. Those cheating consider only the costs and benefits to themselves. They ignore the external costs they impose on others. And others *are* harmed. Other, non-cheating students suffer by comparison on exams and taxpayers, who are paying much of the financial freight, end up with graduates who are less knowledgeable than advertised. Promoting academic integrity makes perfect economic sense. Cheating inflicts serious damage on society. How can we reduce the incidence of cheating?

My committee colleague urged exhortation. We were to instill *good* values in our students, wave the flag of integrity, appeal to their conscience, convince them to be *good* citizens of the world.

Hogwash. Exhortation is worthless. In another study comparing student-graded papers to secretly-graded photocopies, the instructors found exhortation was counterproductive. After making an impassioned moral appeal to students to grade their quizzes honestly, the amount of cheating actually rose! Exhortation is not the answer. The key is to raise the expected costs or lower the expected benefits.

Most policies aim at raising costs to cheaters; primarily by penalizing those who are caught. Sanctions run from a slap on the wrist for minor violations to expulsion for more serious cases. But, penalties have limited value. Penalties cannot be imposed without working through rather cumbersome procedures to ensure due process for the accused. Such procedures are necessary, but costly. Paperwork, testimony, and hearings take an emotional toll on both plaintiff and defendant. If only minor sanctions are at stake, instructors may decide the cost of following through on an accusation exceeds any possible gain. They may let it slide.

Raising the stakes with stiffer penalties creates other problems. When the severity of the penalty rises, the likelihood of it being imposed falls. And, penalties which are seldom imposed provide little or

no deterrent effect. We instructors, by and large, are a forgiving lot. We want to punish cheaters, but not ruin their lives. We are reluctant to bring charges that might result in such dire consequences.

Even if we try, we may not get far. Students facing possible suspension or expulsion will not stroll submissively to their doom. The cost of confessing a violation that carries a slap on the wrist is minimal; the cost of confessing a violation that gets you expelled is not. Moreover, members of hearing boards are not so quick to convict when sanctions are severe. They will demand more incontrovertible evidence before abandoning "reasonable doubt" of guilt. When penalties stiffen, fears of convicting an innocent person -- and fears of lawsuits soar.

Stiff penalties are not the answer. Policies which make it costly to cheat in the first place are better. We can shuffle test questions so that students in alternate seats must answer different questions in different orders. We can patrol the aisles, searching for unauthorized papers and stalking potential miscreants with our steely glares. Or, we can rearrange desks to maximize the distance between chairs. Those of you who took classes from Art Martel might recall his innovative efforts in this regard. His rapid redeployment of desks prior to exams has been dubbed the *Martel Maneuver*.

Alas. These methods can be as costly as they are effective. Multiple test versions are tedious to compose and grade, vigilant surveillance is draining and can unnerve innocent students, and rearranging desks probably violates union work rules.

A final alternative is to cut the marginal benefit of cheating. But, how? Eliminate grades? Award A's to everyone? Nick Karatjas is trying a different approach this semester. He encourages students to bring a 3"X 5" index card to each exam, filled with whatever material they want to write on it -- sort of like legalized "cheat sheets." With legal cheat sheets, students have no incentive to smuggle their own into exams, or even to strain to see someone else's answers. The benefit of cheating falls.

The experiment has produced other beneficial results as well. It allows Nick to create more exam questions that emphasize application of theory (which cannot easily be put on an index card) rather than memorization of factual material and definitions (easily written on a card). More importantly, students modify their study methods. They treat the 3"X 5" card as a scarce resource that must be used as efficiently as possible. If not all information can be crammed onto the card, what information is most critical? Students report organizing the material in new ways and trying to separate the wheat from the chaff -- which is exactly what we want. The cards also seem effective in moderating student test anxiety. Even those students who report not using their cards claim to feel less stressed.

Hmmmm. Sounds interesting. Maybe I'll give it a try.

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