Economics

Department Alumni Newsletter

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Bob Stonebraker, editor

Students are great

Usually. Do they always stay awake in class? Do they always appreciate the true beauty of profit-maximization graphs? Do they always set their priorities as we would like? Of course not. But, neither did you. On the whole, our students are bright. Our students are energetic. Our students are creative. And, they keep us on our toes.

Want some examples? My *Contemporary Economic Issues* class requires students to give oral presentations that apply basic economic principles to any current issue or topic of their choice. I want them to see that economics is not just about stock markets and unemployment rates. I want them to see economics at work in their day-to-day lives.

What fun! Today I learned about the shifting market shares of motorcycle producers. The student proudly passed around photos of his own Harley Davidson while drawing market equilibrium graphs on the chalkboard. *Can you picture me cruising in a leather jacket on a high- riser?* Last week a budding attorney explained that the appropriate public policy on media violence hinged on whether media violence and real violence were substitute or complementary goods. *Can you picture the graphs?* And a young woman, currently torn between pursuing a Ph.D. in economics and a marketing career with the World Wrestling Federation, excitedly explained how its large stable of wrestling superstars allows the WWF to capture economies of scale and create a more inelastic demand. *Can you picture me in the ring with Stone Cold?*

These are intelligent, creative and vibrant young people. They have ability. They are fun. And we do our part to nurture that ability, to nurture that creativity. A few weeks ago I asked one of our new majors what most surprised him about his first months at IUP. He thought for a moment, and then replied: "the economics faculty." He continued, "I never thought that college professors would interact so much with students. I didn't think they would care."

We do care. That always has been our strength. We always have done it with time and energy. We now have started doing it with cold, hard cash as well. With scholarships. This Fall we awarded the first Donald A. Walker Scholarship to an incoming student -- a very talented young man in the Robert E. Cook Honors College. And an alum has recently changed his will to create a second endowed Department of Economics scholarship. Even better, after discovering that I might keep calling to see if he was dead yet, the donor decided to begin funding the scholarship immediately. His generous gift, matched by his employer, will allow us to offer a scholarship to a deserving student next year. Thank you. Thank you. Thank you.

Could you do the same? Does your employer offer matching charitable gifts? Hmmmm?

Bob Stonebraker, editor

Safety in Numbers?

Like all hot-blooded American males, I speed. Not too much. Cruise control keeps me close, but I do speed. Whizzing along a highway posted at 65 miles per hour, I set my cruise at 68 miles per hour. Will the extra three miles per hour get me pulled over by the local constabulary? Not so far.

Besides, at only three mph above the limit, I am among the slowest drivers on the road. Why would a police officer bother with me when others are travelling even faster? And how many cars can an officer stop? There is safety in numbers.

Speeding is not the sole example. As a pedestrian, I am reluctant to cross against a light except when in New York City. In New York, no one pays attention to DO NOT WALK signs. Neither do I. They cannot arrest us all. There is safety in numbers.

Or, consider the looting that often occurs in the aftermath of riots or earthquakes. Store windows have been smashed, alarm systems are down, doors are knocked in. Even with television news cameras rolling, looters swarm through the aisles grabbing as much as they can carry. Why? When interviewed most looters appear to be average law-abiding citizens with no particular economic need nor grudge. Yet when the looting began, they joined the fray. After all, the police could not arrest them all. There is safety in numbers.

Costs and benefits

Of course, it is all economics. Choices are not made in a vacuum. We compare expected costs and benefits. Should I eat another hot dog? Only if the additional benefits exceed the additional costs. Should I stuff one more scoop of ice cream into the bowl? Only if the additional benefits exceed the additional costs.

The same process is at work in decisions about such scofflaw behavior as speeding, jaywalking and looting. The benefits of these activities are easy to identify: saving time, saving time, and a free video-cassette recorder respectively. The costs depend upon potential legal penalties and, more importantly, on the probability of being caught. Imagine zooming along a highway at 10 miles-per-hour above the speed limit. Which is more likely to slow you down: a sign promising harsh penalties for speeders, or the sight of a police cruiser in your rearview mirror? Me, too. Penalties matter, but likely apprehension matters more. Even a draconian penalty such as hot dog deprivation is no deterrent if the chance of being caught is zero.

The examples above share a common thread. In each case the number of criminal actions swamp what law enforcement agents can reasonably bring to trial. The sheer volume of crime *congests* the system and lowers the likelihood of being caught. This cuts the expected costs of crime and encourages even more criminal activity. In other words, once congestion occurs and apprehension rates drop, crime begets crime. There is safety in numbers.

Are you still with me? Will you acknowledge that such nefarious behaviors as speeding and jaywalking can fit an economist's model of rational choice? Will you concede that even criminals might accede to calculations of costs and benefits? If so, will you take one more step? Will you apply the same concepts to murder?

Bloody murder

Yes, murder. Murder as in *bang, bang, you're dead.* If New York's reputation for jaywalking is poor, it is even worse for such violent crimes as murder. The Big Apple homicide rate is three times that of the U.S. in general. Why? Perhaps it is because the justice system is congested with jaywalkers. Or, maybe it is just too much spicy food.

Colombia is worse. No matter how daunting a dark dash through Central Park may seem, compared to one in the country of Colombia, it is like a Sunday afternoon stroll down main street Mayberry. Homicide rates in Colombia, generally considered the world's most violent country, are quadruple the NYC level and are some 50 times higher than those generally found in Europe. Colombian rates for carjackings, kidnappings and thefts are similarly high.

Until the late 1970s Colombia was relatively peaceful. It was democratic with few racial or religious tensions to fuel violent conflicts. Do you remember the television commercials of Juan Valdez and his burro ambling through mountain fields, carefully picking only ripest coffee beans for your morning brew? Juan's modern counterparts are likely to be toting automatic weapons.

Why? What happened? The easy answer is cocaine. After a right-wing military coup drove drug traffickers from Chile in the 1970s, the displaced dealers shifted operations to Colombia. Violence erupted as rival firms vied for market share. Bullets to the brain proved a quick and effective way to eliminate both competitors and uncooperative government officials. However, once cartel power became firmly established, drug violence subsided. With all competitive threats literally buried, the market stabilized.

Colombian violence remains high, but relatively little is associated now with drugs or the continuing rebel insurgent groups fighting the government. A recent study by Alejandro Gaviria in the *Journal of Development Economics* reports that more than 80 percent of Colombian homicides are unrelated to major drug or rebel organizations. The problem, according to Gaviria, is that the earlier drug violence congested the law enforcement system and lowered the probability of being caught. The low chance of apprehension lowered the cost of murder and attracted an increased supply of assassins. By the time drug violence had subsided, non-drug- related homicides had increased.

Other crimes in Colombia also rose, but only after the increase in homicides. Once murder investigations congested the system, enforcement officials had little time or energy to pursue less serious crimes. As an economist would predict, this lower likelihood of prosecution sparked an increase in infractions from petty theft to kidnapping. It becomes a vicious cycle. Crime creates law enforcement congestion. Congestion lowers the probability of being caught and convicted which, in turn, lowers the cost of crime and creates even more crime.

Multiplier Effects

Hmmm. No doubt all of this reminds you of Keynesian macroeconomic multipliers. Do you remember those? An increase in government spending for economics professors creates new income for economics professors (like me!). I use my new income to buy additional cartons of Breyer's Ice Cream (vanilla). This creates new income for Breyer's employees and owners who, in turn, spend their new income for tickets to see the Pittsburgh Pirates. This increases income for the Buccos, who then shell out the big bucks needed to hire free-agent shortstop Alex Rodriguez. A-Rod spends his new income to buy hot dogs and fries. This creates new income for the hot dog vendors, *etcetera, etcetera, etcetera*. Sound familiar? The initial burst in government spending is multiplied into a much larger amount of private spending. Spending begets more spending.

The policy message is clear. To avoid spiraling crime, nip it in the bud. Hit it hard. Hit it early. Swift and sure justice. Get it before any self-propagating multiplier effects take root.

Simple enough? Maybe not. The day after drafting this article I found myself driving in downtown Pittsburgh. After a matinee at the Pittsburgh Public Theater my wife and I turned down Penn Avenue. We reached Heinz Hall just as the symphony crowd was beginning to exit. An elderly couple, walking with canes, began to cross the street. They were in the middle of the street. They were jaywalking. Incipient crime. My brain is yelling: "Nip it in the bud. Hit it hard. Hit it early. Swift and sure." But, what do I do? Should I run them down? I envision the local TV news flash: "Elderly couple leveled by crazed IUP economist. Graphs at eleven." So I slow. I slow to a crawl to let them pass. A mistake? The moment I slow, forty others see their opening and lurch into the street with the elderly couple. Two are multiplied into forty. And I wait. There is safety in numbers.....

Another View of the Pharmaceutical Industry

by

George A. Chressanthis, Ph.D.

Editor's note: *In light of the current controversy over Medicare drug benefits, I asked George Chressanthis ('77) to consider writing an article for our newsletter. George is currently Director of Promotion Response Analytics at AstraZeneca Pharmaceuticals. He has published numerous industry articles on pharmaceutical pricing, co-authored a book on the same subject, and makes presentations at conferences and workshops around the country on topics involving pharmaceutical marketing. He consented (Thank You, George!), but cautions: " The views expressed in this article are those of the author only and not those of his current or previous employers. All usual disclaimers apply."*

The pharmaceutical industry has taken its share of hits during this year's presidential election. The political rhetoric used to characterize the industry has (to say the least) been interesting to hear, especially for someone who makes his living working within this dynamic industry. All of us have benefited from the various drugs developed by this industry over the years. Yet, how this industry works and how firms bring these drugs to market is relatively unknown by the general public. This article will look at two commonly stated "myths" about this industry.

Myth #1 – The pharmaceutical industry earns excessive profits.

A recent comment in The Philadelphia Inquirer (10/28/00, p. c4) read that the industry earns annual profits of 19 percent of revenue, which critics find excessive, as compared to five percent for other Fortune 500 companies. What is missing from this statement is what the industry spends to bring new drugs to market. Pharmaceutical firms are more research and development intensive than those in other industries. According to the latest statistics, U.S.-based pharmaceutical firms spend about 17.7 percent of revenue on R&D. The top 50 pharmaceutical firms in 1999 spent more than $45 billion on health-care related R&D, a 30 percent increase from 1998 (Med Ad News, Sept. 2000, p. 6). Table I lists the top six pharmaceutical firms for health-care R&D spending for 1999.

These statistics however do not tell the entire story. Companies must bear a great deal of risk and uncertainty. Studies indicate that it now costs at least $500 million to bring a new chemical entity (NCE) to market. The largest drug companies have as many as 100 potential drugs in the pipeline at any time. Why so many? Approximately 80 percent of all NCEs never reach the market. And many that do reach the market prove to be financial duds. Only three of ten drugs approved for the market recover average R&D costs (Med Ad News, Sept. 2000, p. 6).

Table I: Health-Care Research and Development Expenditures

	1999 R & D ($millions)	% Change from 1998
1. Pfizer	$4,035.0	22.1%
2. Glaxo SmithKline Plc.	$3,704.9	-------
3. Johnson & Johnson	$2,600.0	11.3
4. Aventis SA	$2,592.9	7.6
5. Roche Holding Ltd.	$2,462.7	10.5
6 AstraZeneca Plc.	$2,454.0	12.7

Source: *Med Ad News*, September 2000, p.16.

And development costs are growing. Because of the inherent difficulties in creating new drugs across numerous therapy classes, each new generation of products seems to require more time and expense. It now takes about 15 years of research and testing before a typical pharmaceutical product can be sold (see Table II). Also, pharmaceutical firms must go through numerous regulatory reviews of clinical data by the FDA. Although this review process is important, it creates additional risks and uncertainties, increases expense, and further slows the process of getting drugs to market.

Table II: Drug Development: Years to Market

1960s	8.1
1970s	11.6
1980s	14.2
1990-1996	14.9

Source: *Med Ad News*, Sept. 2000, p. 6.

Lastly, while R&D costs increase, the time available for pharmaceutical companies to recuperate R&D costs continues to decrease. While firms maintain exclusive rights for the length of their patents, the patent clock starts ticking long before the drugs are actually introduced into the market. The longer it takes to obtain final government approvals, the shorter is the actual time period during which firms can hold generic substitutes at bay.

These statistics explain why many companies in the industry have sought to merge in order to acquire the necessary economies of scale and scope necessary to develop new drugs. It is also why the industry is very sensitive to policies that will adversely affect revenue and profitability, thereby impacting the ability to put resources into R&D.

Myth # 2 – Price controls will make drugs more affordable and accessible.

The cost of drugs accounts for only about 12 percent of total healthcare expenditures, but about one-third of all out-of-pockets expenses. This makes drug costs very visible relative to other healthcare expenditures. The demand for prescription drugs has increased as a result of the development of new and effective medicines, an aging population that is more likely to consume drugs, an increased awareness of the benefits of drug therapy, and a growing access to healthcare that increases the likelihood of drugs being prescribed. Despite the rapid increase in demand, price increases have been tempered by a number of forces. Managed care continues to exert pressure on the industry through cost containment measures. Also, the rising acceptability and availability of generic drugs offer less expensive, though potentially qualitatively different, alternatives to branded drugs. While total expenditures for drugs rose 15.7 percent in 1998, only 3.2 percent was due to price increases (Med Ad News, Sept. 2000, p. 4).

Yet, what all of you learned (I hope) in Principles of Economics applies just as much to drug pricing as to other products. Price controls can lower drug prices artificially, but not without severe consequences. When prices are driven down, firms have less incentive to supply. The main effect of any controls on pharmaceutical prices would be to severely limit R&D. In fact, variations in controls on drug pricing around the world strongly correlate to trends in resources spent on R&D by country. Where price controls are more restrictive, the R&D expenditures drop.

The United States currently accounts for almost 40 percent of the world market for pharmaceuticals. Given this size, lower U.S. profit margins would have a major impact on world revenues of pharmaceutical producers. R&D would be stifled and the tremendous social benefits and value created by new drug therapies would be lost.

Social Benefits

Finally, the social benefits and value of current drug therapies offer a very different interpretation of drug prices that counters criticisms that they are too high. Drug therapies often provide significant social benefits that go well beyond the direct benefits enjoyed by individual drug users (remember the term "externalities"?). The case of vaccines represents a classic example.

More importantly, Med Ad News also cited a recent study that found a $4 decline in hospital spending for every dollar spent on drug therapy. For example, new lipid-lowering drugs(reduce cholesterol) decrease the need for more expensive and invasive heart-bypass surgeries or decrease the risk of first or second heart attacks. Drugs that prevent and/or treat osteoporosis in women significantly reduce the mortally risk due to hip and spine fractures. New anti-hypertension drugs allow people to control their high blood pressure, reducing the risks of heart attacks and stroke (and associated costs to treat such diseases in the hospital). The use of newer SSRI anti-depressants in one study found that worker productivity improved. Numerous other examples can be listed where drug therapy saves hospital spending, increases the productivity of individuals, and/or improves the quality of life for people to enjoy.

Thus, from a societal viewpoint, drug therapy represents a bargain. The institution of price controls would jeopardize all of these significant benefits enjoyed by society.

Economics in the Woods

by

Dr. James J. Jozefowicz

Picture this. Drs. Willard Radell, Yaw Asamoah, Stephanie Brewer and myself tripping along a narrow wooded path up a hill on a beautiful sunny July afternoon with a gaggle of high school students in tow. As we walk, we imagine traders from the Delaware and Seneca and Shawnee tribes carrying furs and other cargo from Frankstown to Kittanning along this same path one thousand years ago. Where are we? On a remnant of the Frankstown-Kittanning Path, of course!

Wait a minute. Economists in the woods? Economists in the woods with high school students? What's going on here? Is this some kind of bizarre search for Edgeworth's Box? No. It was the third annual Summer Honors Program in Economics -- a week-long event for high-school students from around the state.

The woodland excursion was part of Dr. Radell's field trip on the history of economic development in Western Pennsylvania. Departing from McElhaney Spring at the intersection of the Kittanning and Catawba Paths, the trip included visits to the Allegheny Portage Railroad and Horseshoe Curve, in addition to the remnant of the Frankstown-Kittanning Path. While visiting the Portage Railroad the group got to dodge speeding cars along a highway and visit the Skew Arch Bridge before touring a mock-up of Engine House #6. They got to ride in a funicular up the incline at the Horseshoe Curve only to nearly be encircled by passing trains at the top. In addition, the students learned about a lot more than trains. Do you know why the toilets at the Horseshoe Curve are waterless? Do you know the economic significance of the Sheetz in Carrolltown?

Forays into the wilderness of Western Pennsylvania were not the only highlights of the program. Starting with the basics of economics, students were surprised to learn that all you really need is economics to decide whether to eat potato chips or broccoli and understand why more husbands do the laundry these days! As one participant put it, "Economics scares me. I want to study it, I want to learn about it, but it scares me … because it's so applicable." There's a future economics major if I've ever seen one!

From that introduction, the students played the Stock Market Game and participated in sessions on international economics, money and banking, macroeconomic data, and World Wide Web economics. They also had the opportunity to sample the new field of experimental economics and win money in a series of game theory experiments. We assume that consumers act as if they are maximizing utility and that firms act as if they are maximizing profit. Is it true? Can we replicate such behavior in real-world experiments? Yes! In the trust/reciprocity and public goods games directed by Dr. Brewer, our high school students behaved just like the self-interested rational agents we would expect. Adam Smith's invisible hand was alive and well in Indiana, PA this summer.

Dr. Radell's field trip was a hit, but so were the opportunities to win real money in Dr. Brewer's experimental economics sessions and the picnic at Dr. Stonebraker's house on Tuesday evening. Yes, hot dogs, hamburgers, and cold hard cash are a winning combination with high school students.

The students thoroughly enjoyed their time with us and we enjoyed them. In the words of one participant, "I loved learning about economics. It was new to me when I came here, but I found it very interesting."

The program has proved to be a very successful recruitment tool for IUP. Eleven students involved in the 1999 Summer Honors Program in Economics entered IUP this fall as freshmen. Three of the students entered the Honors College and a fourth has declared a major in Economics. Funding for the last two years came primarily through the generosity of T.W. Phillips Gas and Oil Company, with additional support from the Pennsylvania Partnership for Economic Education.

New York, New York

by

Dr. Stephanie M. Brewer

Editors note: *During the 1970s and 1980's the Economics Club at IUP sponsored a wide variety of academic and non-academic events. Students organized fund-raisers, ran tutoring programs, enjoyed a variety of faculty and off-campus speakers, and partied. Especially ambitious groups even took trips to New York City. Interest subsequently waned and the club slowly sank into oblivion. Until last year. New faculty member Jim Jozefowicz reorganized the organization, recruited officers and, with help of fellow new colleague Stephanie Brewer, has reinvigorated the club. Their latest activity? A trip to New York City.*

As part of reviving the dormant IUP Economics Club, Dr. Jozefowicz and I offered to chaperone a weekend educational trip. By popular request, students selected New York City for our inaugural adventure. They insisted they wanted New York so that we could tour the New York Stock Exchange (NYSE).

On a Thursday evening, we piled into an IUP van with six students and headed off. Dr. Jozefowicz and I made alternate arrangements for our Friday classes. The students claimed that they also had made alternate arrangements.

The first evening we drove as far as the East Stroudsburg Super 8 (an economical choice). That proved to be an adventure in itself as we plowed through rain and fog, carefully dodging the deer lining the edge of the road. I also discovered that handling a 15-passenger van requires some adjustments in driving habits -- not to mention having to pack a pillow so I could reach the floor pedals! [Editor's note: *Dr. Brewer is vertically challenged.*]

We continued into the city Friday morning. Several of the students had never seen New York, and we watched their eyes open wide with delight as we emerged from the Lincoln Tunnel for their first encounter with the Big Apple. We gratefully left the IUP van parked near our hotel fully convinced that utilizing the subways and cab services would place us on a higher indifference curve than driving ourselves.

Arriving early for our scheduled appointment at the NYSE, we checked out the educational film and interactive displays, and we viewed the actual floor of the exchange. On this particular day, the stereotypical chaos on the floor was absent and the traders seemed more interested in watching us and the other visitors than they were in watching the ticker displays. Ever vigilant for good values, we ended our time at the exchange by raiding the gift shop and purchasing memoribilia on sale (did you know the NYSE has adopted a new logo?) [Editor's note: *No one thought to bring your editor a Yankees cap.*].

From the NYSE, we had our picture taken with a bigger-than-life-statue of George Washington in front of Federal Hall. I even saw someone I knew from my undergraduate days at Baylor University. After a few quick probability calculations, Dr. Jozefowicz assured me that I must be mistaken. But, he was wrong. We spied the same woman again later that evening–it is a small world after all!

Friday we stood on the observation deck of the World Trade Center towers and checked out the sights -- including the Statue of Liberty. We experienced up close and personal the crush of people in the subway system as we rode to the Times Square area for dinner. Saturday included a tour of the NBC studios at Rockefeller Center, haute cuisine at the Hard Rock Café and a Broadway show. Some of us chose to see *Rent*, the rest opted for the more traditional *Les Miserables*. We ended the evening by walking along Fifth Avenue where both extremes of our capitalistic system were in full view -- the glitz and glamour of Tiffany's, Prada and other exclusive shops whose doorways were crammed with temporary cardboard homes set up by homeless men for the night.

We strolled through St. Patrick's Cathedral before hailing cabs to take us back to our hotel. After a harrowing cab ride, the gentlemen weren't quite so convinced that they were still on a higher indifference curve than if we had driven, but I suppose that was as much a part of the requisite learning experience about the city as anything else.

Next year? Maybe Washington, D.C., maybe Toronto. Stay tuned.

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