

Are Business Majors Different? Strategies for Teaching Principles of Microeconomics

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One of the fundamental questions of economics is how do you allocate scarce resources to satisfy unlimited wants. In teaching a Principles of Economics course, there are only so many weeks in a semester and so many topics to cover. One has to decide what topics to cover and how to cover them. The biggest determinant of the choices one makes may well be the student audience in the course. One needs to balance the approach so that those students who are only taking one economics course receive enough exposure to “thinking like an economist” with the needs of business majors who would benefit from real world applications of economic theory to business situations. This paper examines two particular areas -- market structure and elasticity -- and presents different approaches based on the types of students one is trying to reach.

INTRODUCTION

One of the fundamental questions of economics is the how does one allocate scarce resources to satisfy unlimited wants. The process takes place on a daily business for individuals, organizations and society as a whole. It also has to take place when one teaches principles of economics. There are only so many weeks in a semester and so many topics to cover. One has to make decisions on what topics to cover and how to cover them. The biggest determinant of the choices you make may well be the audience in the course.

Principles of microeconomics students come from various backgrounds and have various reasons for taking the class. In larger universities, one may have students separated by major. Students who are economics majors may be in one section, business majors in another and students who are neither may be in a third. In principles classes at most colleges, however, one will have all three. One group may be students who are taking the class to fulfill general education requirements and this will be their only exposure to economics. A second group will likely be business majors who will have to take two or possibly three economics courses to complete the major. Economics majors will take many economics courses before they earn a degree. This third group composed of majors will be exposed to enough economics over the course of their college career so that the approach in principles is not as important. The first two groups introduce the dilemma. How does one balance the approach so that those students who are only taking one economics course receive enough exposure to “thinking like an economist” with the needs of business majors who would benefit from real-world applications of economic theory to business

situations? This paper will examine two areas in particular- market structure and elasticity - and outlines two different approaches based on what types of students one is trying to reach.

MARKET STRUCTURE

An effective way to draw together many of the topics in a microeconomics principles course is pose and build answers to two broad questions: How does a market work at its best? And how does a market system fail to work at its best? The answer to the first places the students' inquiry in the pristine environment of perfect competition. This pristine environment provides a clear benchmark or reference point. From that vantage point they begin their exploration of the second question. This exploration requires them to leave the pristine competitive environment and delve into murky, muddy environments: market power, externalities, public goods, and asymmetric information. In these environments they grapple with the deviations from the competitive benchmark. But in their exploration of these muddy areas, the students have the clear reference point of the competitive equilibrium. And they have compass guidance of the two broad questions which they are able to keep in mind. Lastly a feature useful for the students who appreciate graphs is that the answers to these questions boil down to five similar graphs.

The answer to the first question provides the benchmark, the reference point. The general answer to the first question--how does a market work at its best?--is: when the market is competitive. The concept of competitive is defined as a market in which nine pillars (assumptions) are present. Five of these pillars--the first four and the eighth--are familiar to all economists and we make explicit four additional assumptions that we believe are implicit. To help the students remember the pillars, the pillars are introduced using the order of the acronym LIKE PATH \$:

- L...Lots of buyers and sellers
- I...Independent action
- K...Knowledgeable buyers and sellers
- E...Easy entry and exit

- P...Property rights are well defined and enforceable
- A...Always able adults in action
- T...Transactions costs are zero
- H...Homogenous product

\$...\$ is used for S and represents given the current distribution of income and wealth

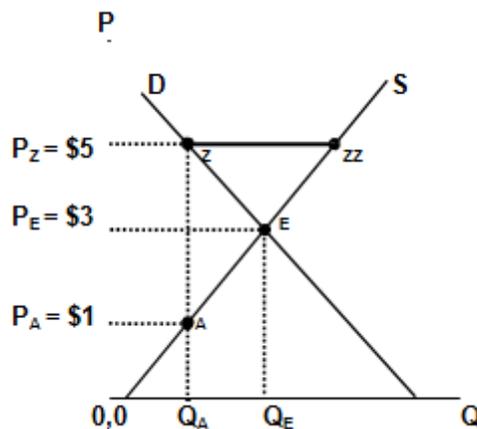
The benefit of these pillars is that they create a pristine environment focused on the power of price as a signal. The nine pillars simplify the complex environment in which a market operates facilitates. Intuitively, these assumptions eliminate the frictions, imperfections, the bumps, and the warts of real-world market activity. By this elimination, they place the market participants and their activities in the pristine environment of perfect competition. In this pristine environment no individual buyer or seller has power over price. Instead, in this pristine environment pricing power resides in the invisible hand of competition in the market. Essentially in an analogy, in this competitive environment each buyer, each seller is similar to a mosquito with no pricing power while the market is the elephant with all pricing power. An individual the buzzing mosquito has little effect on the market elephant's price signal. As a consequence of the competition, the market sends out a price signal determined by the interaction of demand and supply rather than the exertion of power by any one buyer or seller or small group of buyers or sellers. And the individual buyer and seller responds to the price signal as a price taker rather than react by trying to make price.

There is an additional, significant benefit inherent by the simplification afforded when the nine pillars (in particular property rights well defined and enforceable--hence no externalities, no public goods--and

knowledgeable buyers and sellers--hence no asymmetric information) are present: they assure there is no wedge between private benefits and social benefits as well as no wedge between private costs and social costs. Because private and social benefits (costs) are the same, the demand (supply) embodies all benefits (costs inherent in the production of) derived from the good. Since there is no divergence, no wedge between private and social benefit for demand and no divergence between private and social costs for supply, benefits and costs both private and social are equal at equilibrium. Consequently the result of a competitive market's price (and profit) signal is efficiency. Or stated a little less technically, the market works at its best by sending out price signals that induce self-interested buyers and sellers to pick the amount of each good that is optimal from society's perspective as well as the individual decision maker's.

The significance and power of competition is illustrated in Figure #1. If the quantity exchanged were Q_A then there is a surplus of value of the distance $Z-A$ when viewed vertically (or a surplus of quantity of the distance $Z-ZZ$ when viewed horizontally).

FIGURE 1



Viewing the diagram vertically, competitive market pressures at Q_A lead buyers and sellers to increase the quantity exchanged because the value of the marginal unit to the buyer measured along the demand curve (point Z) exceeds the cost of the marginal unit sold by the seller (point A). And as long as this excess of benefit over cost persists, there is the mutually beneficial incentive to increase quantity. In the competitive environment, the horizontal Z,ZZ surplus of quantity leads puts downward pressure on price. The falling price induces decreases in the quantity supplied (moving from ZZ to E along the supply curve) and increases in the quantity demanded (moving from Z to E along the demand curve). Whether viewed vertically or horizontally, the movement from Q_A and P_Z to Q_E and P_E is due to the mutually beneficial incentives and pressures that competition brings to bear.

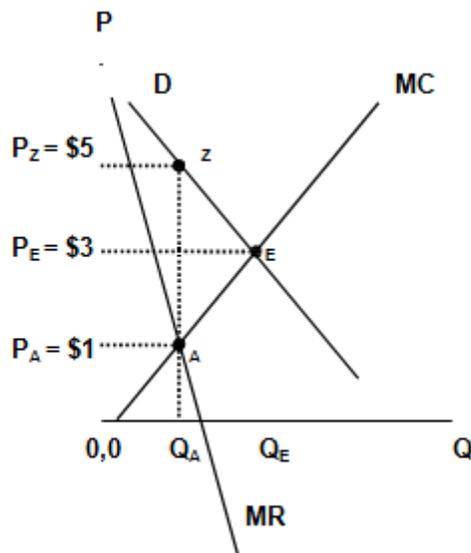
With the benchmark of perfect competition established (and many applications practiced in class), attention turns to the second question: How does a market system fail to work at its best? The approach taken for answering the second question is: remove one of the nine pillars and see what results. In each case removing a pillar results in the appearance of a wedge that separates society's marginal benefit from society's marginal costs. Hence the level of production diverges from that of the competitive benchmark's production level. The market fails!

Notably this approach provides a different perspective on the topic of monopoly. In the standard market structure approach, monopoly is one of many possible market structures which differ from perfect competition. Rather in this "remove-a-pillar-approach" monopoly--the presence of market power by the seller--is seen as one of many sources of market failure due to the lack of competition in which the market fails to live up to the promise of Adam Smith's Invisible Hand that the pursuit of private interest results in

the best outcome for society. In turn, we now consider market power, externalities, public goods, and asymmetric information.

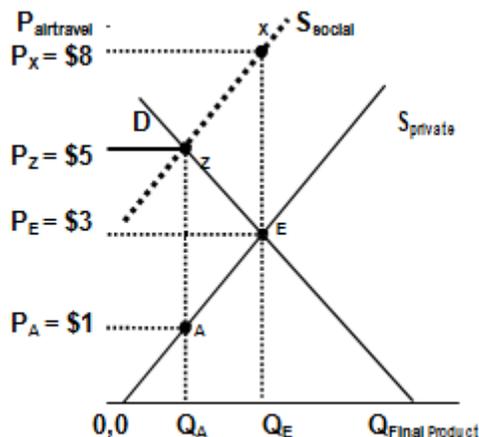
Market power emerges when one removes the first pillar of lots of sellers (and the easy entry and exit pillar). In the extreme of only one seller there is monopoly, (see Figure #2 below), with a few more sellers oligopoly (raising the importance of strategy and game theory) and with even more monopolistic competition (raising the importance of product differentiation which also vitiates the pillar of homogenous product). In all these as the seller(s) exercises market power by restricting production (in Figure #2 from Q_E to Q_A) in order to maximize profit, the seller(s) inserts a wedge. As illustrated in Figure #2 this wedge is \$4 between the private benefit (represented by the price chosen from the demand curve of point z at P_Z of \$5) and the private marginal cost (point A at P_A or \$1). Consequently as the value to society of the marginal unit exceeds its cost, too little is produced from society's view point. This wedge or divergence persists as there is no (or too little) competitive pressure to force the increase in production which would remove the wedge (angle ZEA) between private costs and benefits.

FIGURE 2



When one removes the pillar of well-defined property rights externalities emerge. In the case of a negative externality generated coincidentally by the production of a Final Product, there is some cost incurred by society which the private supplier of the goods does not incur. Hence the social supply curve is the private supply curve plus the vertical addition of this cost incurred by society but not the private firm. In Figure #3 this cost un-incurred by the sellers of the good at quantity Q_A is given by the vertical distance between the social and private supply curves or ZA . This distance is the value of the resource lacking a well-defined property right but is used in the production of a Final Product (maybe air used to dispose of jet exhaust or water to dispose of industrial waste or agricultural fertilizer run off).

FIGURE 3

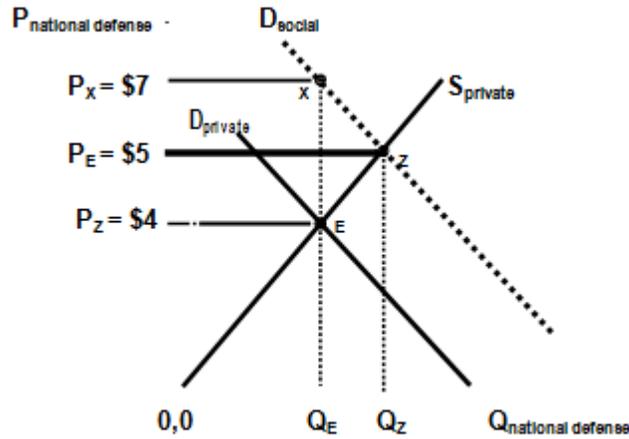


Private buyers and sellers of the Final Product (perhaps airline travel) reach equilibrium at point E at quantity Q_E and price P_E where the private supply and demand curves intersect. But private sellers do not pay the external or un-incurred cost for the resource lacking a well-defined property right (maybe air) but used in making that Final Product (perhaps airline travel). If this external cost which is paid by society were to be brought into the decision calculus of private sellers of the Final Product, then the dotted social supply curve would be in force and the equilibrium would be at the lower quantity Q_A and higher price P_Z .

Without a defined property right, economic agents use a resource at zero pecuniary cost. Without a cost they “overuse” this resource in their provision of the final product up to quantity Q_E . For a while this might go unnoticed but as the resource becomes scarce, there is an opportunity cost. This opportunity cost is often felt and referred to as pollution as the economic activity of one agent (for example maybe airlines and their customers) generates a cost that spills over onto another. On the flip side of the negative externality presented here, there are positive externalities that would separate private from social benefits by raising the social demand curve above the private demand curve. The point is the social and private costs (benefits) no longer align when there are externalities due to the failure to define property rights. There is a divergence, a wedge at Q_E of angle XZE in figure with social costs at X exceeding social benefits at E . Consequently the price signals sent out by markets fail to produce the optimal amount at least cost from society’s point of view.

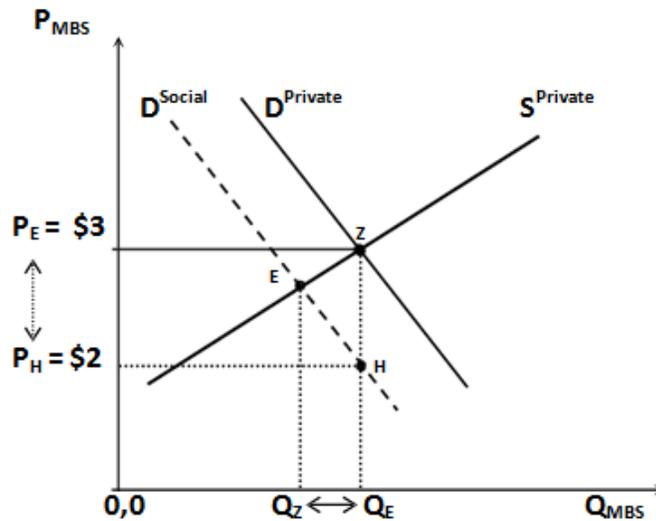
When property rights though defined cannot be enforced, public goods exist. (See Figure #4). With public goods (in the extreme of pure public goods) no one can be excluded without diminishment (rivalry.) Everyone gets all of it! So the social benefit to all is more than the private benefit to the one (few) who buy the public good in the amount she/he (they) want. That is the social value curve--“demand curve”--lies above the private value--“demand”--curve for the good. Consider national defense. Suppose someone or small group of buyers buy Q_E amount of national defense. Since everyone gets all of it, there is a wedge of angle XZE in Figure #4 between the benefit to the private buyer(s)--at point E on the private value curve--who foot the bill for the amount they wish to have and the public benefit to all in society on the social value curve--at point X --as all derive benefit from the good even the free riders who do not pay. Note that Q_E is less than the quantity Q_Z at which social benefit equals social cost. Due to the very nature of a public good which is everyone gets all of it, the un-enforceability of property rights eliminates market pressure to increase production to Q_Z where social benefits equal social costs at the margin.

FIGURE 4



Lastly removing the pillar of knowledgeable buyers and sellers means one side--either buyer or sell--knows better than the other the true benefits and costs of the item/service being traded. Again a wedge of angle between private and social emerges, sometimes on the benefit side other times on the cost side. One need only remember the financial crisis and the Mortgage back securities (see Figure #5) in which the value perceived privately by the buyers (given as \$3 or Z) was much higher than the “true value” to society (given by \$2 or H) known by the sellers who originated loans (i.e. checked the creditworthiness or in cases did not check the creditworthiness only the pulse of the borrower) but unknown to buyers due to asymmetry of information. The ZH difference of \$1 and the ZEH wedge separates private and social benefits and lead to the wrong amount Q_E or over production of Q_ZQ_E . Indeed too many unwarranted loans were made which ultimately went into default.

FIGURE 5



Or one can recall the never ending wedge between private and social costs via moral hazard and adverse selection imposed upon insurance markets by asymmetric information. In these instances the buyer knows better than the seller that cost the buyer will impose on the insurance company. The social supply curve would lie above the private supply curve as in Figure #3. One only needs to adjust the labels of the axes, *mutatis mutandis*, and reinterpret the results from the point of view of the insurance context.

The point in each of these four cases of removing a pillar is that:

- (1) social benefits diverge from social costs at the margin and
- (2) the divergence persists due to the absence of the power of competition to force movement to the competitive benchmark in which social benefit equals social cost and production equals the competitive equilibrium's level of production.

In short the absence of competition results in the presence of this wedge that causes market price signals to mislead and drive society away from efficiency.

This approach certainly gives all students a solid understanding of markets and how markets fail. Anyone who paid attention to this discussion would definitely be able to "think like an economist". However, is this enough for business majors? Would they benefit from more, or if time does not allow, from something different? Another approach for business majors would be to spend more time with alternative market structures and how, given the different market structures that firms operate under, their maximizing behavior changes.

The initial approach would be the same. A solid understanding of the perfectly competitive, ideal market is necessary. The other three market structures- monopolistic competition, oligopoly and monopoly- can then be contrasted with perfect competition. The three main areas to focus on would be type of product, entry, and firm interaction.

Perfect competition:

- > large number of firms
- > ease of entry and exit
- > homogeneous products
- > no interaction

Monopolistic Competition:

- > large number of firms
- > ease of entry and exit
- > differentiated products
- > no interaction

Oligopoly:

- > few firms
- > barriers to entry

- > differentiated products
- > firms interact

Monopoly

- > single seller
- > barriers to entry
- > unique products

Once the differences in market structure are firmly established, each market structure can be examined in detail with regards to how a firm's strategy is impacted by the market structure in which it operates.

There are few, if any, perfectly competitive markets in the real world. Small scale farming is one that comes close. Under perfect competition, there is little or no strategy for the individual firm. Perfectly competitive firms produce as much as they can with the resources they have. There is no product differentiation and no interaction between firms. Farmers try to grow as much as they can with resources they have. The price they receive is determined by the market. Farmers do not react to one another. There is little or no strategic behavior exhibited in perfectly competitive markets.

Monopolies are the other end of the spectrum. There is only one seller and there are barriers to entry. Monopolies may not exhibit much strategic behavior either. As they have no close competitors and their product is unique, they do not have many areas where it would be in their best interest to use resources to strategize. Given the monopoly faces the market demand curve, an effective strategy might involve targeting that demand curve. One strategy might be to try to shift the market demand. Another might be to make that demand more elastic. As powerful as the monopoly market is for a theoretical analysis, it does not offer much for real world analysis. Pure monopolies are few and far between and tend to be regulated when they do.

Monopolistically competitive markets on the other hand are everywhere. The fact that monopolistically competitive firms differentiate their products leads to behavior that is quite different than perfectly competitive firms. Productive differentiation comes in many forms. Quality, location, size, shape, advertising are but a few. Spending time on differentiation gives business majors an introduction to marketing. It also allows for discussion of strategy. How much should a firm spend on differentiation? The obvious answer is only as much as they can recover through price differentials. An example from the restaurant market will illustrate. Where should a restaurant locate? Rents are higher in some locations than others. The restaurant should only pay higher rent if it believes it can recover the higher rent with higher prices or a bigger volume.

Oligopoly as a market structure may be the most interesting of all for business majors. By far the most dominant market structure in terms of business volume, oligopolies exist in almost every segment of the economy. With a small number of firms, differentiated products and barriers to entry, oligopolistic market structures are permeated with strategic behavior. From erecting barriers to entry, to reacting to other firms, to capturing scale and scope economies, firms under oligopolistic conditions behave very differently from other firms. Perhaps the most significant result of this market structure is that firms interact. This allows for the students to be exposed to basic game theory. Alternative teaching methods and several in class exercises flow readily from the discussion. Students can be paired up for simple games. Games such as tic-tac toe or versions of the prisoner's dilemma can be used to demonstrate strategic behavior. One that is particularly effective is rock/ paper/ scissors. Pair the students up and take one of the partners from each pair out of the classroom. Tell them they are going to play two rounds. In round one, all they are going to do is be a rock each and every time. In round two, they are to do whatever their opponent did the previous time. Bring them back into the room and tell their partners that their goal is to beat their opponent three times in a row. Let the games begin! When they are finished, they may ask, "What was the point?" Tell them they have just demonstrated the two most dominant at business strategies in the marketplace today. Full Speed Ahead (Walmart) and follow the leader (automobiles).

ELASTICITY

The traditional approach when teaching elasticity is to focus on price elasticity of demand. This approach works very well for those taking economics as a general education course. Depending on the math skills of the students, either basic math or calculus can be used to define the concept as relationship between the percentage change in quantity demanded and the percentage change in price. Changes in elasticity along the demand curve are explained in great detail to demonstrate that elasticity is not the same as slope. Elasticity measures are defined as elastic or inelastic. The relationship between elasticity, total revenue and price changes are discussed in great detail. Students practice calculating elasticity. Once

students have mastered the calculations, time constraints begin to enter the equation. The determinants of elasticity have to be covered but at what depth is a going to be a function how much time was spent on the math. Depending on the time remaining, supply elasticity, income elasticity, and cross price elasticity are then covered briefly if at all. This approach works very well for the generalist student learning to think like an economist but business majors may well benefit from a different approach.

Cross price elasticity is a vital concept for business students to master. It is too important to relegate to the last in a series of elasticity calculations that budding economics students need to commit to memory as so often happens in the economics courses. So for business students the focus is first put on SWOT (strengths, weaknesses, opportunities, threats) analysis and in particular identifying a business's opportunities and then its threats. This captures the student's imagination via intuition. The importance of mastering the calculation follows naturally and successfully.

Building upon the lead of Baye (2000), students are asked two leading questions and then several follow up questions. First, have they ever bought a hamburger at McDonald's? Most of them answer yes. The second question: when you buy the hamburger is that all you buy? The answers to the second question are legion: a cola, a shake, fries, a salad, a happy meal, a McFlurry, and on and on. The first follow up question is what do you think would happen to the amount of fries McDonald's sells if McDonald's lowers the price of its hamburger ($\downarrow P_h$)? The answer is they will sell more fries ($\uparrow Q_f^d$). So the following connection is established by intuitive consensus: $\downarrow P_h \rightarrow \uparrow Q_f^d$. And the students realize McDonald's opportunity: McDonald's can increase the revenues it generates on fries by lowering the price of hamburgers a bit. Indeed the students generalize to McDonald's ability to increase its revenues by offering other things that go with a hamburger.

Now to set the intuitive, cross-price-elasticity hook, ask the students to think about several other businesses: self- service gasoline and steak houses. If they owned a self- service gasoline station what would they put on the shelves of the station? After all, the customer filling her/his car with gasoline has two things, money to spend and time to shop. Again the answer contains things that go with gasoline, that rise in quantity demanded when the price of gasoline falls. So the store is filled with window washer fluid, STP fuel additive, cigarettes, and cola. If they owned a steak house it would be beer, cola, and baked potatoes. And the connections devolve further. Just consider that with the baked potato go butter, sour cream, and bacon bits. Indeed the butter, sour cream, and bacon bits add up to a large expenditure. With this head of steam built up, invariably a student brings up the grocery store and milk going on sale.

Identifying such opportunities (connections) and how large such opportunities are (how strong the connection) brings to the fore the question of how much. The answer is naturally cross price elasticity. Recalling the McDonald's hamburger-fry connection the formula for cross price elasticity is introduced $\% \Delta Q_f^d / \% \Delta P_h$. The negative sign of the ratio for a complement is established from hamburger-fry connection of $\downarrow P_h \rightarrow \uparrow Q_f^d$. With all this development done the conclusion is announced that the cross price elasticity helps the firm identify opportunities.

While often complements are obvious to the intuition, cross price elasticity provides the business of a way to identify less obvious complements, which are opportunities. Consider for instance hamburgers and coffee: if the lower hamburger price leads to increased coffee sales the cross price elasticity of between coffee and hamburgers is negative. This would establish a complementary nature of the goods and a business opportunity. Essentially the lower price of a burger brings the parent to McDonald's for the child's burger and then the parent grabs a cup of coffee. The size of the negative price elasticity coefficient determines the strength of this opportunity.

With all this established three further extensions for consideration arise. Returning to the McDonald's hamburger and fries example:

- (1) What happens to the revenue from hamburger sales if the price of a hamburger is reduced?
- (2) What is the interpretation of the cross price elasticity if it is positive?
- (3) What is the interpretation of the cross price elasticity for the case of an increase in the price of hamburger rather than a decrease?

The first leads to a refresher on own price elasticity and to the discussion of loss leaders such as milk. The grocery store is willing to endure reduced revenues on milk if it gains more from the sales of all milk's complements. Similarly for hamburgers, McDonald's is willing to endure reduced revenues on hamburgers if it gains more from the sales of all hamburger's complements. But as Baye [2000, 84] points out in his discussion, if hamburgers have an elastic demand and if hamburgers and sodas are complements, lowering the price of hamburgers can increase revenues not only due to increased revenues on hamburgers themselves but this is reinforced by the increase revenues due to increased soda sales.

The second leads to the discussion of threats. Should a decrease in the price of KFC chicken (or Taco Bell's taco or Burger King's burger) lead to a decrease in McDonald's hamburgers sold ($\downarrow P_{KFC} \rightarrow \downarrow Q^d_{MCH}$), McDonald's needs to be watchful of KFC's (Taco Bell's, Burger King's) pricing behavior. The pricing of KFC is a threat to McDonald's sales as buyers would be substituting KFC chicken for McDonald's burgers. So substitutes whose prices are falling are seen as the source of threats.

And as the connection is $\downarrow P_{KFC} \rightarrow \downarrow Q^d_{MCH}$, the cross price elasticity is positive. So, positive cross price elasticities can be used to identify threats. This maybe most helpful as cross price elasticities could help identify less obvious threats such as changes in the price of gasoline affecting the ability of families to buy burgers at McDonald's.

The third enriches the interpretation of opportunities and threats. Price increases reverse cross price elasticity's identification of opportunities and threats. When price, say of hamburgers, rises--ceteris paribus--then sales of complements such as fries would drop and revenues would be lost. But when the price of KFC chicken rises--ceteris paribus, the sales of substitutes such as McDonald's burgers would rise and revenues would be gained. Indeed identifying opportunities and threats is complex.

Perhaps the richest lesson contained in the study of cross price elasticity is far beyond both [1] the technical computation of the coefficient of cross price elasticity and [2] whether goods are substitutes or complements. The richest lesson is that the student realizes that he/she lives in a complex web of price signals and interdependent opportunities and threats.

CONCLUSIONS

Engaging business students with the economic concepts and tools they will need to use in their careers requires the instructor to select from the many economic concepts and choose the most effective way from the many possible ways to present them. This paper aids the instructor by selecting and examining two areas--market structure and elasticity--and two providing two different approaches to each. But knowing these ways of getting the point across is not enough. The key to selecting from among these ways of getting the point across is: know your audience! Find out why the students are in the class and determine what they are to take away from the class. As economics clearly demonstrates, it's all about the choices you make.

REFERENCE

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