Lecture 1: Introduction to Managerial Economics

Textbook

- Textbook: Allen, W. Bruce, Weigelt, Keith, Doherty, Neil A., and Edwin Mansfield, 2009, Managerial Economics (7th edition), W. W. Norton (ISBN: 0393932249).

Course Goals

- Learn to use economic models to think critically about everyday problems.
- Know what conditions characterize competitive outcomes and efficient allocations of resources.
- Understand how firm cost structure and the nature of the market determine prices and production; learn how firms with pricing power can exploit variation in demand to price discriminate and maximize profits.
- Apply strategic thinking to decision-making and know how to use it to analyze firm and individual choices.
- Understand how risk influences decision-making and the design of real world contracts.

Grade Determination

- Final Grade = .30(Problem Sets) + .30(Midterm Exam 1) + .40(Final Exam)
- The midterm exam will occur in class on Thursday, November 5. The final exam will occur during the final class session on Monday, December 14.

Microeconomics and Macroeconomics

- Microeconomics represents the branch of economics which deals with the behavior of individual economic units—consumers, firms, workers, and investors—as well as the markets that these units comprise.
- Macroeconomics represents the branch of economics which deals with aggregate economic variables, such as the level and growth rate of national output, interest rates, unemployment, and inflation.

Managerial Economics

- Managerial economics involves the application of microeconomics to analyze managerial actions and their effect on firm performance.
    - The purpose of this analysis is to shed light on concepts such as cost, demand, profit, competition, pricing, compensation, and business strategy.
    - With its focus on behavior, managerial economics provides powerful tools and frameworks to guide managers to better decisions.

Business and the Social Sciences

- Economics, psychology, and sociology represent the "parent" social sciences upon which most business disciplines are based.
    - Managerial economics, finance and accounting draw primarily on economics (especially micro), whereas management and marketing tend to be based primarily upon psychology and sociology.

        - Counterexamples include behavioral economics and finance, use of econ-based pricing strategies in marketing, application of game theory in management strategy, etc.

Managerial Economics

- Where does managerial economics fit within the EMBA curriculum?
    - Managerial economics is a standard first-year course requirement in most EMBA programs.
    - This course differs conceptually from other first-year courses in that it (like QBA 5330) focuses upon the analytic foundations for decision-making that are subsequently applied in "core business foundations" courses such as accounting, finance, and marketing.

Internet Resources: Class Website and Class Blogsite

Why all the math?

- Perspective from the great master, Alfred Marshall:
    - In a letter to his protégée, A.C. Pigou, he [Marshall] laid out the following system: "(1) Use mathematics as shorthand language, rather than as an engine of inquiry. (2) Keep to them till you have done. (3) Translate into English. (4) Then illustrate by examples that are important in real life (5) Burn the mathematics. (6) If you can't succeed in 4, burn 3. This I do often."

      Source: Todd G. Buchholz, 1989, New Ideas from Dead Economists, New York: Penguin Group, p. 151.

Why all the math?

- Perspectives from the economics blogosphere:
    - Nobel laureate Paul Krugman notes that "Math in economics can be extremely useful", and that math can serve an essential analytic function by helping to clarify one's thoughts.
    - Greg Mankiw notes that "Math is good training for the mind. It makes you a more rigorous thinker."
    - Jason DeBacker observes that math helps to quantify tradeoffs, and that using math "…puts in plain sight the assumptions that lie behind a model and the mechanisms at work in the model".
- However, it is also important to remember that it is better to be vaguely right than precisely wrong!

Discrete (algebra) versus continuous (calculus) analysis

- In the textbook's preface (cf. pp. xx), the authors note that given the choice between algebra and calculus, the average student prefers algebra.
- The authors use both algebraic and calculus-based analytic approaches; however, so long as one understands basic calculus, the latter approach is often easier to grasp.

- For those students whose math skills may be a bit on the "rusty" side, I recommend reviewing Appendix A (pp. 597-626) of the textbook.

QBA 5330 Review: Calculating Derivatives

QBA 5330 Review: Interpreting Single Variable Regression Models

- Suppose you are interested in determining the historical sensitivity of the returns on your company's stock (r_s) compared with returns on the Wilshire 5000 index U.S. stock market (r_w). The parameter a1 in the equation $r_s = a_0 + a_1(r_w)$ provides this answer, and it corresponds to the derivative dr_s/dr_w (what is the expected sign for a_1?).

QBA 5330 Review: Interpreting Multiple Variable Regression Models

- Suppose that product demand (Q) is a function of price P, per capita disposable income I, and the amount spent on advertising A; i.e., $Q = b_0 + b_1(P) + b_2(I) + b_3(A)$. Here, the parameter b_1 corresponds to the partial derivative $\partial Q/\partial P$; it indicates how product demand responds to changes in price, holding I and A constant (what are interpretations and expected signs for b_1, b_2, and b_3?).

QBA 5330 Review: Optimization with Calculus and with Solver

The Optimal Size of a Nursing Home (Class exercise)

- The nursing home industry is growing rapidly because of the aging of the U.S. population. The average cost per patient-day of a nursing home (owned by a chain of for-profit homes) is $Y = A - 0.16X + 0.00137X^2$, where X is the nursing home's number of patient-days per year (in thousands) and A is a number that depends on the region in which the nursing home is located (and other such factors) but not on X. (a) How big must a nursing home be (in terms of patient-days) to minimize the cost per patient-day? (b) Show that your result minimizes, rather than maximizes, the cost per patient-day.

The Value of the Firm

- Owners (shareholders) of for-profit organizations expect managers to increase the value of expected future cash flows; i.e., maximize firm value.
- The value of the firm (V) is defined in equation (1.1) in the text as the present value of its expected cash flow, or profits.

The Value of the Firm (special cases)

The Value of the Firm

- Given $V = \pi_1/(i-g)$,
  - $\partial V/\partial \pi_1 = 1/(i-g) > 0$,
  - $\partial V/\partial i = -\pi_1/(i-g)^2 < 0$, *and*
  - $\partial V/\partial g = \pi_1/(i-g)^2 > 0$;

- I.e., the value of the firm is positively related to its expected profits and the rate of growth in expected profits, and inversely related to its cost of capital!

Rule of 72 – a brief digression…

The Value of the Firm: Profit is a Reward for:

- Innovation
  - Producing products that are better than existing products in terms of functionality, technology, and style
- Taking Risks
  - Risk takes many forms; e.g., future outcomes and their likelihoods are unknown, as are the reactions of rivals.
- Exploiting Market "Inefficiencies"
  - Building barriers to entry, employing sophisticated pricing strategies, etc.

Impact of Good & Bad News on Firm Value

"Good" management can create value; "bad" management can destroy value

- See Value Destruction: The Cost to Companies That Engage in Deceptive Marketing:
  - "On September 2, Pfizer agreed to pay $2.3 billion to settle civil and criminal allegations that it violated federal rules governing drug sales. The pharmaceutical manufacturer was charged with illegally promoting its pain-killer Bextra and three other medications by offering doctors speaking fees and subsidized trips to resorts, among other benefits. The settlement was the largest ever levied against a U.S. company."
  - "While the amount of the settlement is significant, the indirect costs to the company may be even higher over time in terms of lost shareholder value."

The Principal-Agent Problem

- Managerial Interests and the Principal-Agent Problem
  - The interests of a firm's owners and those of its managers may diverge, unless the manager is the owner.
  - However, the separation of ownership and control is often necessary because the capital raising and risk bearing capabilities of entrepreneurs are limited.

The Principal-Agent Problem

- Separation of ownership and control
  - The principals are the owners; they want managers to maximize firm value.
  - The agents are the managers; other things equal, they prefer more compensation and less accountability.
  - The divergence in goals is commonly referred to as the principal-agent problem.

Moral Hazard

- A moral hazard occurs when one party is responsible for the interests of another, but has an incentive to put his or her own interests first.
- If I can take risks that you have to bear, then I may as well take them; however, if I have to bear the consequences of my risky actions, this will motivate me to act more prudently.
- Managers who choose not to maximize firm value may act this way if compensation is not adequately sensitive to the fortunes of the firm's owners.

Solution: Moral Hazard

- Devise methods that lead to convergence of the interests of the firm's owners and its managers
- Examples: contract design which ties managerial compensation to shareholder welfare; e.g., via share/option ownership, bonuses linked to profits, etc.

Demand and Supply: a First Look

- A market exists when there is economic exchange; that is, individuals and organizations interact with each other to buy or sell goods and services.
- Markets typically function well so long as contracts are binding and enforceable, which in turn implies respect for the rule of law and private property rights.

The Demand Side of the Market

- Demand Function
    - Behavior of quantity demanded relative to price within a given period of time, holding other influences constant.
        - Other influences typically include factors such as income, product quality, prices and product quality of substitutes and complements, advertising expenditures, etc.
    - Negative slope; quantity demanded increases as price falls.

The Supply Side of a Market

- Supply Function
    - Quantity supplied relative to price within a given period of time, holding other influences (e.g., technology, costs of so-called "factors" of production such as labor and capital) constant
    - Positive slope; quantity supplied increases as price rises.

Actual Price

- If actual price is above (below) equilibrium price, there will be a supply surplus (deficit) that puts downward (upward) pressure on the actual price.
- If actual price is equal to equilibrium price, then there will be neither a shortage nor a surplus and price will be stable.