Chapter 1

Introduction to managerial economics

LEARNING OBJECTIVES

- Appreciate the objective of managerial economics.
- Understand value added and economic profit.
- Apply total benefit and total cost to decide participation.
- Apply marginal benefit and marginal cost to decide extent.
- Appreciate the effect of bounded rationality on decision-making.
- Understand the vertical and horizontal boundaries of an organization.
- Distinguish competitive markets, market power, and imperfect markets.

KEY TAKEAWAYS

- Managerial economics is the science of cost-effective management of scarce resources.
- Value added is the difference between buyer benefit and seller cost, and comprises buyer surplus and seller economic profit.
- In decisions on participation, compare the total benefit and total cost.
- In decisions on extent, compare the marginal benefit and marginal cost.
- In decision-making, take care to avoid systematic biases, including the sunk-cost fallacy, status quo bias, and anchoring.
- The vertical boundaries of an organization delineate activities closer to or further from the end user.
- The horizontal boundaries of an organization are defined by the scale and scope of operations.
- Businesses with market power must manage their costs, pricing, advertising, and relations with competitors.
- Businesses in imperfect markets should act strategically to resolve the imperfection.

TIPS FOR INSTRUCTORS

Global flower market video: https://www.bbc.com/future/bespoke/made-on-earth/the-new-roots-of-the-flower-trade/

PROGRESS CHECKS AND ANSWERS

1A. Explain the relation among the following: buyer benefit, seller cost, value added, buyer surplus, and economic profit.

Answer
Value added = Buyer benefit − Seller cost = Buyer surplus + Seller economic profit.

1B. Suppose that the offer from the new firm is $25 per hour. Should Angela reject?

Answer
Angela should compare the marginal earnings and marginal cost in the new job, decide how much she would work in the new job, and then compare the total earnings and total costs in the current and new jobs.

1C. What is bounded rationality and what problems does it cause?

Answer
Bounded rationality is the idea that there are limits to rationality when individuals make decisions. It can result in suboptimal decision-making: for instance, individuals may erroneously count sunk costs, display a tendency to stick to the status quo, or rely excessively on a specific piece of information when making decisions.

1D. Explain the difference between the vertical and horizontal boundaries of an organization.

Answer
The vertical boundaries delineate activities closer to or further from the end user. By contrast, the horizontal boundaries are defined by the organization's scale and scope of operations.

1E. Distinguish the three branches of managerial economics.

Answer
The three branches are: (i) Competitive markets, (ii) Market power, and (iii) Imperfect markets. Competitive markets have large numbers of buyers and sellers, none of which can influence market conditions. By contrast, a buyer or seller with market power can

influence market conditions. A market is imperfect if one party directly conveys benefits or costs to others, or if one party has better information than another.

REVIEW QUESTIONS AND ANSWERS

1. Explain the difference between value added and economic profit.

Answer
Value added is the difference between buyer benefit and seller cost. Economic profit is the difference between seller revenue and seller cost.

2. Consider a charity that gives free meals. Since the charity receives no revenue while meals are costly, do the free meals mean that the charity is destroying value?

Answer
Value added is the difference between buyer benefit and seller cost (not the difference between seller revenue and seller cost). So, even though the charity receives no revenue, it need not be destroying value. For the free meals to create value, the buyer's benefit must exceed the seller's cost. In this example, the recipients of the meals are the "buyers," though they buy the meals at a price of zero. The charity is the seller.

3. Maggie works 10 hours a day at a supermarket. The store pays $10 per hour for a basic eight-hour day and $15 per hour for overtime. What are Maggie's (i) marginal pay and (ii) average pay?

Answer
i) Maggie's marginal pay from 10 hours of work is $15 per hour, since she is paid $15 for an additional hour worked from 9 hours to 10 hours.
ii) Maggie's average pay is her total pay divided by her total hours worked. This can be expressed as $(8 \times \$10 + 2 \times \$15)/10 = \$110/10 = \$11$. Therefore, her average pay is $11 per hour.

4. Explain the difference between the marginal and average values.

Answer
The average value of a variable with respect to some factor measures the total value of the variable divided by the total quantity of the factor, whereas the marginal value measures the change in the variable associated with a unit increase in the factor. The relation between marginal and average values with respect to some factor depends on whether the average value is decreasing, constant, or increasing with respect to the factor.

5. In decisions on participation, managers should compare the total benefit and total cost. True or false?

Answer
True.

6. In deciding how many hours to work, why should a worker compare the marginal earnings and marginal cost of each hour?

Answer
The decision of how many hours to work is one of extent. By comparing the marginal earnings (benefit) and marginal cost of each hour, the worker maximizes her net benefit from working, i.e. total benefit minus total cost. As long as marginal earnings exceed marginal cost, it is in the worker's interest to work longer hours, and vice versa.

7. Why do individuals act with bounded rationality?

Answer
People act with bounded rationality because they have limited cognitive ability and lack self-control.

8. Describe the vertical boundaries of your local cable television provider. In what ways could the vertical boundaries be expanded or reduced?

Answer
With regard to vertical boundaries, a local cable TV provider that produces TV programs is more vertically integrated than a local cable TV provider that buys TV programs from others.

9. Describe the horizontal boundaries of your university. In what ways could the horizontal boundaries be expanded or reduced?

Answer
A university that merges with a hospital is expanding its horizontal boundaries. A university that shuts some of its faculties down is shrinking its horizontal boundaries.

10. In the context of manufacturing Apple iPhones, explain the difference between outsourcing and vertical integration.

Answer

When Apple engages a contractor in China to manufacture iPhones, Apple is outsourcing, i.e. vertically disintegrating. If Apple were to manufacture the iPhones, it would be vertically integrating (upstream).

11. Explain the difference between: (a) the market for electricity; and (b) the electricity industry.

<u>Answer</u>
(a) The electricity market includes buyers and sellers. (b) The electricity industry consists of sellers only.

12. In every market, all buyers are consumers and all sellers are businesses. True or false?

<u>Answer</u>
False. In business-to-business markets, buyers are businesses. In human resource markets, sellers are human beings.

13. What is another name for the model of competitive markets?

<u>Answer</u>
Demand and supply model.

14. What distinguishes a manufacturer with market power from one without market power?

<u>Answer</u>
A manufacturer with market power can influence conditions of demand and/or supply.

15. Managers operating in an imperfect market should (choose a or b):
(a) Set high prices to make up for the imperfection.
(b) Act strategically to resolve the imperfection.

<u>Answer</u>
(b).

DISCUSSION QUESTIONS AND ANSWERS

1. The Hong Kong Hospital Authority provides healthcare at subsidized prices through a network of hospitals and clinics. In the financial year 2019–2020, the

Authority earned fees and charges of HK$4.8 billion while incurring expenses of HK$76.9 billion. The government paid the Authority a subsidy of HK$71.3 billion.

(a) What is the economic profit of the Hospital Authority?
(b) What is the minimum benefit that the Hospital Authority l must provide to add value?
(c) Some critics might argue that, since the Hospital Authority is losing money, it should be shut down. Please explain why or why not.
(d) The waiting times for some specialist services are quite long. Should the government increase the subsidy so that the Hospital Authority can expand its staff and facilities?

<u>Answer</u>
(a) Economic profit = HK$76.9 billion – HK$4.8 billion, which is a loss of HK$72.1 billion.
(b) Value added = Buyer benefit – Seller cost. For value added ≥ 0, the hospital needs Buyer benefit ≥ Seller cost, or Buyer benefit ≥ HK$76.9 billion.
(c) Not necessarily. The Hospital Authority can still be value adding, rather than value destroying, if buyer benefit exceeds the seller cost of HK$76.9 billion. Evidence to the contrary is needed for critics to make a convincing case that the Hospital Authority should be shut down.
(d) The government should only increase its subsidy if it assesses that the marginal value added from the expansion of staff and facilities, i.e. marginal buyer benefit minus marginal seller cost, is positive. If the marginal buyer benefit (e.g. earlier detection of conditions and increased patient satisfaction) is higher than the marginal seller cost (e.g. higher payroll expenditures), then the increase in subsidy would increase value added and should be undertaken.

2. At the time of writing, Amazon.com offered Prime, a bundle that includes free shipping on consumer purchases, discounts on groceries, as well as video, music, games, and books, at a price of US$119 per year. The price of the Harry Potter paperback box set was US$50.33 with free shipping.

(a) From the viewpoint of an Amazon Prime subscriber, compare the marginal cost of buying the Harry Potter box set from Amazon vis-à-vis a competing retailer that charges for shipping.
(b) Suppose that Amazon Prime subscribers are subject to the sunk-cost fallacy. How would that affect their demand to buy products from Amazon vis-à-vis competing retailers?
(c) By default, Amazon has set membership of Prime to automatically renew. This auto renewal takes advantage of a behavioral bias. Explain which one.

(d) Considering your answers to (a)–(c) above, explain how the Prime service gives Amazon an advantage over competitors.

Answer

(a) The marginal cost of buying the Harry Potter box set from Amazon is simply its price of US$50.33, while the marginal cost of buying it from a competing retailer is equal to the retail price charged, plus delivery fees. Assuming that the retail price is close to that set by Amazon, Amazon enjoys a pricing advantage over the competing retailer.
(b) The cost of subscribing to Amazon Prime is a sunk cost, because it cannot be recovered once paid for. If Prime subscribers commit the sunk-cost fallacy, their demand for Amazon products will be higher vis-à-vis products from competing retailers, as they will have a greater tendency to purchase Amazon products once the Prime subscription has been paid for.
(c) Automatic renewal takes advantage of the status quo bias: Prime subscribers will tend to adhere to their prior decision to subscribe to Prime, perhaps out of convenience or inertia.
(d) The Prime service gives Amazon a pricing advantage over competing retailers, as customers who pay upfront for Prime membership will face lower marginal costs of purchasing goods and services from Amazon compared to its competitors, who charge delivery fees. This boosts demand for Amazon products relative to their competitors. Amazon is able to sustain its pricing advantage over time by taking advantage of Prime subscribers' tendency to stick to the status quo.

3. The Singapore government discourages driving by limiting the registration of new cars and auctioning the licenses. Each license allows the owner to operate a car for 10 years. The prices of licenses fluctuate with demand conditions and the number of licenses.

Classify and explain the following as decisions of participation or extent. (i) Whether to buy a new car; (ii) How much to drive the car.
(a) How would the price of a new car license affect the decision on whether to buy a new car?
(b) How would the price of a new car license affect the marginal cost of driving and the decision on how much to drive the car?
(c) People who bought cars when licenses were more expensive drove more. How would you explain such behavior?

Answer

(a) (i) The decision of whether to buy a new car is one of participation. It should be made by comparing the total benefit and total cost of buying a new car. (ii) The decision of how much to drive the car is one of extent. It should be made by comparing

the marginal benefit and marginal cost of driving the car for an additional unit of either distance or time, depending on which is chosen as the relevant measure.
(b) The price of a new car license is a component of the total cost of buying the car. The higher the price of the new car license is, the higher the total cost of the car, and the less likely an individual will be to purchase the car.
(c) The cost of a new car license is a sunk cost – once the license has been purchased, its cost cannot be recovered. Therefore, the price of the new car license should have no effect on the marginal cost of driving. By extension, if the driver is rational, the license price should not affect how much to drive the car.
(d) Car buyers may be boundedly rational, and prone to the sunk-cost fallacy. If they erroneously count sunk costs, individuals who bought cars when licenses were more expensive would drive more.

4. Uber Technologies provides ride hail, delivery, and freight booking services. In 2019, it served customers through the Google Cloud Platform, Amazon Web Services, as well as its own cloud computing facilities. In late 2020, Uber sold its self-driving car division to Aurora Innovation which specializes in self-driving technologies for cars and trucks.
(a) Apply the concepts of vertical integration and (dis)integration to explain: (i) Uber's operation of its own cloud computing facilities, and (ii) Uber's sale of the self-driving car division.
(b) Apply the concept of outsourcing to explain Uber's use of the Google Cloud Platform and Amazon Web Services.
(c) Consider each of Uber's decisions on (i) cloud computing and (ii) development of self-driving technology. Explain whether it is a decision on participation or extent.

<u>Answer</u>
(a) (i) Uber's operation of its own cloud computing facilities can be classified as vertical integration. This move expands its vertical boundaries. (ii) Uber's sale of its self-driving car division can be characterized as vertical disintegration.
(b) Outsourcing is the purchase of services or supplies from external sources. By outsourcing part of its cloud computing needs to Google Cloud Platform and Amazon Web Services, Uber shrinks its vertical boundaries (relative to the scenario where it serves customers exclusively through its own cloud computing facilities). One reason why Uber might have chosen to outsource is to reap cost savings.
(c) (i) Uber's decision on cloud computing is one of extent: it must decide how much of its cloud computing needs should be outsourced to Google Cloud Platform and Amazon Web Services, and how much can be fulfilled through its own cloud computing facilities. Hence, it should compare the marginal benefit and marginal cost of serving customers through its own facilities. (ii) Uber's decision on developing self-driving technology is one of participation. Its decision to sell its self-driving car division indicates that the

total cost of developing self-driving technology exceeded the total benefit, at the time of the decision.

5. Historically, fresh flowers in northern Europe were supplied by local growers. Producers had to grow flowers in heated greenhouses to meet demand in winter, such as on Valentine's Day. Now, European consumers buy roses, carnations, and chrysanthemums produced in Colombia, Ecuador, Ethiopia, and Kenya.
(a) The liberalization of airline regulation allowed the entry of new airlines and increased flights. How did that affect the market(s) for fresh flowers?
(b) How did the development of more fuel-efficient and larger aircraft affect the market(s) for fresh flowers?
(c) Compare the advantage of South American and East African growers over European growers in winter vis-à-vis other seasons.

<u>Answer</u>
(a) The liberalization of airline regulation results in the market for fresh flowers becoming more global in nature, as more buyers and sellers in different countries are connected by flights and therefore able to trade.
(b) More fuel-efficient and larger aircraft reduced the cost of transporting flowers from one region to another. This leads to an expansion of the market for fresh flowers, as buyers and sellers of flowers can trade at relatively low costs.
(c) In winter, South American and East African growers enjoy a cost advantage over European growers: unlike their European counterparts, local weather conditions mean that they need not incur the costs of heating and regulating the conditions of greenhouses in order to grow fresh flowers. In other seasons, this cost advantage may be less pronounced, or even eliminated, if growers in all regions grow flowers using the same techniques and conditions.

6. In January 2021, the Brexit agreement for the UK to leave the European Union (EU) came into effect. From then, the movements of goods, services, and people between the UK and EU were subject to national and European laws and regulations.
(a) How would Brexit affect the supply of services by London investment bankers to EU member countries such as France and Germany?
(b) How would Brexit affect the market power of French and German investment bankers?
(c) UK and EU member countries apply different laws and regulations on the production and sale of goods and services. How would Brexit affect the degree of imperfection in the markets for goods and services?

<u>Answer</u>

(a) Brexit would reduce the supply of services by London investment bankers to EU member countries such as France and Germany, by subjecting the movement of investment banking services and finance professionals between the EU and UK to more laws and regulations.

(b) Since Brexit would result in French and German investment bankers facing less competition from London investment bankers, they would see an increase in market power. In other words, the ability of French and German investment banks to influence market conditions would increase.

(c) Brexit is likely to increase the degree of imperfection in the markets for goods and services if conflicting or overly bureaucratic UK and EU regulations exacerbate differences in information or conflicts of interest.