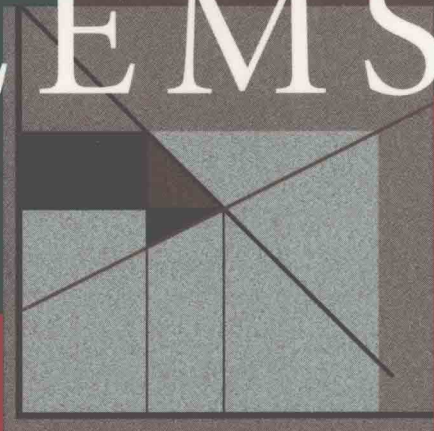


MICRO TENTH EDITION ECONOMIC PROBLEMS



CASE STUDIES

AND EXERCISES FOR REVIEW

EDWIN MANSFIELD JAMES PEOPLES

MICROECONOMIC PROBLEMS

Case Studies and Exercises for Review

TENTH EDITION

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Preface

As in its previous edition, *Microeconomic Problems: Case Studies and Exercises for Review*, Tenth Edition, continues to provide a comprehensive set of questions that covers the entire range of topics taught in intermediate-level microeconomics courses. The inclusion of empirical material as well as problems and cases based on real-world situations demonstrates to students the power of microeconomic theory as an aid to decision makers in both the private and public sectors of the economy. The result is a combination of theory on the one hand with measurement application on the other. On the basis of student response to the previous editions of the study guide, this seems to be an approach that provides an effective tool for learning microeconomic theory. In all, about 1,100 questions are included in the present edition of this book.

While the basic purpose of the Tenth Edition of *Microeconomic Problems* remains the same, there have been notable changes, including new case studies for Chapters 1, 7, 12, and 14; new problem sets for Chapters 1, 2, 3, 13, and 18; and thoroughly revised material for Chapters 9 and 10. Each chapter begins with a case study, which is followed by approximately 30 completion, true-false, and multiple-choice questions. Then there are about a dozen review questions, followed by about a dozen problems. Finally, there is a list of key concepts for review, as well as brief answers for practically all the questions. Some of the answers are of necessity truncated and incomplete. However, they will provide sufficient feedback to students to enable them to gauge their own progress. This organization has many advantages, including the fact that the student progresses from relatively easy material to increasingly demanding analyses as he or she works through each chapter.

I am indebted to many colleagues for their comments and suggestions. In particular, my thanks go to Jacqueline Agesa, Bartholomew Armah, John Bitzan, Gary Hoover, Debashis Pal, and Richard Perlman. Also, I am grateful for the research assistance provided by Komgrich Thavornwanchai and editorial assistance provided by Tina Sasso.

Milwaukee

J.P.

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Part 1 INTRODUCTION

CHAPTER 1 The Nature of Microeconomics

Case Study: Privatization of Electricity Service in the Sub-Sahara

In 1990, the Ivory Coast privatized the management of its electric power company. Privatization took the form of the government's awarding the Ivorian Company of Electricity a lease contract to provide electric service in the country. Prior to 1990, electric service in the country was government owned and operated. To continue providing electrical service following the expiration of the original contract, the Ivorian Company of Electricity must receive a favorable review of its performance. Research by P. Plane reveals that following this privatization, the Ivory Coast electricity industry experienced appreciable productivity gains, marked cost reductions, and greater profits, while workers in this industry enjoyed significant wage increases. Furthermore, cost savings were passed on to customers in the form of lower electricity prices.

- a. How does the requirement of renewing a contract lease create an incentive for the Ivorian Company of Electricity to enhance efficiency and productivity and to lower consumer prices?
- b. How is it possible for the Ivorian Company of Electricity to pay higher wages, charge lower customer prices, and remain profitable?
- c. Why would the Ivorian Company of Electricity charge customers lower prices even though this company is the only provider of electricity service?
- d. Use microeconomic theory to suggest how prices might remain low if the Ivorian Company of Electricity were allowed to provide electric service without having to renew its lease contract.

Completion Questions

1. National defense is an example of a _____ good. Such goods (will, will not) _____ be provided in the right amounts by private industry, so _____ tends to intervene.
2. Economics is concerned with the way in which _____ are allocated among alternative uses to satisfy _____.
3. Microeconomics deals with the economic behavior of _____.
4. Wants _____ from individual to individual and over time for the same person.
5. Resources are used to produce _____.
6. There are two types of resources: economic and _____.

7. Resources are often classified as land, labor, and _____ .
8. Technology is directed toward _____ ; science is directed toward _____ .
9. In a free-enterprise economy, _____ choose the amount of each good that they want, and _____ act in accord with these decisions.
10. In our system, the income of each individual depends largely on how much he or she owns of each resource and _____ .
11. A country's rate of growth of per capita income depends on the rate of growth of its resources and the _____ .

True or False

- _____ 1. When economists refer to goods as being scarce, they mean that these items are monopolized by a few people. If goods were distributed equitably, there would be no problem of scarcity.
- _____ 2. Models generally are not useful in practice; if they were, they would not be called models.
- _____ 3. Microeconomics is helpful in promoting an understanding of the powerful modern tools of managerial decision making.
- _____ 4. The lawyer who argues an antitrust case, and the judge who decides one, must both rely on and use the principles of microeconomics.
- _____ 5. Microeconomics is concerned only with solving practical problems.
- _____ 6. Economic resources always have a zero price.
- _____ 7. There usually is only one way of producing a commodity so it is easy to figure out which way is best.
- _____ 8. The price system plays some role, but only a minor one, in allocating resources in a free-enterprise economy.
- _____ 9. In the acquisition of new weapons, society relies exclusively on the price system.
- _____ 10. A model cannot be useful if it simplifies and abstracts from reality.
- _____ 11. Models are used by economists but not physicists.
- _____ 12. One reason for using a model is that it may be the cheapest way of getting needed information.

Multiple Choice

1. In choosing among alternative models, economists generally have the strongest preference for models that
 - a.* have assumptions that are close to exact replicas of reality.
 - b.* predict better than any other that is available.
 - c.* have few assumptions and are as simple as possible, even if they cannot predict very well.
 - d.* are detailed and complex, with every available fact and figure included.
 - e.* all of the above.
2. Microeconomics is concerned with
 - a.* optimal production decisions.
 - b.* pricing policy.
 - c.* optimal resource allocation.
 - d.* antitrust policy.
 - e.* all of the above.
3. In a free-enterprise economy, profits and losses are
 - a.* the stick used to eliminate less efficient firms.
 - b.* the carrot used to reward the proper decisions.
 - c.* both *a* and *b*.
 - d.* neither *a* nor *b*.
 - e.* always equal to zero.
4. If a model is to be any good, it must
 - a.* make assumptions that are exact replicas of reality.
 - b.* refrain from referring to things that are not directly measurable.
 - c.* predict phenomena in the real world reasonably well.
 - d.* all of the above.
 - e.* none of the above.

Review Questions

1. In December 1995, about 5.6 percent of the labor force was unemployed. How can anyone say that labor is scarce?
2. On most questions of policy, one can find disagreements among economists. Does this prove that economics is not a science?
3. If a certain proposition holds true for a part of a system, must it hold true for the whole system? For example, suppose that a farmer will benefit from producing a larger crop. Does it follow that all farmers will benefit from producing a larger crop? Explain.

4. In evaluating the accuracy of their statements, should one distinguish between (1) economists' descriptive statements, propositions, and predictions about the world and (2) their statements about what policies should be adopted? Explain.
5. According to Adam Smith, "Monopoly . . . is a great enemy to good management." What do you think he meant? Do you agree or disagree?
6. In aeronautical engineering, models of an airplane are used to investigate its aerodynamic properties in a wind tunnel. Must such models have seats for passengers? Must they be hollow? What functions must they serve?
7. According to Alfred P. Sloan, who was president of General Motors from 1923 to 1937 and chairman of its board of directors from 1937 to 1956, "The great difference between the industry of today as compared to that of yesterday is what might be referred to as the necessity of the scientific approach, the elimination of operation by hunches."^{*} How does microeconomics play a role in this more scientific approach to management?
8. What concerns does economics deal with? What is the difference between microeconomics and macroeconomics?
9. Give several examples of the particular types of problems that microeconomics helps to solve.
10. Is microeconomics concerned solely with the solution of practical problems? Give examples of questions that are dealt with in microeconomics that do not take the form of practical problems. In what sense is microeconomics like mathematics?
11. Define human wants. What role do human wants play in microeconomics?
12. Define economic resources. What role do economic resources play in microeconomics?
13. Describe the various types of economic resources.
14. Define technology. Is there any difference between science and technology? If so, what is the difference? What role does technology play in microeconomics?
15. Describe the four basic tasks that must be performed by any economic system.
16. How does our system determine the level and composition of output in the society?
17. How does our economic system allocate its resources among competing uses and process these resources to obtain the desired level and composition of output?

^{*}A. Sloan, *Adventures of a White Collar Worker* (Garden City, N.Y.: Doubleday, 1941).

18. How does our economic system determine how much in the way of goods and services each member of the society is to receive?
19. How does our economic system determine the rate of growth of per capita income?
20. What is a model? Can the usefulness of a model be deduced from the realism of its assumptions? Why do economists use models?
21. What considerations must be taken into account in judging or evaluating a model?
22. Are the models contained in this book sufficiently accurate to solve all of the problems faced by governments and firms? Have all of them been tested completely? Are they the best available at this time?

Problems

1. J. Sachs and W. Woo indicate that China achieved a relatively high annual rate of growth of gross domestic product of 9.5 percent between the start of its market reforms in 1978 and 1994. They also reveal that this successful growth rate dramatically transformed China's economic structure. The proportion of the labor force engaged in agriculture dropped from 71 percent in 1978 to 54 percent in 1994. In addition, the proportion of gross industrial output produced by state-owned enterprises declined from 78 to 34 percent in the same period. An explanation for this structural change is the exodus of workers from low-wage farming into the better-paying non-state-owned industrial and service sectors. Competition from these non-state-owned enterprises is associated with declining demand of state-owned services.
 - a. Should the declining numbers of small farmers and employees at state-owned establishments be considered a cost that developing economies face when instituting economic reforms that are more market oriented? Explain.
 - b. Should the declining number of small farmers adversely affect China's agricultural output?
 - c. If you were asked to identify critical issues that should be considered before embarking on total reformation in China, what points would you make?
2. Many economists argue that the relationship between beef-cow and crop production is competitive. Indeed, Bobst and Davis find that the inventory of beef cows declines by 36,600 cows when harvested cropland increases by one million acres.
 - a. Why should such a relationship exist?
 - b. Should the cattle production–crop production relationship hold if new technology in crop production increases crop yield per acre? Explain.
 - c. Should the competitive relationship hold if new additives in cattle feed increase the weight of beef cows without the need for greater cow-feed consumption? Explain.

3. R. Ehrenberg suggests that universities and colleges should consider the relative costs of projects and the expected return on those costs when allocating scarce school resources to the construction of campus facilities.
- a. Given information on a hypothetical university presented in the table below, determine which of the listed projects should receive funding. Note that construction costs are amortized over the life of the facility, and revenue derived from the use of a science laboratory facility is generated from sources such as grants and returns on the products invented at this facility.

Table 1.1

	<i>Science laboratory facility</i>	<i>Undergraduate library</i>	<i>Football stadium</i>	<i>Cafeteria</i>
Annual costs	\$2 million	\$1.5 million	\$3 million	\$1 million
Annual revenue	\$2.5 million	\$.5 million	\$2.7 million	\$2 million

- b. Should this university ever consider investing in the construction of an undergraduate library or a football stadium if such a product does not generate enough revenue to cover costs?
4. A baguette is a long, thin, crispy loaf of French bread. From the French Revolution to 1978, the price of a baguette was controlled by the French government. Then it was decontrolled, and the price rose to about 40 cents in 1980. Subsequently, Albert Rodriguez, a baker in southern France, cut the price to about 22 cents. Afterward bakers everywhere were following his example.
- a. According to a Parisian baker, “It is going to kill the small-business person. It will mean going to a system of commercial baking in a huge central factory. You have got to pay the baker and his costs.” What is the baker’s implicit assumption about the relationship between the size of a bakery and its cost per baguette?
- b. After he cut his price to 22 cents, some of Mr. Rodriguez’s competitors tried to sell baguettes outside his shop for 11 cents each. Why do you think they did this?
- c. Most of Mr. Rodriguez’s customers ignored Mr. Rodriguez’s competitors when they tried to sell baguettes outside his shop for 11 cents each. Why do you think they did this?
- d. If you were assigned the task of constructing a model to predict whether a particular baker would cut the price he or she charges for a baguette, what factors would you stress?

Key Concepts for Review

Economics	Capital
Microeconomics	Technology
Macroeconomics	Tasks performed by an economic system
Human wants	The price system
Labor	Models
Land	Model building

Answers

Case Study: Privatization of Electricity Service in the Sub-Sahara

- a. Poor performance by Ivorian Company of Electricity management increases the risk of this company's failing to get its contract renewed. The possibility of such an outcome provides an incentive for the Ivorian Company of Electricity to enhance efficiency and productivity and to pass the cost savings on to customers.
- b. Improving productivity allows the Ivorian Company of Electricity to generate enough cost savings so that it receives profits while paying higher wages to workers and charging lower prices to customers. In addition, paying higher wages allows the Ivorian Company of Electricity to employ highly skilled workers who are able to contribute to greater productivity gains.
- c. The threat of losing the contract creates an incentive for the Ivorian Company of Electricity to charge low prices even though the company does not face competition for its services.
- d. Allowing potential rivals access to the Ivorian Company of Electricity's customers could generate the competition needed to keep prices low.

Completion Questions

1. public; will not; government
2. resources; human wants
3. individual consumers, firms, and resource owners
4. vary
5. goods and services
6. free
7. capital
8. use; understanding
9. consumers; producers
10. the price of each resource
11. rate of increase of the efficiency with which they are used

True or False

1. False 2. False 3. True 4. True 5. False 6. False 7. False 8. False
9. False 10. False 11. False 12. True

Multiple Choice

1. b 2. e 3. c 4. c

Review Questions

1. Despite the fact that some labor is unemployed, labor is scarce. Certainly, the quantity of labor is not unlimited, and labor's price is nonzero.
2. No, because most of the disagreements stem from differences in ethical and political views.

3. No. This is the so-called fallacy of composition.
4. Yes, because the latter statements reflect the value judgments of the economists.
5. He meant that a monopolist, having succeeded in freeing himself from competition, is likely to take things easy and worry less about efficiency.
6. No.

No.

They must provide information that is useful in predicting the characteristics of the final airplane.

7. It helps to show how firms should analyze their production, marketing, and financial problems in order to increase their profitability.
8. Economics is concerned with the way in which resources are allocated among alternative uses to satisfy human wants.

Microeconomics deals with the economic behavior of individual units like consumers, firms, and resource owners; macroeconomics deals with the behavior of economic aggregates such as gross domestic product and the level of employment.

9. Business firms are constantly faced with the problem of choosing among alternative ways of producing their product. One type of problem that microeconomics can help to solve is: which technique will maximize the firm's profits?

Firms are also faced with the problem of pricing their product. Another type of problem that microeconomics can help to solve is: which price will maximize the firm's profits?

Society as a whole must decide how it wants to organize the production and distribution of goods and services. Microeconomics can sometimes be useful in helping to indicate what changes society would be justified in making in this system.

Public policy must also be concerned with the structure of individual markets and industries. Microeconomics plays an important role in helping to illuminate antitrust cases and to solve problems in this area.

10. No.

Why is steak more expensive than hamburger? Why are physicians paid more than carpenters? How will an increase in the price of margarine affect the amount of butter purchased by Susan? Why are there so many producers of wheat and so few producers of automobiles?

Pure mathematics is not concerned with the solution of particular problems, but it has turned out that various branches of mathematics are of great value in solving practical problems. This is true as well of much of microeconomic theory. Also, microeconomics, like mathematics, is extremely important as a basis for understanding the world around us and for further professional training.

11. Human wants are the things, services, goods, and circumstances that people desire.

Human wants—or, more precisely, their fulfillment—are the objective at which economic activity is directed.

12. Resources are the things or services used to produce goods which can be used to satisfy wants.

Economic resources are scarce, and thus have a nonzero price. The essence of "the economic problem" is that some resources are scarce and must be allocated among alternative uses. If all resources were free, there would be no economic problem.

13. Land is a shorthand expression for natural resources.
Labor is human effort, both physical and mental.
Capital includes equipment, buildings, inventories, raw materials, and other nonhuman producible resources.
14. Technology is society's pool of knowledge regarding the industrial arts.
Yes. Pure science is directed toward understanding, whereas technology is directed toward use.
Technology sets limits on the amount and type of goods that can be derived from a given amount of resources.
15. First, an economic system must allocate its resources among competing uses and combine these resources to produce the desired output efficiently.
Second, an economic system must determine the level and composition of output.
Third, an economic system must determine how the goods and services that are produced are distributed among the members of society.
Fourth, an economic system must determine the rate of growth of per capita income.
16. Consumers choose the amount of each good that they want, and producers act in accord with these decisions. Also, the production of some goods is a matter of political decision.
17. The price system is used to indicate the desires of workers and the relative value of various types of materials and equipment as well as the desires of consumers. To firms, profits are the carrot and losses are the stick. In addition, the government intervenes directly in some areas like weapons acquisition.
18. The income of an individual depends largely on the quantities of resources of various kinds that he or she owns and the prices he or she gets for them. In addition, the government modifies the resulting distribution of income by imposing income taxes and by welfare programs like aid to dependent children.
19. The rate at which labor and capital resources are increased is motivated, at least in part, through the price system. Increases in efficiency, due in considerable measure to the advance of technology, are also stimulated by the price system. But the government plays an extremely significant role in supporting research and development.
20. A model is composed of a number of assumptions from which conclusions—or predictions—are drawn.
No.
The real world is so complex that it is necessary to simplify and abstract if any progress is to be made. A model may be the cheapest way of obtaining needed information.
21. The most important test of a model is how well it predicts. Another is whether its assumptions are logically consistent. Another important consideration is the range of phenomena to which the model applies.
22. No.
No.
Yes, according to a consensus of the economics profession.

Problems

1.
 - a. Not necessarily. Such economies can actually benefit from this employment shift. Sachs and Woo reveal that small farmers in China received greater earnings by changing jobs to work in the growing private sector. The ease of job mobility assumes a vibrant private sector capable of absorbing the former farmers. This employment mobility also assumes that former farmers acquire skills that are demanded by employers in the private sector.
 - b. No. The propensity for large agriculture concerns to assume a greater farming role following the exit of many small farmers commonly leads to lower farming costs. These cost reductions are associated with economies of scale in farming.
 - c. Briefly, continued economic growth eventually requires countries to improve their ability to compete internationally. Improving infrastructures and telecommunications networks, as well as enhancing the skills of workers, are a few key objectives that countries emphasize when attempting to compete successfully in a global economy.
2.
 - a. Cattle and corn both require the use of land for their development. Since land is a scarce resource, its use for the production of one of these goods lowers its availability for the production of the other.
 - b. No. Since farmers who grow corn need less land to satisfy the same level of demand for corn, *ceteris paribus*, there should be a greater availability of land for alternative uses, such as cattle grazing.
 - c. No. Since cattle ranchers need less land to satisfy the same level of demand for beef, *ceteris paribus*, there should be greater availability of land for alternative uses, such as for growing corn.
3.
 - a. The university should consider funding the construction of the science laboratory facility and the cafeteria, since these projects generate profit.
 - b. The university should still consider funding construction of an undergraduate library and a football stadium, since these facilities help increase student enrollment.
4.
 - a. This baker is assuming that the cost per baguette falls as the size of the bakery increases.
 - b. They did it to cut Mr. Rodriguez's sales and to punish him for cutting his price.
 - c. They did it because they suspected that, once Mr. Rodriguez's competitors had hurt his business and brought him into line (or put him out of business), they would raise their price to its original level. As one of Mr. Rodriguez's customers said, "We know that at his place it will still be [22 cents] tomorrow."
 - d. The probability that a particular baker would cut his or her price would be expected to be directly related to how profitable he or she believes such an action would be.

CHAPTER 2 Demand and Supply

Case Study: In Vino Veritas

In 1979, the weather conditions in many parts of Europe were ideal for cultivating grapes. In France, there was a record output of more than 2.2 billion gallons of wine. In Bordeaux, wine-makers took about 10 million gallons of wine off the market in an attempt to buttress the price of their wine.* However, another way that industries can attempt to protect themselves against reductions in the price of their product is to prevail on the government to establish a price floor. Suppose that the French government had decreed that Bordeaux wine could not be sold in 1979 at less than its 1978 price.

- a. If the market demand curve for Bordeaux wine was the same in 1979 as in 1978, would such a price floor have raised the price above the equilibrium price that otherwise would have prevailed?
- b. If such a price floor raised the price, would the price increase result in an increase in the total amount of money received by the Bordeaux wine makers?

Completion Questions

1. If the price elasticity of demand for refrigerators is 2, and the price of a refrigerator increases by 1 percent, there will be an (increase, decrease) _____ of about _____ percent in the amount spent on refrigerators.
2. The market demand curve for grade-A widgets is a vertical line at a quantity of 1,000 units per year. The price elasticity of demand for grade-A widgets equals _____.
3. The equation for the market supply curve of grade-A widgets is $P = 0.1Q$, where P is the price (in dollars) of a grade-A widget and Q is the output (in units per year) of grade-A widgets. The price elasticity of supply of grade-A widgets equals _____.
4. Based on the information in Questions 2 and 3, the equilibrium price of a grade-A widget equals _____.
5. Based on the information in Questions 2 and 3, the equilibrium output of grade-A widgets equals _____.

**New York Times*, May 7, 1980.

6. If the government sets a price floor of \$150 for a grade-A widget, the excess supply of grade-A widgets will be _____, based on Questions 2 and 3.
7. If the government sets a price ceiling of \$80 for a grade-A widget, the excess demand of grade-A widgets will be _____, based on Questions 2 and 3.
8. If the price elasticity of demand for gasoline is 0.50, a _____ percent increase in the price of gasoline will be required to reduce the quantity demanded of gasoline by 1 percent.
9. If the actual price of gasoline equals the equilibrium price, the difference between the quantity of gasoline supplied and the quantity of gasoline demanded equals _____.

True or False

- _____ 1. No equilibrium price nor equilibrium quantity exists if good's demand curve is a vertical line and its supply curve is a horizontal line.
- _____ 2. The demand curve for a free good (a good with a zero price) must be a horizontal line.
- _____ 3. If actual price exceeds equilibrium price, there is a tendency for actual price to rise.
- _____ 4. A shift to the right of the market supply curve tends to increase the equilibrium price.
- _____ 5. A product's market demand curve generally slopes upward and to the right if the product's price elasticity of demand is very large.
- _____ 6. The slope of the market demand curve equals the price elasticity of demand.
- _____ 7. In any market, the seller alone determines the price of the product that is bought and sold. Since the seller has the product, while the buyer does not have it, the buyer must pay what the seller asks.
- _____ 8. If the price of coffee goes up, it is likely that the market supply curve for tea will shift to the right.

Multiple Choice

1. If the president of the United States were to announce that the government would no longer allow private parties to buy gold (so that the government would be the sole buyer) and that the government would buy any and all gold at \$500 per ounce, which of the diagrams on the next page would represent the demand curve for gold in the United States?