22

FRONTIERS OF MICROECONOMICS

This is a great chapter to get students interested in further study of economics. It is important for the students to learn that economics is a growing and developing science and that economists are always looking for new areas to study and new phenomena to explain.

WHAT'S NEW IN THE SEVENTH EDITION:

A new *Case Study* on *Left-Digit Bias* has been added and a new *In the News* feature on "Can Brain Science Improve Economics?" has been added.

LEARNING OBJECTIVES:

By the end of this chapter, students should understand:

- how to examine problems caused by asymmetric information.
- the market solutions to asymmetric information.
- why democratic voting systems may not represent the preferences of society.
- why people may not always behave as rational maximizers.

CONTEXT AND PURPOSE:

Chapter 22 is the last chapter in the microeconomics portion of the text. It is the second of two unrelated chapters that introduce students to advanced topics in microeconomics. These two chapters are intended to whet their appetites for further study in economics.

The purpose of Chapter 22 is to give students a taste of three topics on the frontier of microeconomic research. The first topic addressed is *asymmetric information*, a situation when one person in an economic relationship has more relevant knowledge than the other person does. The second topic is *political economy*, the application of economic tools to the understanding of the functioning of government. The third topic addressed is *behavioral economics*, the introduction of psychology into the study of economic issues.

KEY POINTS:

- In many economic transactions, information is asymmetric. When there are hidden actions, principals may be concerned that agents suffer from the problem of moral hazard. When there are hidden characteristics, buyers may be concerned about the problem of adverse selection among the sellers. Private markets sometimes deal with asymmetric information with signaling and screening.

- Although government policy can sometimes improve market outcomes, governments are themselves imperfect institutions. The Condorcet paradox shows that the majority

rule fails to produce transitive preferences for society, and Arrow's impossibility theorem shows that no voting system will be perfect. In many situations, democratic institutions will produce the outcome desired by the median voter, regardless of the preferences of the rest of the electorate. Moreover, the individuals who set government policy may be motivated by self-interest rather than national interest.

Table 1

- The study of psychology and economics reveals that human decision making is more complex than is assumed in conventional economic theory. People are not always rational, they care about the fairness of economic outcomes (even to their own detriment), and they can be inconsistent over time.

CHAPTER OUTLINE:

I. Asymmetric Information

A. Many times in life, one person holds more knowledge about what is going on than another. Such a difference in access to relevant information is known as an *information asymmetry*.

B. Examples

1. A worker knows more than his employer about the level of his work effort. This is an example of a *hidden action*.

2. A seller of a used car knows more than the buyer does about the car's condition. This is an example of a *hidden characteristic*.

C. When there is asymmetric information, the party without the relevant knowledge would like to have such knowledge, but the other party may have an incentive to conceal it.

D. Hidden Actions: Principals, Agents, and Moral Hazard

Figure 1

1. Important Definitions

a. Definition of **moral hazard: the tendency of a person who is imperfectly monitored to engage in dishonest or otherwise undesirable behavior.**

b. Definition of **agent: a person who is performing an act for another person, called the principal.**

c. Definition of **principal: a person for whom another person, called the agent, is performing some act.**

2. The employment relationship is the classic example.

a. Workers (agents) may be tempted to shirk their work-related responsibilities because their employers (the principals) do not monitor their behavior closely.

b. Employers can respond by providing better monitoring, paying higher wages, or delaying part of the worker's pay until later in the worker's life.

3. *FYI: Corporate Management*

a. From an economic standpoint, the most important feature of the corporate form of organization is the separation of ownership and control.

b. This creates a principal–agent problem where the shareholders are the principals and the managers are the agents.

c. Managers' goals may not always coincide with shareholders' goal of profit maximization.

d. As a result, many managers are provided compensation packages that provide incentives to act in the best interest of corporate profits.

E. Hidden Characteristics: Adverse Selection and the Lemons Problem

1. Definition of **adverse selection: the tendency for the mix of unobserved attributes to become undesirable from the standpoint of an uninformed party.**

2. Examples include the used car market, the labor market, and the market for insurance.

3. When markets suffer from adverse selection, the invisible hand does not necessarily work well.

a. In the used car market, owners of "cherry" or "plum" cars may choose to keep them rather than sell them at a low price.

b. In the labor market, wages may be stuck at a level above the equilibrium wage, resulting in unemployment.

c. In insurance markets, buyers with low risk may decline to purchase insurance because the price is too high.

F. Signaling to Convey Private Information

1. Definition of **signaling: an action taken by an informed party to reveal private information to an uninformed party.**

2. Examples of Signaling

a. Firms may spend money on advertising to signal the high quality of their products.

b. Students may spend time in school to signal that they are high-ability individuals.

3. For a signal to be effective, it must be costly. However, it must be less costly (or more beneficial) to the person or firm with the higher-quality product.

4. *Case Study: Gifts as Signals*

a. Because people know their own preferences better than anyone else, we would expect that they would prefer cash gifts.

b. However, the ability to choose the right gift for someone may serve as a signal of an individual's love.

c. Note that choosing the right gift is costly and the cost depends on how well the giver knows the recipient (which may be determined as a measure of the giver's level of interest in the recipient).

G. Screening to Uncover Private Information

1. Definition of **screening: an action taken by an uninformed party to induce an informed party to reveal information.**

2. Examples of Screening

a. A buyer of a used car may ask to have the car examined by a mechanic prior to purchase.

b. An insurance company may offer different policies that would lead safe or risky drivers to reveal themselves. Safe drivers are likely to prefer policies with low premiums and high deductibles. Risky drivers are more likely to prefer policies with higher premiums and low deductibles.

H. Asymmetric Information and Public Policy

1. Market failures such as externalities, public goods, imperfect competition, and poverty show that governments can sometimes improve market outcomes.

2. Asymmetric information is another reason why market outcomes may be inefficient.

3. However, three factors make it difficult for the

government to improve the outcome in some cases.

a. The private market can sometimes deal with information asymmetries on its own using a combination of signaling and screening.

b. The government rarely has more information than the private parties do.

c. The government is itself an imperfect institution.

Activity 1—A Market for Lemons

Type: In-class demonstration
Topics: Asymmetric information, signaling, regulation
Materials needed: Prepared instruction sheets and record sheets
Time: 50–60 minutes
Class limitations: Works in any size class, althoug using a larger number of groups will res in a larger amount of time necessary to complete each round

Purpose

This classroom experiment demonstrates how a market for lemons can dev when buyers have no information on the quality of a product available for sale.

Instructions

Divide the class into seven groups, three sellers and four buyers. Try to kee the groups separated and make sure that students know to reveal their cost or value information to anyone. Pas instruction sheets and record sheets for each group. He are the rules for the first few rounds of the game:

1. Sellers must decide their product quality and pric simultaneously. Each seller can choose only one product quality but can sell up to two units each period. Sellers' decisions are recorded and given t instructor.
2. Once all of the sellers have made their decisions, instructor lists the sellers' product quality and the on the board.
3. The instructor draws a number from a hat (1 thro 4) and this will be the first buyer to make a purcha Buyers decide which firm to buy from based on preferred quality and price. Buyers may purchase one unit each period. Once a seller has sold two u he or she can sell no more and should be eliminat from the list of choices.
4. Profit for sellers will be the difference between th price and the cost (given to them on their instructi sheets) for each unit sold. Due to rising marginal c the cost of the second unit is $1.00 more than the The cost information for each firm is:

	Quality 1	Quality 2	Quality 3
Cost of 1st unit	$1.75	$4.95	$11.35
Cost of 2nd unit	$2.75	$5.95	$12.35

5. For the buyers, consumer surplus will be the difference between the value to the consumer (giv on their instruction sheets) and the price paid. The value for each buyer is:

	Quality 1	Quality 2	Quality 3
Value to the buyer	$5.00	$9.80	$14.50

6. Once a few rounds have been played, the instruct should announce that he will only list the sellers' prices on the board. Buyers must base their decisi entirely on price information.

Points for Discussion

Begin by discussing the results of the rounds where buyers and sellers had complete information.

1. Do sellers or buyers benefit from a higher quality product?
2. What is the most efficient quality? (Which maxim total surplus?)
3. Suppose the market ended up with only Quality 2 products? Would it be efficient for a regulator to forc firms to manufacture Quality 3 products? Why or wh not?

Students will generally figure out that Quality 2 maximizes the sum of prod and consumer surplus in the market. To illustrate this p the instructor can graph the supply and demand curves each quality.

Once you have discussed the market with full information, start a discussio the results of the information asymmetry.

1. What happened in the market when buyers were unable to distinguish the product quality?
2. Why were firms driven to produce the lowest qua
3. In reality, is there any way for a firm to reveal the quality of its product?

Most students will reply that the producers were able to take advantage of buyers in this situation and thus cut product quality. Bu quickly learned to protect themselves and only purchas lower priced goods. This led to a market where the onl good available for sale is of the lowest quality.

Students may discuss the ability of a firm to signal its quality through expensive advertisements or product guarantees and warranties.

II. Political Economy

A. Definition of **political economy: the study of government using the analytic methods of economics.**

B. The Condorcet Voting Paradox

1. Most advanced societies rely on democratic principles, allowing the majority to set government policy.

2. For most policy issues, the number of possible outcomes exceeds two.

3. Example: Three possible outcomes (A, B, and C) and three voter types (Type 1, Type 2, and Type 3). The mayor of a town wishes to aggregate the individual preferences into preferences for society as a whole.

	Voter Type		
	Type 1	Type 2	Type 3
Percent of Electorate	35	45	20
First Choice	A	B	C
Second Choice	B	C	A
Third Choice	C	A	B

a. In pairwise majority voting, A would beat B, B would beat C, and C would beat A.

b. This violates transitivity. We generally expect that if A is preferred to B and B is preferred to C, then A would be preferred to C.

c. Definition of **Condorcet paradox: the failure of majority rule to produce transitive preferences for**

society.

d. This implies that the order on which things are voted can determine the result.

C. Arrow's Impossibility Theorem

1. In a 1951 book, economist Kenneth Arrow examined if a perfect voting system exists.

2. He assumes that society wants a voting scheme that satisfies social properties.

    a. Unanimity.

    b. Transitivity.

    c. Independence of irrelevant alternatives.

    d. No dictators.

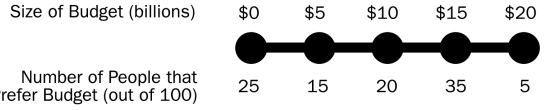
3. Arrow proved that no voting system could have all of these properties.

4. Definition of **Arrow impossibility theorem: a mathematical result showing that, under certain assumed conditions, there is no scheme for aggregating individual preferences into a valid set of social preferences.**

5. Arrow's impossibility theorem implies that no matter what voting scheme society adopts for aggregating the preferences of its members, in some way it will be flawed as a mechanism for social choice.

D. The Median Voter Is King

1. Example: A society is deciding how much money to spend on a public good. Each voter has a most-preferred budget and prefers outcomes closer to his preferred budget.



2. Definition of **median voter theorem: a mathematical result showing that if voters are choosing a point along a line and each voter wants the point closest to his preferred point, then majority rule will pick the most preferred point of the median voter.**

   a. The median voter is the voter exactly in the middle of the distribution.

   b. On Figure 1, the median voter wants a budget of $10 billion.

3. One implication of the median voter theorem is that if two political candidates are each trying to maximize their chance of election, they will both move their positions toward the median voter.

4. Another implication of the median voter theorem is that minority views are not given much weight.

E. Politicians Are People Too

1. Politicians may be self-interested.

2. Some politicians may be motivated by desire for reelection and others may be motivated by greed.

III. Behavioral Economics

A. Definition of **behavioral economics: the subfield of economics that integrates the insights of psychology.**

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B. Behavioral economics is a relatively new field in economics where economists make use of basic psychological insights into human behavior.

C. People Aren't Always Rational

1. Economists assume that human beings are always rational.

a. Firm owners maximize profit.

b. Consumers maximize utility.

c. Given constraints that they face, these individuals make decisions by rationally weighing all costs and benefits.

2. Real people are often more complex than economists assume.

a. They can be forgetful, impulsive, confused, emotional, and shortsighted.

b. These imperfections suggest that humans should not be viewed as rational maximizers but as "satisficers," where they choose options that are simply "good enough."

3. Studies of human decision making have found several systematic mistakes that people make.

a. People are overconfident.

b. People give too much weight to a small number of vivid observations.

c. People are reluctant to change their minds.

4. Case Study: Left-Digit Bias

a. Studies suggest that buyers are excessively sensitive to a price's left-most digit.

b. An irrational focus on the left-most digit is called *left-digit bias*.

D. People Care about Fairness

1. Example: the ultimatum game.

a. Two volunteers are told they are going to play a game and could win a total of $100.

b. The game begins with a coin toss, which is used to assign the volunteers to the roles of Player A and Player B.

c. Player A's job is to propose a division of the prize between himself and the other player.

d. After Player A makes his proposal, Player B decides whether to accept or reject it.

e. If Player B accepts the proposal, both players are paid according to the proposal. If Player B rejects the proposal, both players receive nothing.

2. Conventional economic theory suggests that Player A should know that if he offers $1 to Player B and keeps $99 for himself, Player B should accept it ($1 is greater than $0).

3. In reality, when the offer made to Player B is small, Player B often rejects it.

4. Knowing this, people in the role of Player A often offer a more substantial portion of the money to Player B.

5. This implies that people may be driven by a sense of fairness.

E. People Are Inconsistent over Time

1. Many times in life, people make plans for themselves but then fail to follow through.

2. The desire for instant gratification can induce a decisionmaker to abandon his past plan.

3. An important implication is that people will try to

find ways to commit their future selves to following through on their plans.

F. *In the News: Can Brain Science Improve Economics?*

1. A new branch of economics examines the biology of the brain to understand economic behavior.

2. This article from *Project Syndicate* discusses neuroeconomics, the study of how the physical structures that underlie brain functioning affect economic decision-making.

SOLUTIONS TO TEXT PROBLEMS:

Quick Quizzes

1. Buyers of life insurance will likely have higher than the average death rates. Two reasons for this are moral hazard and adverse selection.

Moral hazard is the tendency of a person who is imperfectly monitored to engage in dishonest or otherwise undesirable behavior. After purchasing insurance, an insured person may engage in riskier behavior than do people who are not insured.

Adverse selection is the tendency for the mix of unobserved attributes to become undesirable from the standpoint of an uninformed party. In this case, those with higher risk of death are more likely to want to buy insurance. As a result, the price of life insurance will

reflect the costs of a riskier-than-average person. Buyers with low risk of death may find the price of life insurance too high and may choose not to purchase it.

A life insurance company can mitigate moral hazard by trying to monitor behavior better and charging higher rates to those who engage in risky behavior (such as smoking). It can mitigate adverse selection by trying to collect better information on applicants; for example, it may require that all applicants submit to a medical examination before issuing insurance.

2. According to the median voter theorem, if each voter chooses a point closest to his preferred point, the district vote will reflect the preferences of the median voter. Therefore, the district will end up with a student-teacher ratio of 11:1.

3. Human decision making can differ from the rational human being of conventional economic theory in three important ways: (1) people aren't always rational, (2) people care about fairness, and (3) people are inconsistent over time.

Questions for Review

1. Moral hazard is the tendency of a person who is imperfectly monitored to engage in dishonest or otherwise undesirable behavior. To reduce the severity of this problem, an employer may respond with (1) better monitoring, (2) paying efficiency wages, or (3) delaying part of a worker's compensation to later in his work life.

2. Adverse selection is the tendency for the mix of unobserved attributes to become undesirable from the standpoint of an uninformed party. Examples of markets in which adverse selection might be a problem include the market for used cars and the market for insurance.

3. Signaling is an action taken by an informed party to reveal private information to an uninformed party. Job applicants may use a college diploma as a signal of ability. Screening is an action taken by an uninformed party to induce an informed party to reveal information. A life insurance company may require applicants to submit to a health examination so that the company will have more information on the person's risk of death.

4. Condorcet noticed that the majority rule will fail to produce transitive properties for society.

5. The median voter's preferences will beat out any other proposal in a two-way race because the median voter will have more than half of the voters on his side.

6. Two volunteers are chosen and a coin toss determines which volunteer is Player A and which is Player B. Player A proposes a split of a sum of money and then Player B decides whether to accept or reject the proposal. If Player B accepts, the sum of money is divided as outlined in the proposal. If Player B rejects the proposal, each player gets nothing.

   Conventional economic theory predicts that Player A will offer only $1 to Player B and keep the remainder for himself. This is predicted to occur because Player A

knows that Player B will be better off with $1 than with $0. However, in reality, Player B generally rejects small proposals that he considers unfair. If Player A considers this, he will likely offer Player B a more substantial amount.

Quick Check Multiple Choice

1. b
2. a
3. d
4. b
5. a
6. c

Problems and Applications

1. a. The landlord is the principal and the tenant is the agent. There is asymmetric information because the landlord does not know how well the tenant will take care of the property. Having a tenant pay a security deposit increases the likelihood that the tenant will take care of the property in order to receive his deposit back when he vacates the property.

   b. The stockholders of the firm (the owners) are the principals and the top executives are the agents. The firm's owners do not know in advance how well the top executives will perform their duties. Tying some of the executives' compensation to the value of the firm provides incentive for the executives to work hard to increase the value of the firm.

c. The insurance company is the principal and the customer is the agent. Insurance companies do not know whether the car owner is likely to leave the vehicle parked with the keys in it or park it in a high crime area. Individuals who will go to the trouble of installing anti-theft equipment are more likely to take good care of their vehicles. Offering a discount on insurance premiums will induce car owners to install such devices.

2. Individuals who are relatively healthy may decide to forgo purchasing the policy if the premium rises. Thus, the insurance company is left with only those policyholders who are relatively unhealthy. This means that the firm's revenues may in fact fall, but its costs could remain the same. Therefore, the firm's profits could fall.

3. Saying "I love you" is likely not a good signal. To be an effective signal, the signal must be costly. In fact, the signal must be less costly, or more beneficial, to the person with the higher-quality product. Simply professing one's love does not meet this requirement.

4. If insurance companies were not allowed to determine if applicants are HIV-positive, more individuals who are HIV-positive would be able to purchase insurance, but that insurance would be very expensive. Covering these individuals would raise the cost of providing health insurance and the company would have to raise premiums for all. Thus, individuals who are not HIV-positive would be forced to pay more for health insurance and may drop coverage. Insurance companies would be left insuring only those who are ill (including

those who are HIV-positive), increasing the adverse selection problem. The number of individuals without health insurance would likely rise as a result.

5. Ken is violating the property of independence of irrelevant alternatives. Adding a choice of strawberry after he chooses vanilla over chocolate should not induce him to change his mind and prefer chocolate.

6. a. If the three friends use a Borda count, the Chinese restaurant gets the most votes (10); the Italian restaurant gets 9 votes; the Mexican restaurant gets 7 votes; and the French restaurant gets 4 votes.

   b. In this scenario, the Italian restaurant gets 5 votes and the Chinese restaurant gets 4 votes. Thus, they will choose to eat at the Italian restaurant.

   c. This voting violates the assumption of independence of irrelevant alternatives. The presence of the Mexican and French restaurants should not alter the group's preferences between the Italian and Chinese restaurants.

7. a. There would be a tie between the three television shows, with 6 votes each.

   b. In a vote between *NCIS* and *Glee*, *NCIS* would win. In a vote between *NCIS* and *Homeland*, *Homeland* would win. Thus, Monica's first choice (*Homeland*) would win.

   c. No. He will want to vote between *Glee* and *Homeland* first, with the winner then competing in a

second vote with *NCIS*. That way, his preferred choice (*NCIS*) would win.

d. If Chandler says he prefers *Glee* over *NCIS*, *Glee* will then compete in a vote against *Homeland* (which it will win). This way, Chandler will not have to watch his least preferred show (*Homeland*).

8. a. The efficient number of DVDs is three. Total surplus would be the sum of the roommates' willingness to pay (38 + 26 + 18 = 82) minus the cost of the DVDs (15 + 15 + 15 = 45) which is 37.

b. Quentin would want 4 DVDs; Spike would prefer 3; Ridley wants 2; Martin wants 1; and Steven does not want to buy a DVD.

c. The preference of the median roommate (Ridley) is 2 DVDs.

d. Quentin and Spike would vote for 3 DVDs, but the other three roommates would vote for 2 DVDs.

e. No. Any other option besides 2 DVDs would get fewer votes.

f. No. The provision of the public good will likely be determined by the preferences of the median voter. This may or may not be the efficient outcome.

9. More than likely, the two stands will locate at the center of the beach. Thus, they will always be closest for at least half of the beach goers. This is related to the median voter theorem.

10. a. Assuming the needy person is a rational consumer, he would use the cash to maximize his utility and purchase what he needs most.

b. The soup kitchen may be better than the cash handout if the government does not have complete information about how the needy person will spend the cash. That is, rather than the possibility of the needy person spending the cash on drugs or alcohol, the government can be certain the needy person is getting food from the soup kitchen.

c. The soup kitchen may be better than the cash handout based on behavioral economics because people aren't always rational and the needy person may spend the cash on something he doesn't need as much as food.