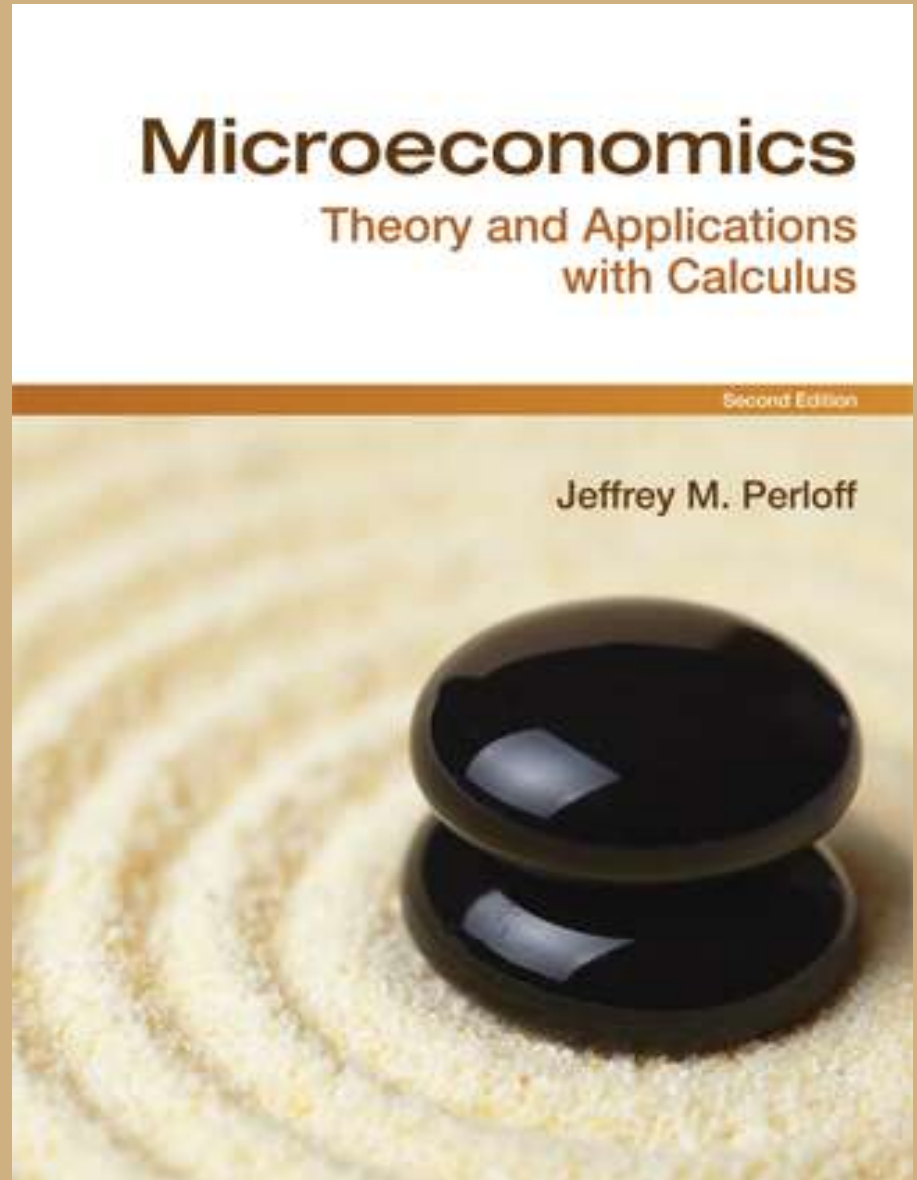


Chapter 18

Asymmetric Information

*The buyer needs a hundred eyes,
the seller not one.*

George Herbert (1651)



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Chapter 18 Outline

- 18.1 Problems Due to Asymmetric Information
- 18.2 Responses to Adverse Selection
- 18.3 How Ignorance About Quality Drives Out High-Quality Goods
- 18.4 Market Power from Price Ignorance
- 18.5 Problems Arising from Ignorance when Hiring

18.1 Problems Due to Asymmetric Information

- **Asymmetric information** exists when one party to a transaction knows a material fact that the other party does not.
 - Example: used car salesperson knows the quality of the car and the buyer does not.
 - The more informed party may engage in **opportunistic behavior**, which is taking advantage of someone when circumstances permit.
 - Opportunistic behavior leads to market failures.
- Two major types of opportunistic behavior:
 1. Adverse selection
 2. Moral hazard

18.1 Problems Due to Asymmetric Information

- ***Adverse selection*** is opportunism characterized by an informed person's benefitting from trading with a less-informed person who doesn't know about an *unobserved characteristic* of the informed person.
 - Example: people who buy life insurance policies are better informed about their own health than insurance companies are.
- ***Moral hazard*** is opportunism characterized by an informed person's taking advantage of a less-informed person through an *unobserved action*.
 - Example: insured people may engage in risky behaviors that increase the probability of claims against the insurance company.

18.2 Responses to Adverse Selection

- Adverse selection creates a market failure by reducing the size of a market or eliminating it.
 - Example: Insurance companies have to charge higher rates due to adverse selection, thus, fewer people can afford insurance.
- Two main methods for solving the adverse selection problem:
 - 1.Restricting opportunistic behavior
 - 2.Equalizing information

18.2 Responses to Adverse Selection

1. Restricting Opportunistic Behavior

- Adverse selection can be prevented if people have no choice.
- Examples:
 - A government can provide universal health insurance coverage
 - Firms provide health insurance benefits to all employees
 - Many states require drivers to carry auto insurance

2. Equalizing Information

- An uninformed person may engage in **screening** to determine information held by informed people (e.g. test-driving a car)
- An informed party may engage in **signaling** to send information to a less-informed person (e.g. firm distributing favorable report on its product by an independent testing agency)

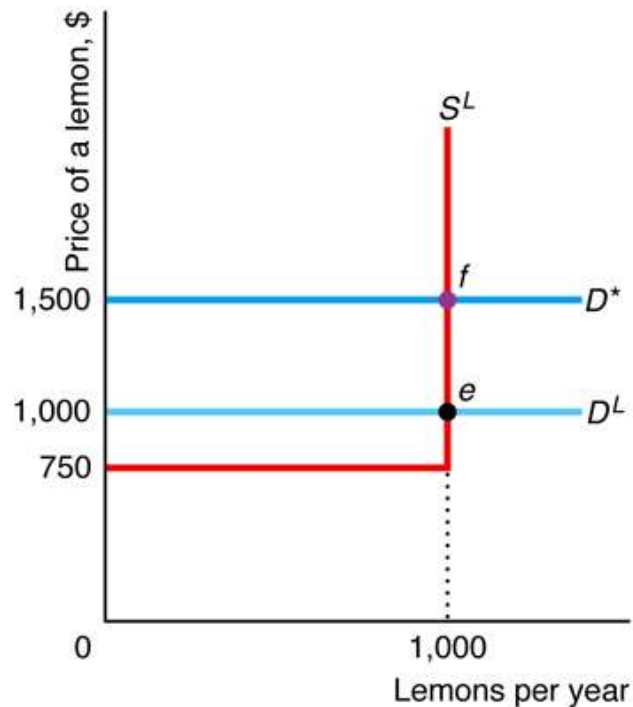
18.3 How Ignorance About Quality Drives Out High-Quality Goods

- Consumers often have trouble determining the quality of goods and services.
 - Consumer ignorance about quality leads to less-efficient use of resources than would occur if everyone were perfectly informed.
- Example: Used-car markets
 - Owners of lemons, low-quality cars, are more likely to sell their cars than owners of high-quality cars.
 - Creates an adverse selection problem; too few high-quality cars in the used-car market.

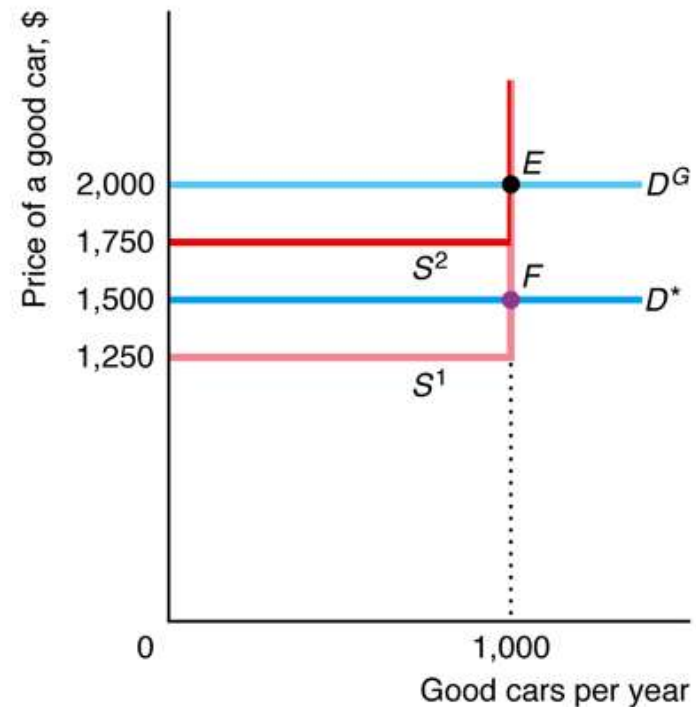
18.3 Markets for Lemons and Good Cars

- If good car owners' reservation price is high enough, only lemons will be sold.

(a) Market for Lemons



(b) Market for Good Cars



18.3 How Ignorance About Quality Drives Out High-Quality Goods

- If both sellers and buyers know the quality of all used cars before any sales occur:
 - all the cars, lemons and good, are sold
 - good cars sell for a higher price than lemons
 - this market is efficient because the goods go to the people who value them the most.
- In our lemons example, we assumed that sellers are unable to alter the quality of the used car.
- What if firms are able to vary the quality of their products?

18.3 How Ignorance About Quality Drives Out High-Quality Goods

- If firms are able to vary the quality of their products, but consumers can't identify high-quality goods before they purchase:
 - consumers pay the same price for all goods (regardless of quality)
 - producers of high-quality goods do not capture the benefits from raising the quality of their product.
 - the incentive to produce high-quality is reduced or eliminated.
- Stated another way, the *social value* of raising product quality is greater than the *private value*.

18.3 How Ignorance About Quality Drives Out High-Quality Goods

- How might we avoid problems stemming from consumer ignorance?
 1. **Laws to prevent opportunism**, like product liability laws, may protect consumers.
 2. Consumers can obtain reliable information about quality through **screening**.
 3. Some organizations publish expert **third-party comparisons** of brands (e.g. *Consumer Reports*)
 4. Government, consumer groups, or industry groups can provide information based on **standards and certification**.
 5. Producers of high-quality goods can use **signaling** to inform consumers about their products' superiority over rivals'.

18.4 Market Power from Price Ignorance

- Consumer ignorance about quality not only has potential to keep high-quality goods out of the market.
- Consumer ignorance about price variation across firms gives firms market power.
- Firms thus have incentive to make it difficult for consumers to collect pricing information.

18.4 Market Power from Price Ignorance

- Tourist-Trap Model
 - Assume you're a tourist in a small town
 - Tour bus has stopped on a street crowded with souvenir shops
 - You have no time to compare prices because the bus is leaving
- Normally, the close proximity of so many shops selling similar souvenirs would result in competitive prices.
- Consumers' limited information about prices (and the lack of incentive to gain information since you won't likely return) gives souvenir shops market power.

18.5 Problems Arising from Ignorance when Hiring

- What kinds of asymmetric information problems plague labor markets?
 - Prospective employees may have less information than firms do about working conditions.
 - Firms may have less information about potential employees' abilities than potential workers do.
- We examine models of screening and signaling more closely to see how workers and firms reduce information asymmetries and increase welfare in labor markets.

18.5 Information About Employment Risks

- Firms decide how much to invest in workplace safety and extra safety is costly.
- Workers must be compensated (with higher wages) for less safe work environments, so a firm that improves workplace safety can pay lower wages.
- If one firm invests in more safety, it can pay lower wages and so can all firms in the industry.
 - Result stems from workers only knowing about *industry-level* safety rather than *firm-level* safety.

18.5 Information About Employment Risks

- A firm bears the full cost of safety investments, but only derives some of the benefits.
 - This leads to underinvestment in safety by all firms in industry.
 - Prisoners' dilemma safety investment game:

		<i>Firm 2</i>	
		<i>No Investment</i>	<i>Investment</i>
<i>Firm 1</i>	<i>No Investment</i>	\$200 \$200	\$200 \$100
	<i>Investment</i>	\$250 \$100	\$225 \$225

18.5 Education as a Signal

- An informed person who voluntarily provides information to an uninformed person may make unsubstantiated claims or **cheap talk**.
 - Cyndi knows her ability (high or low) and the firm wants to match her ability to the level of ability demanded on the job.

(a) When Cheap Talk Works

		Job That the Firm Gives to Cyndi	
		Demanding	Undemanding
Cyndi's Ability	High		
	Low		

18.5 Education as a Signal

- Although Cyndi's cheap talk in the previous example resulted in assigning her the appropriate job, she may instead face incentives to lie about her ability.
 - Cyndi wants demanding job regardless of her ability.

(b) When Cheap Talk Fails

		Job That the Firm Gives to Cyndi	
		Demanding	Undemanding
Cyndi's Ability	High	3 / 2	1 / 1
	Low	3 / 1	2 / 4

18.5 Education as a Signal

- Why go to college?
 - Obtain valuable training that will result in a better job.
 - Obtain diploma to signal your ability to employers, which results in a better job.
- Assumptions of the signaling model:
 - Schooling provides no useful training and only serves as a signal.
 - High-ability workers are θ share of the workforce; low-ability workers are $1 - \theta$ share.
 - High-ability workers are worth w_h to the firm; low-ability workers are worth w_l and will pay workers these marginal products.

18.5 Education as a Signal

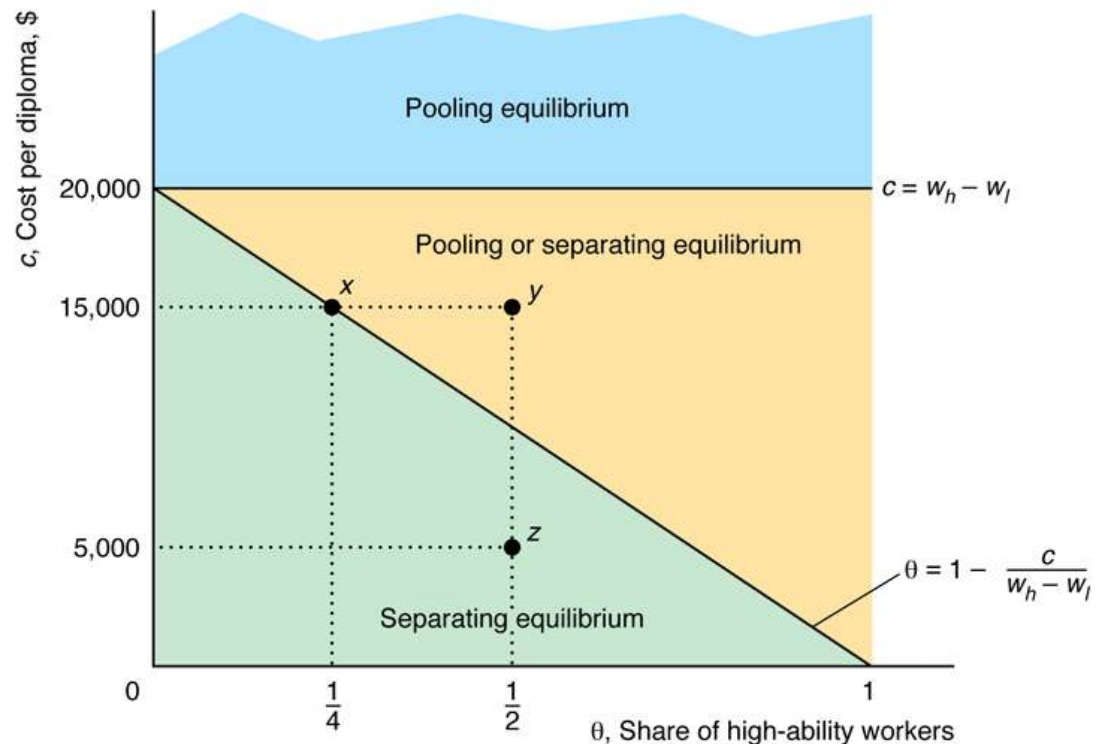
- If employers can't directly determine a worker's skill level, two types of equilibria are possible:
 - 1.Pooling equilibrium:** dissimilar people are paid alike or behave alike.
 - All workers are paid the average wage:

$$\bar{w} = \theta w_h + (1 - \theta)w_l$$

- 2.Separating equilibrium:** dissimilar people are paid differently and behave differently.
 - Successful signal causes high-ability workers to receive w_h and low-ability workers to receive w_l .

18.5 Education as a Signal

- If schooling is very costly, only a pooling equilibrium is possible.
- If there are few high-ability people, only a separating equilibrium is possible.



18.5 Education as a Signal

- In a separating equilibrium, high-ability people get an otherwise useless education to signal that they differ from low-ability people.
- In this extreme example, education is socially inefficient.
 - It is costly and would be more efficient to find a cheaper way of sending the same signal.
- This inefficient expenditure on education is due to asymmetric information.

18.5 Screening in Hiring

- Firms screen prospective workers in various ways:
 - Hire based on characteristics believed to be correlated with ability, some of which are easily observable in an interview (e.g. how a person dresses or speaks).
 - Hire based on performance on a test, which may or may not accurately measure skills required on the job.
- Some employers engage in ***statistical discrimination***, which is hiring based on the belief that people of a certain age, gender, race, religion, or ethnicity have a higher ability than others on average.

18.5 Screening in Hiring

- This employer hires only people of Race 2.
 - Actions may be based on true differences rather than racism, but still harmful to people of Race 1.

