How do you avoid buying a lemon?
Markets with Private Information

When you have completed your study of this chapter, you will be able to

1. Describe the lemons problem and explain how the used-car market solves it.

2. Describe the asymmetric information problems in the insurance market and explain how they are solved.

3. Explain the information problems and other economic problems in health-care markets.
Private information is information relevant to a transaction that is possessed by some market participants but not all.

Asymmetric information is a situation in which either the buyer or the seller has private information.

How does a market with asymmetric information work?

Is the market outcome efficient?
12.1 THE LEMONS PROBLEM AND ITS SOLUTION

A Market for Used Cars with a Lemons Problem

A *lemons problems* arises when it is not possible to distinguish reliable products from lemons (defective products), there are too many lemons—perhaps only lemons—and too few reliable products—perhaps none.

To see how the used-car market overcomes the lemons problem, we’ll first look at a market that *does* have a lemons problem.

Assume that there are only two types of cars: lemons and good cars.
12.1 THE LEMONS PROBLEM AND ITS SOLUTION

Buyers’ Decisions and Demand

Greg wants to buy a used car and he would like to avoid buying a lemon.

He knows that the value of a good car to him, his marginal benefit, is $20,000.

But Greg knows how to fix a car, so he would be willing to buy a lemon if he could get it for a price equal to his marginal benefit from a lemon, which is $10,000.
Figure 12.1 shows the demand for used cars. If buyers expect no lemons, then the demand curve for used cars is $D_G$. If buyers expect only lemons, then the demand curve for used cars is $D_L$. The demand for used cars of unknown quality lies between $D_G$ and $D_L$. 
12.1 THE LEMONS PROBLEM AND ITS SOLUTION

Sellers’ Decisions and Supply

Sellers know their marginal cost, so they know the quantity they are willing to supply at a given price.

The marginal cost of a lemon is less than that of a good car and over a range of low prices, only lemons are supplied.

At higher prices, the quantity of lemons supplied falls off and good cars start to be supplied.
Figure 12.2 shows the supply of used cars. At low prices, sellers supply only lemons.
(a) Lemons

1. At prices up to $12,000, only lemons are supplied

(b) Good cars

2. Good cars are supplied at prices above $12,000
At high prices, sellers supply only good cars.
12.1 THE LEMONS PROBLEM AND ITS SOLUTION

The Market Outcome

Demand and supply determine the price of a used car and the quantity traded, but the market doesn’t work well.

All the cars are lemons.
At the equilibrium quantity and price...

...all the cars are lemons.
12.1 THE LEMONS PROBLEM AND ITS SOLUTION

Adverse Selection

This market suffers from adverse selection.

Adverse selection arises in markets with private information.

Adverse selection is the tendency for people to enter into transactions that bring them benefits from their private information and impose costs on the uninformed party.
In the used-car market, the low price adversely selects lemons.

Owners of lemons have a greater incentive to offer their cars for sale.

In the extreme case here, good cars disappear from the market.

Owners of good cars have no incentive to offer them for sale because the market price is less than their own marginal benefit.
12.1 THE LEMONS PROBLEM AND ITS SOLUTION

A Used-Car Market with Dealers’ Warranties

To overcome the adverse selection problem, used-car dealers convince buyers that a car isn’t a lemon by giving a guarantee in the form of a warranty.

The dealer *signals* which cars are good ones and which cars are lemons.

**Signaling** occurs when an informed person takes actions that send information to uninformed persons.
Figure 12.4 shows that signaling makes the used-car market efficient.

Part (a) shows the market for lemons.

Buyers can identify the lemons, the cars without warranties.

The market is efficient.

The deadweight loss from over-supply is eliminated.
(a) Lemons
Part (b) shows the market for good cars.

With warranties, buyers know that these cars are good cars.

The market is efficient.

The deadweight loss that arises from under-supply is eliminated.
Pooling Equilibrium and Separating Equilibrium

Pooling equilibrium is the outcome when only one message is available and an uninformed person cannot determine quality.

For example, the used-car market with no warranties.

Separating equilibrium is the outcome when signaling provides full information to a previously uninformed person.

For example, the used-car market with warranties.
Just as buyers and sellers gain from trading goods and services, so they can also gain by trading risk.

But risk is a “bad,” not a good. The good that is traded is risk avoidance.

A buyer of risk avoidance can gain because the value of avoiding a risk is greater than the price that must be paid to others to get them to bear a share of it.

A seller of risk avoidance faces a lower cost of risk than the price that people are willing to pay to avoid it.
Insurance plays a big role in our economic lives. Insurance reduces the risk that each person faces by sharing or pooling the risks.

When you buy insurance against the risk of an unwanted event, you pay an insurance company a premium.

If the unwanted event occurs, the insurance company pays you the amount of the insured loss.
Asymmetric Information in Insurance

Think about auto collision insurance.

Some drivers are careful and they are less likely to have accidents than others who are aggressive drivers.

Each driver knows which type he or she is, but the insurance company doesn’t know.

But if the insurance company did know, it could charge the higher-risk aggressive driver a higher premium and offer lower-risk careful driver a lower premium.
Without knowledge about driver types, all insured drivers get the same deal.

There is a *pooling equilibrium* like that in the used-car market without dealer warranties.

Careful drivers and aggressive drivers pay the same premium.

But the insurance companies incur losses on aggressive drivers and make profits on careful drivers.
Figure 12.5 shows the pooling equilibrium.

The demand for collision insurance by all drivers is $D$.

The supply of collision insurance is $S$.

All drivers pay a premium of $1,000 a year.

The market equilibrium is a pooling equilibrium.
The demand for collision insurance by all drivers is $D$.

The demand by careful drivers is $D_C$.

The distance between the curves $D_C$ and $D$ is the quantity of policies demanded by aggressive drivers.
Moral Hazard

Moral hazard is the tendency for a person with private information to use it in ways that impose costs on an uninformed party with whom they have made an agreement.

A driver with full collision coverage has less incentive than a driver with little or no collision coverage to drive carefully.

Once a person has bought insurance, her or his incentives change and the change adversely affects the interest of the insurance company.
Adverse Selection

Adverse selection arises because people at greater risk are more likely to buy insurance than those for little risk.

For example, an aggressive driver is more likely than a careful driver to take the fullest possible coverage.

So more of the insured risks arise from the activities of the riskiest people.

Insurance companies have an incentive to find ways around the moral hazard and adverse selection problems.
Screening in Insurance Markets

Screening occurs when an uninformed person creates an incentive for an informed person to reveal relevant private information.

Insurance companies use the “no-claim” bonus and the deductible as screens to separate high-risk aggressive drivers and low-risk careful drivers and set premiums in line with the risk arising from the two types of drivers.
No-Claim Bonus

A *no-claim bonus* is a discount in the insurance premium for drivers who don’t make claims.

A driver accumulates a no-claim bonus by driving safely and avoiding accidents.

The longer the period of no-claim, the greater is the no-claim bonus and the greater is the incentive to drive carefully.

The no-claim bonus helps to lessen the moral hazard problem.
Deductible

A *deductible* is the amount of a loss that the insured person agrees to bear personally.

The larger the deductible, the lower is the premium.

The lower the premium, the decrease in the premium is more than proportionate to the increase in the deductible.

The size of the deductible reveals to the insurance company whether the driver is aggressive or careful.
Separating Equilibrium with Screening

With screening that indicates driver types, insurance companies can supply insurance on different terms to the different groups.

With only two groups, aggressive and careful, it can offer premiums at two different levels:

- A higher premium for aggressive drivers and a lower premium for careful drivers.
- The number of aggressive drivers decreases.
Figure 12.6 shows the separating equilibrium.

Without screening, 60 careful drivers and 60 aggressive drivers each pay a premium of $1,000 a year.
With screening, there is a separating equilibrium. 80 careful drivers pay a premium of $800 a year.
12.2 INFORMATION PROBLEMS IN INSURANCE MARKETS

With screening, there is a separating equilibrium.

40 aggressive drivers pay a premium of $1,200 a year.
12.3 HEALTH-CARE MARKETS

Economic Problems in Health-Care Markets

Health care is two distinct products:

1. Health insurance—insurance that pays health-care bills

2. Health-care services—the services of health-care professionals and hospitals.

With no government intervention, both health insurance and health-care services would be underprovided.
Health insurance and health-care services would be underprovided for three economic reasons:

- Asymmetric information
- Missing insurance market
- Public-health externalities

**Asymmetric information**

Asymmetric information brings adverse selection and moral hazard to both these markets.
Missing Insurance Market

Many people can’t get private health insurance because they are too old, too sick, or too disabled.

Others with pre-existing conditions can get insurance but only with exclusions of the very health problems they are most likely to encounter.

These people have the greatest wants for health care, but the least ability to get it in the free market.
The missing insurance market is one that is blind to a person’s known health risks.

This market can only be provided by government intervention.

The U.S. system deals with this problem by government provision of health insurance—Medicare and Medicaid, which provides health insurance to 88 million people.

It is estimated that 46 million people have no health insurance and 25 million are underinsured.
Health-Care Systems in Other Countries

Every major country except the United States has a comprehensive national health-care system.

Every person is insured under a government-funded national insurance program.

Health-care services are provided by private clinics, hospitals, physicians, and specialists but they are paid for by governments.

Government expenditure on health care is funded by health insurance taxes and income taxes.
12.3 HEALTH-CARE MARKETS

Resources in the public health-care system are allocated by physicians, specialists, and hospitals and are based on urgency of need, which often results in lengthy waiting lists.

No one is permitted to opt out of the national health service but in most countries, everyone is permitted to buy private insurance and private health care.

So a “two-tier” system emerges in which the rich buy private insurance and get high-quality care while the poor get low-quality state care.
A Reform Idea

Health care in the United States faces two problems:
Too many people are uninsured and health care costs too much.

Obama Affordable Care Act addresses the first of these problems but does little to address the overexpenditure.

A solution to both the problems is to use health-care vouchers to ensure universal coverage and put a cap on total expenditure.
How Do You Avoid Buying a Lemon?

The used-car market in the United States might have a lemons problem, but it definitely works.

In 2008, 50,000 used-car dealers sold 37 million cars at an average price of $8,000 per car.

But in the market for new cars:

Around 40 domestic and foreign producers sold 13 million cars at an average price of $26,500 per car.

The stock of cars on U.S. roads is 250 million, so with 37 million being traded, more than one car in seven changes hands each year.
What makes this market work and helps it overcome the lemons problem?

The answer is dealers’ warranties and third party inspection services.

By offering warranties,

1. Dealers *signal* that the cars they are selling are free from defects and,

2. If a car should turn out to be a lemon, the dealer will bear the cost of fixing it.