

Microeconomics: Principles, Applications, and Tools

NINTH EDITION

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NINTH EDITION

Chapter 6

Market Efficiency and Government Intervention

The housing market in New York City is highly regulated. The city issues a relatively small number of permits for new condominium buildings, and rapid growth in the demand for condominiums has resulted in soaring condominium prices.

Learning Objectives

- 6.1** Use demand and supply curves to compute the value of markets
- 6.2** Explain why the market equilibrium maximizes the value of a market
- 6.3** Describe the market effects of price controls
- 6.4** Describe the market effects of quantity controls
- 6.5** Explain how a tax is shifted to consumers and input suppliers

Market Efficiency and Government Intervention

- **Efficiency**

A situation in which people do the best they can, given their limited resources.

PRINCIPLE OF VOLUNTARY EXCHANGE

A voluntary exchange between two people makes both people better off.

A market equilibrium will generate the largest possible surplus when four conditions are met:

- *No external benefits*: The benefits of a product (a good or service) are confined to the person who pays for it.
- *No external costs*: The cost of producing a product is confined to the person who sells it.
- *Perfect information*: Buyers and sellers know enough about the product to make informed decisions about whether to buy or sell it.
- *Perfect competition*: Each firm produces such a small quantity that the firm cannot affect the price.

6.1 CONSUMER SURPLUS AND PRODUCER SURPLUS

The Demand Curve and Consumer Surplus

- **Willingness to pay**

The maximum amount a consumer is willing to pay for a product.

- **Consumer surplus**

The amount a consumer is willing to pay for a product minus the price the consumer actually pays.

6.1 CONSUMER SURPLUS AND PRODUCER SURPLUS

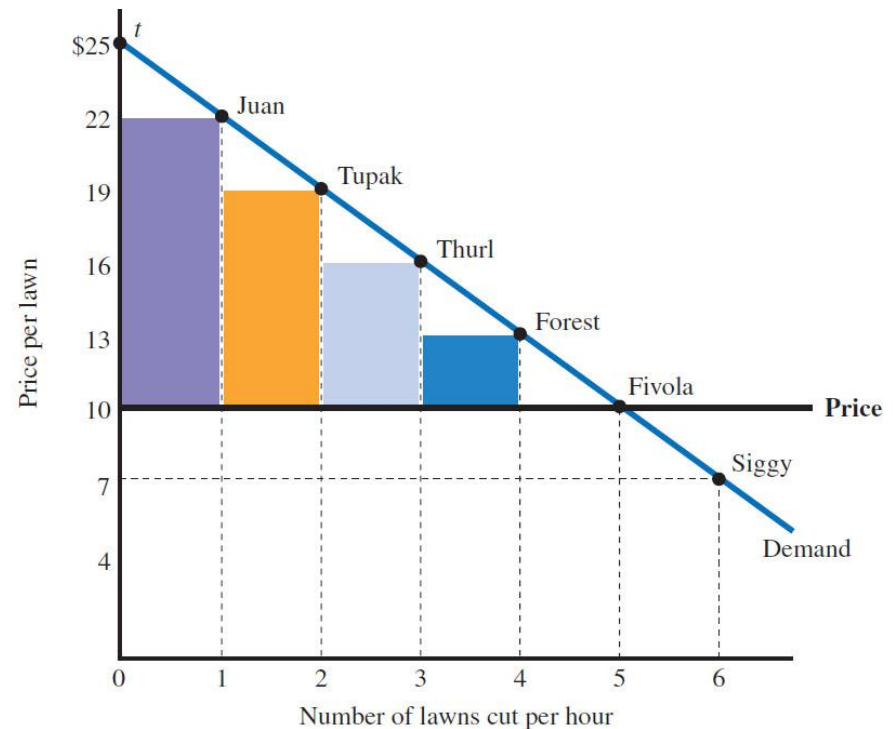
The Demand Curve and Consumer Surplus

Consumer surplus equals the maximum amount a consumer is willing to pay (shown by the demand curve) minus the price paid.

Juan is willing to pay \$22, so if the price is \$10, his consumer surplus is \$12.

The market consumer surplus equals the sum of the surpluses earned by all consumers in the market.

In this case, the market consumer surplus is $\$30 = \$12 + \$9 + \$6 + \$3 + \0 .



▲ FIGURE 6.1 The Demand Curve and Consumer Surplus

APPLICATION 1

COMPUTER SURPLUS OF INTERNET SERVICES

APPLYING THE CONCEPTS #1: How do we compute consumer surplus?

- What is the consumer surplus from Internet service? Two recent studies compute consumers' willingness to pay for Internet service. For Japanese consumers, the average willingness to pay for Internet service (email and web browsing delivered over personal computers) is ¥5,623 per month, compared to an average price of broadband Internet service of ¥4,000.
- In other words, the average consumer surplus is ¥1,623, or about 40 percent of the price.
- For US consumers, the average willingness to pay for Internet service is \$85 per month, and with an average monthly price of \$40, the consumer surplus is \$45 per month.

6.1 CONSUMER SURPLUS AND PRODUCER SURPLUS

The Supply Curve and Producer Surplus

- **Willingness to accept**

The minimum amount a producer is willing to accept as payment for a product; equal to the marginal cost of production.

- **Producer surplus**

The price a producer receives for a product minus the marginal cost of production.

6.1 CONSUMER SURPLUS AND PRODUCER SURPLUS

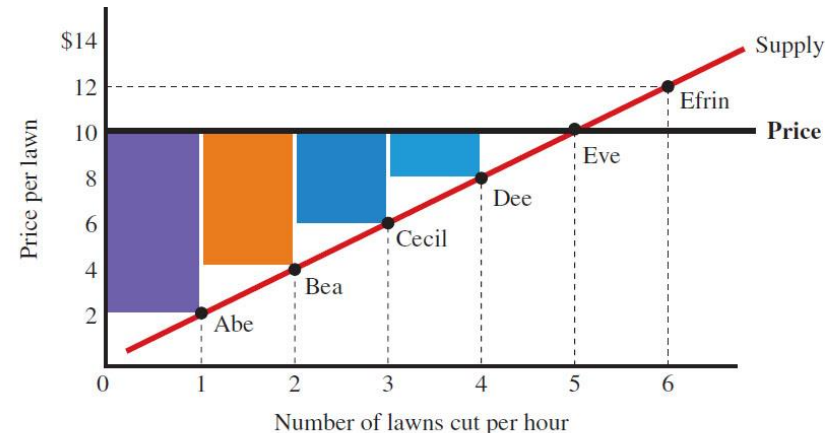
The Supply Curve and Producer Surplus

Producer surplus equals the market price minus the producer's willingness to accept, or marginal cost (shown by the supply curve).

Abe's marginal cost is \$2, so if the price is \$10, his producer surplus is \$8.

The market producer surplus equals the sum of the surpluses earned by all producers in the market.

In this case, the market producer surplus is $\$20 = \$8 + \$6 + \$4 + \$2 + \0 .



▲ FIGURE 6.2 The Supply Curve and Producer Surplus

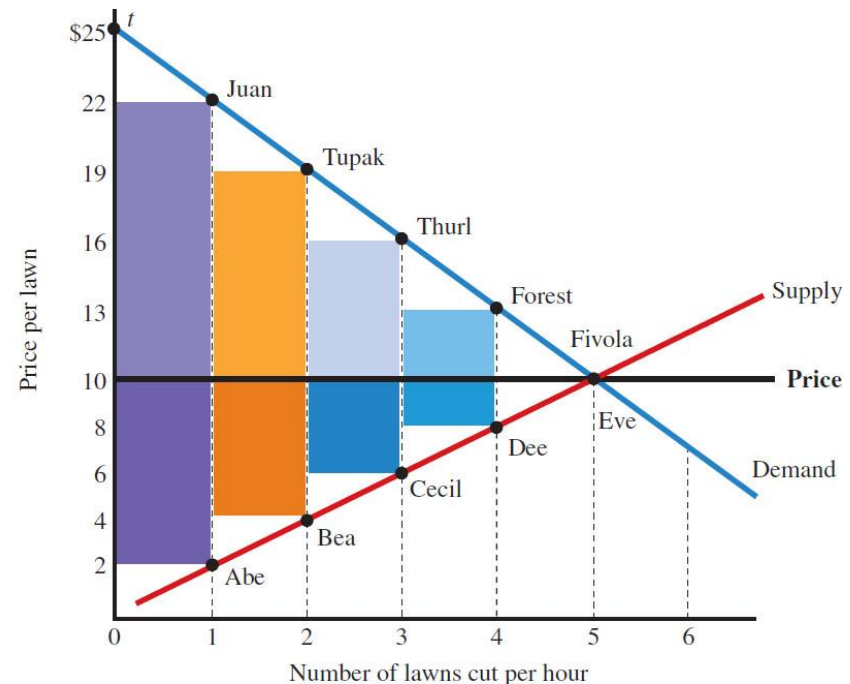
6.2 MARKET EQUILIBRIUM AND EFFICIENCY

- **Total surplus**

The sum of consumer surplus and producer surplus.

The total surplus of the market equals consumer surplus (the lightly shaded areas) plus producer surplus (the darkly shaded areas).

The market equilibrium generates the highest possible total market value, equal to \$50 = \$30 (consumer surplus) + \$20 (producer surplus).



▲ FIGURE 6.3 Market Equilibrium and the Total Market Surplus

6.2 MARKET EQUILIBRIUM AND EFFICIENCY

Total Surplus Is Lower with a Price below the Equilibrium Price

- **Price ceiling**

A maximum price set by the government.

Total Surplus Is Lower with a Price above the Equilibrium Price

- **Price floor**

A minimum price set by the government.

6.2 MARKET EQUILIBRIUM AND EFFICIENCY

Total Surplus Is Lower with a Price above the Equilibrium Price

- (A)** A maximum price of \$4 reduces the total surplus of the market. The first two consumers gain at the expense of the first two producers. The consumer and producer surpluses for the third and fourth lawns are lost entirely, so the total value of the market decreases.
- (B)** A minimum price of \$19 reduces the total surplus of the market. The first two producers gain at the expense of the first two consumers. The consumer and producer surpluses for the third and fourth lawns are lost entirely, so the total value of the market decreases.

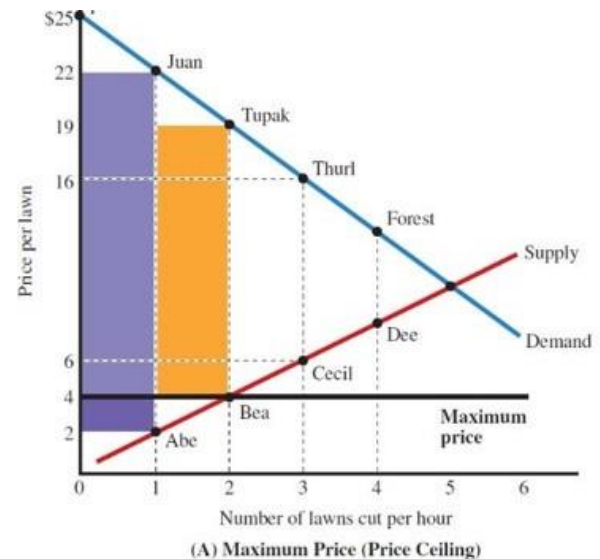
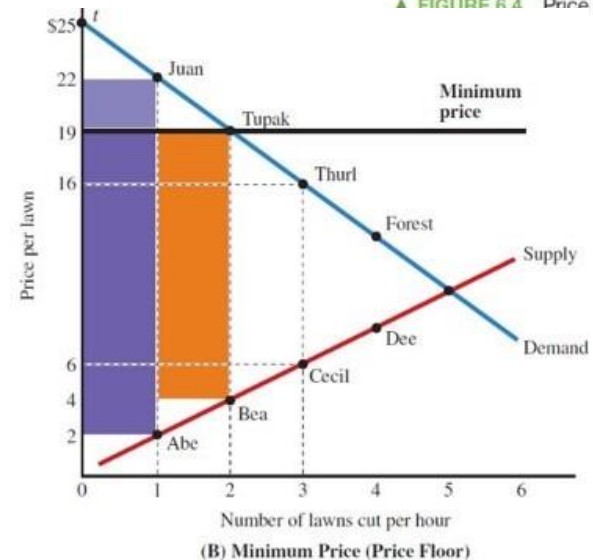


FIGURE 6.4 Price Ceilings and Price Floors



6.2 MARKET EQUILIBRIUM AND EFFICIENCY

Efficiency and the Invisible Hand

- The market equilibrium maximizes the total surplus of the market because it guarantees that all mutually beneficial transactions will happen.
- Instead of using a bureaucrat to coordinate the actions of everyone in the market, we can rely on the actions of individual consumers and individual producers, each guided only by self-interest. This is Adam Smith's invisible hand in action.

Government Intervention in Efficient Markets

- In most modern economies, governments take an active role.
- For a market that meets the four efficiency conditions, the market equilibrium generates the largest possible total surplus, so government intervention can only decrease the surplus and cause inefficiency.

APPLICATION 2

RENT CONTROL AND MISMATCHES

APPLYING THE CONCEPTS #2: Why does the market equilibrium maximize the value of a market?

- Under rent control, the government sets a maximum price for housing, decreasing the quantity supplied and the total value of the market. Rent control and other maximum prices cause inefficiency of another sort.
- Consider a consumer living in a rent-controlled apartment who experiences a change in circumstances that would normally cause the consumer to move to a different apartment. For example, when a single person renting a tiny apartment gets married, he or she is likely to move to a larger place. But a consumer in a rent-controlled apartment may stay in the tiny but inexpensive apartment, generating a housing mismatch. A recent study suggests that in New York City, about 20 percent of rent-controlled apartments are mismatched.
- The most famous case of a mismatched tenant is former Mayor Koch of New York. When he was elected mayor and moved into the mayor's official residence, he held onto his rent-controlled apartment, presumably anticipating his post-mayor life in an apartment at a controlled rent that was roughly one-third the market rent.

6.3 CONTROLLING PRICES—MAXIMUM AND MINIMUM PRICES

Setting Maximum Prices

Here are some examples of goods that have been subject to maximum prices or may be subject to maximum prices in the near future:

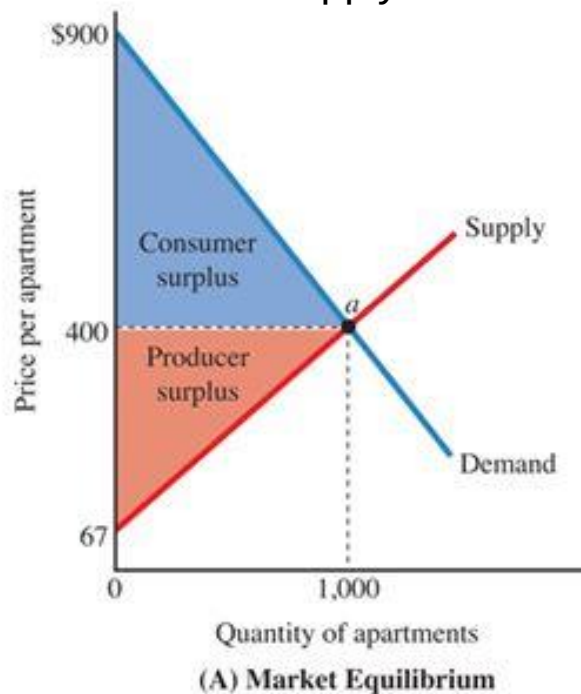
- *Rental housing.*
- *Gasoline.*
- *Medical goods and services.*

In all three cases, a maximum price will cause excess demand and reduce the total surplus of the market.

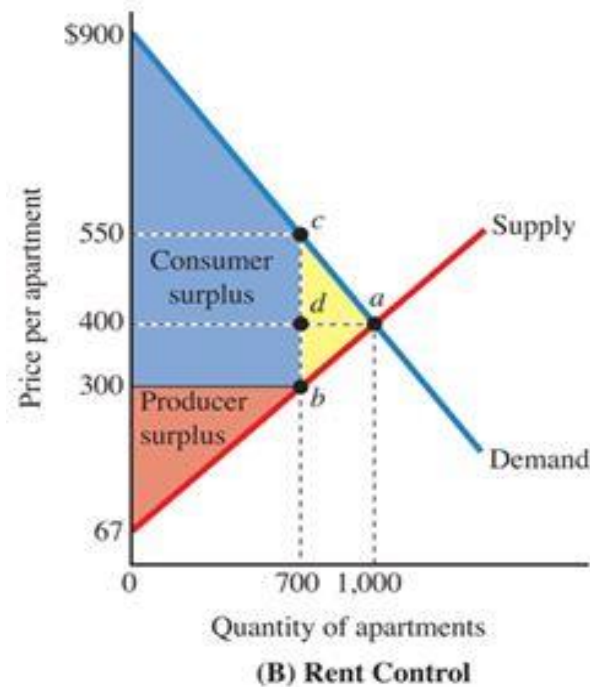
6.3 CONTROLLING PRICES—MAXIMUM AND MINIMUM PRICES

Rent Control

(A) In the market equilibrium, with a price of \$400 and 1,000 apartments, the total surplus is the area between the demand curve and the supply curve.



(B) Rent control, with a maximum price of \$300, reduces the quantity to 700 apartments and decreases the total surplus.



Deadweight loss

The decrease in the total surplus of the market that results from a policy such as rent control.

6.3 CONTROLLING PRICES—MAXIMUM AND MINIMUM PRICES

Rent Control

PRINCIPLE OF VOLUNTARY EXCHANGE

A voluntary exchange between two people makes both people better off.

Because rent control outlaws transactions that would make both parties better off, it causes inefficiency.

Three more subtle effects associated with rent control add to its inefficiency:

- *Search costs.*
- *Cheating.*
- *Decrease in quality of housing.*

APPLICATION 3

PRICE CONTROLS AND THE SHRINKING CANDY BAR

APPLYING THE CONCEPTS #3: How Do Price Controls Affect the Market?

- During World War II, the U.S. government used a system of price controls to set maximum prices on all sorts of products, including candy bars.
- Consumer Reports compared the weights of candy bars in 1943 to their weights in 1939, before the maximum prices were imposed. In 19 of 20 cases, the candy bars had shrunk, causing the price per ounce to increase by an average of 23 percent.
- In other words, producers reacted to maximum prices by shrinking candy bars to match the relatively low maximum price. In the words of Consumer Reports, the shrinkage of candy bars is an example of “hidden price increases.”

6.3 CONTROLLING PRICES—MAXIMUM AND MINIMUM PRICES

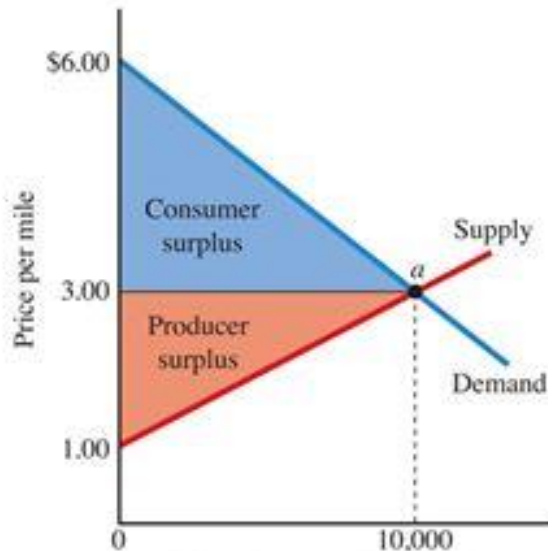
Setting Minimum Prices

- Recall that when government sets a minimum price above the equilibrium price, the result is permanent excess supply.
- Governments around the world establish minimum prices for agricultural goods.
- Under a price-support program, a government sets a minimum price for an agricultural product and then buys any resulting surpluses at that price.

6.4 CONTROLLING QUANTITIES—LICENSING AND IMPORT RESTRICTIONS

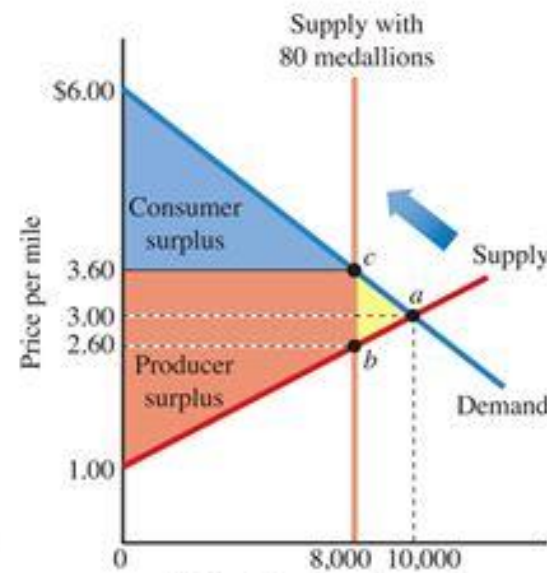
Taxi Medallions

(A) The market equilibrium is shown by point *a*, with a price of \$3.00 and a quantity of 10,000 miles of service per day (100 taxis and 100 miles per taxi). The total surplus is the area between the demand and supply curves.



(A) Market Equilibrium

(B) A medallion policy reduces the quantity of taxi service to 8,000 miles per day (80 taxis and 100 miles per taxi) and increases the price to \$3.60 (point *c*).



(B) Taxi Medallions

The producers of the first 8,000 miles gain at the expense of consumers, but the surpluses for between 8,000 and 10,000 miles are lost entirely. Therefore, the total surplus decreases.

6.4 CONTROLLING QUANTITIES—LICENSING AND IMPORT RESTRICTIONS

Licensing and Market Efficiency

Our analysis of taxi medallions applies to any market subject to quantity controls.

In general, a policy that limits entry into a market

- increases price,
- decreases quantity, and
- causes inefficiency in the market.

In evaluating such a policy, we must compare the possible benefits from controlling nuisances to the losses of consumer and producer surplus.

Winners and Losers from Licensing

Who benefits and who loses from licensing programs such as a taxi medallion policy?

The losers are consumers, who pay more for taxi rides.

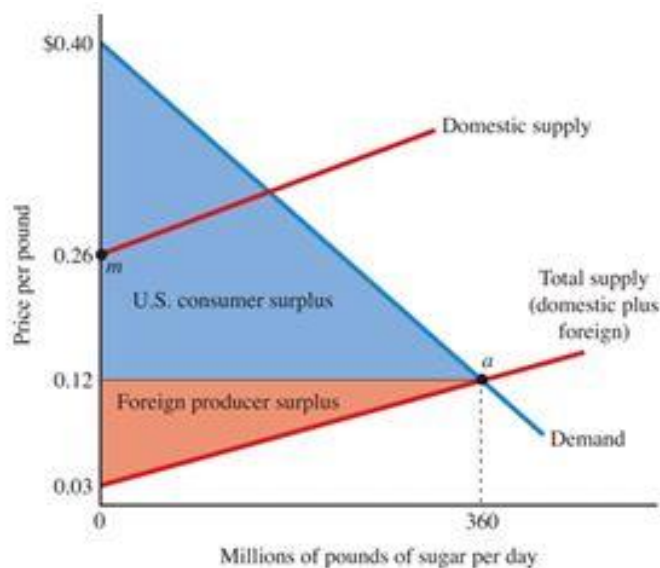
The winners are the people who receive a free medallion and the right to charge an artificially high price for taxi service.

6.4 CONTROLLING QUANTITIES—LICENSING AND IMPORT RESTRICTIONS

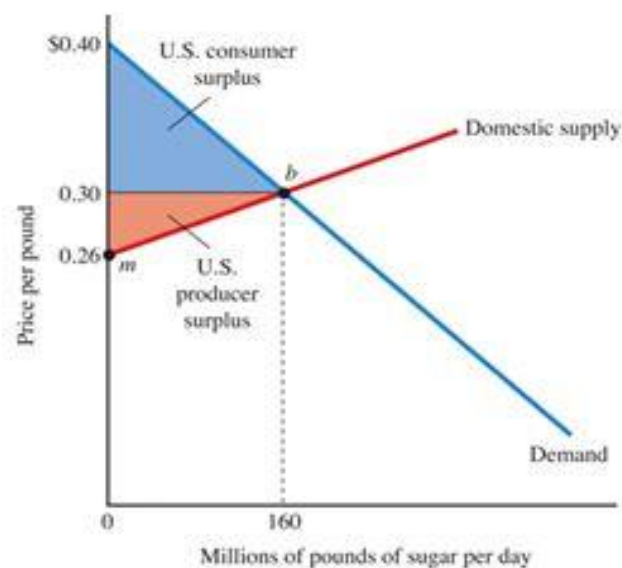
Import Restrictions

(A) With free trade, the demand intersects the total supply curve at point *a* with a price of \$0.12 and a quantity of 360 million pounds. This price is below the minimum price of domestic suppliers (\$0.26, as shown by point *m*), so domestic firms do not participate in the market. The total surplus is shown by the shaded areas (U.S. consumer surplus and foreign producer surplus).

(B) If sugar imports are banned, the equilibrium is shown by the intersection of the demand curve and the domestic (U.S.) supply curve (point *b*). The price increases to \$0.30. Although the ban generates a producer surplus for domestic producers, their gain is less than the loss of domestic consumers.



(A) Free Trade with No Domestic Production



(B) Import Ban and Domestic Production

APPLICATION 4

THE COST OF PROTECTING A LUMBER JOB

APPLYING THE CONCEPTS #4: What Are The Effects of Import Restrictions?

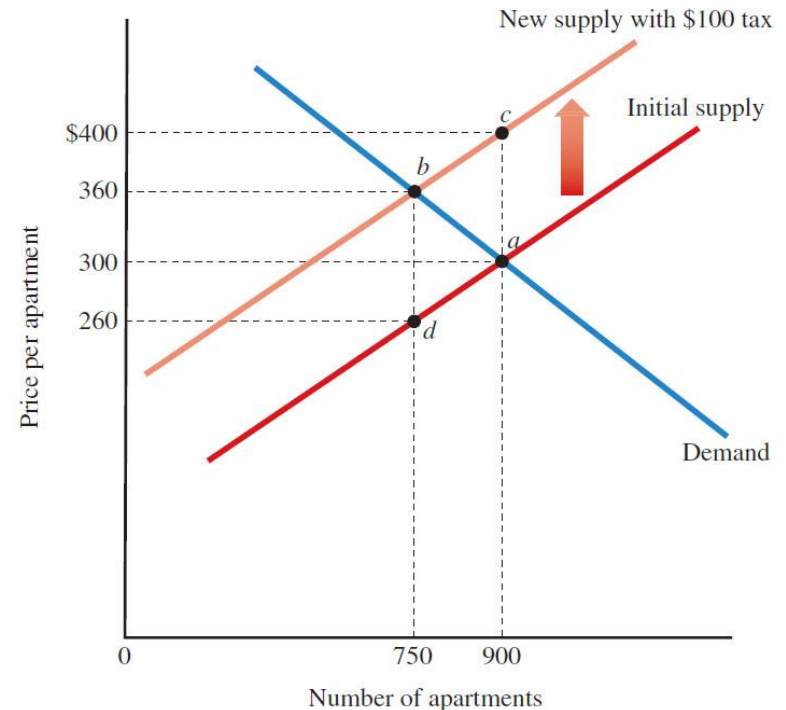
- What is the cost of using import restrictions to protect jobs in the softwood lumber industry? Softwood lumber is subject to import quotas (quantity restrictions) and tariffs (import taxes) that decrease the supply of lumber and increase the price to builders.
- These policies protect about 600 jobs in the industry and impose a cost on consumers of roughly \$632 million, so the cost per protected job is roughly \$1 million a year.
- A recent study estimates the consumer benefits of relaxing import restrictions. The annual benefit would be \$1.5 billion for ethanol, \$49 million for sugar, \$514 million for textiles, and \$215 million for footwear.

6.5 WHO REALLY PAYS TAXES?

Tax Shifting: Forward and Backward

A tax of \$100 per apartment shifts the supply curve upward by the \$100 tax, moving the market equilibrium from point *a* to point *b*.

The equilibrium price increases from \$300 to \$360, and the equilibrium quantity decreases from 900 to 750 apartments.



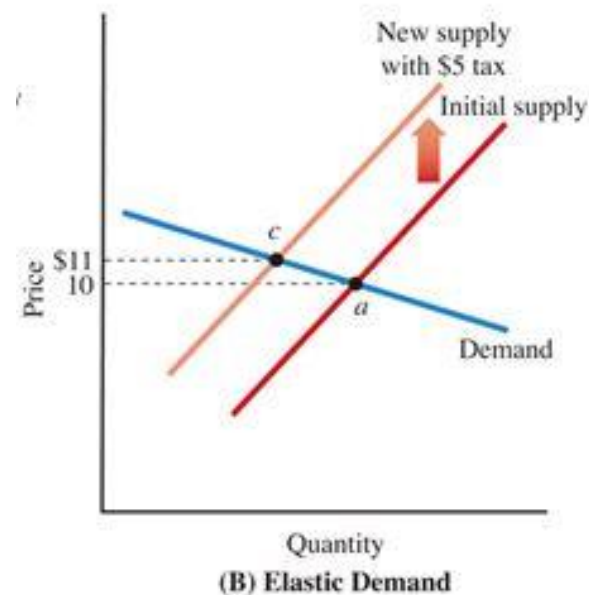
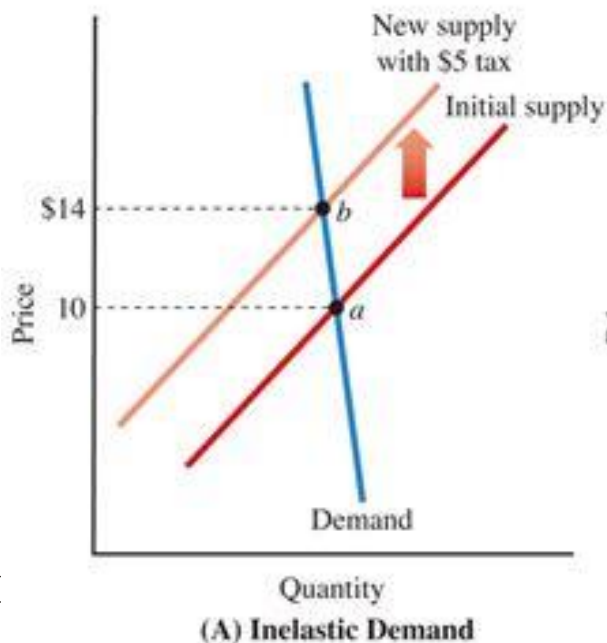
▲ FIGURE 6.8 The Market Effects of an Apartment Tax

6.5 WHO REALLY PAYS TAXES?

Tax Shifting and the Price Elasticity of Demand

If demand is inelastic (Panel A), a tax will increase the market price by a large amount, so consumers will bear a large share of the tax.

If demand is elastic (Panel B), the price will increase by a small amount and consumers will bear a small share of the tax.



6.5 WHO REALLY PAYS TAXES?

Cigarette Taxes and Tobacco Land

- In 1994, President Clinton proposed an immediate \$0.75 per pack increase in the cigarette tax.
- The tax had two purposes:
 - Generate revenue for Clinton's health-care reform plan
 - Decrease medical costs by discouraging smoking.
- Based on our discussion of the market effects of a tax, we would predict that the tax would be shared by consumers, who would pay higher prices, and the owners of land where tobacco is grown.
- It appears tobacco farmers and landowners understand the economics of cigarette taxes. Led by a group of representatives and senators from tobacco-growing areas in North Carolina, Kentucky, and Virginia, Congress scaled back Clinton's proposed tax hike from \$0.75 to \$0.05. Although the government would have collected the tax from cigarette manufacturers, savvy tobacco farmers realized the tax would decrease the price of their tobacco-growing land.

6.5 WHO REALLY PAYS TAXES?

The Luxury Boat Tax and Boat Workers

- A lesson on backward shifting occurred when Congress passed a steep luxury tax on boats and other luxury goods in 1990.
- Under the new tax, a person buying a \$300,000 boat paid an additional \$20,000 in taxes.
- The burden of the tax was actually shared by consumers and input suppliers, including people who worked in boat factories and boatyards.
- The tax increased the price of boats, and consumers bought fewer boats.
 - The boat industry produced fewer boats.
 - The resulting decrease in the demand for boat workers led to layoffs and lower wages for those who managed to keep their jobs.
- Although the idea behind the luxury tax was to “soak the rich,” the tax actually harmed low-income workers in the boat industry. The tax was repealed a few years later.

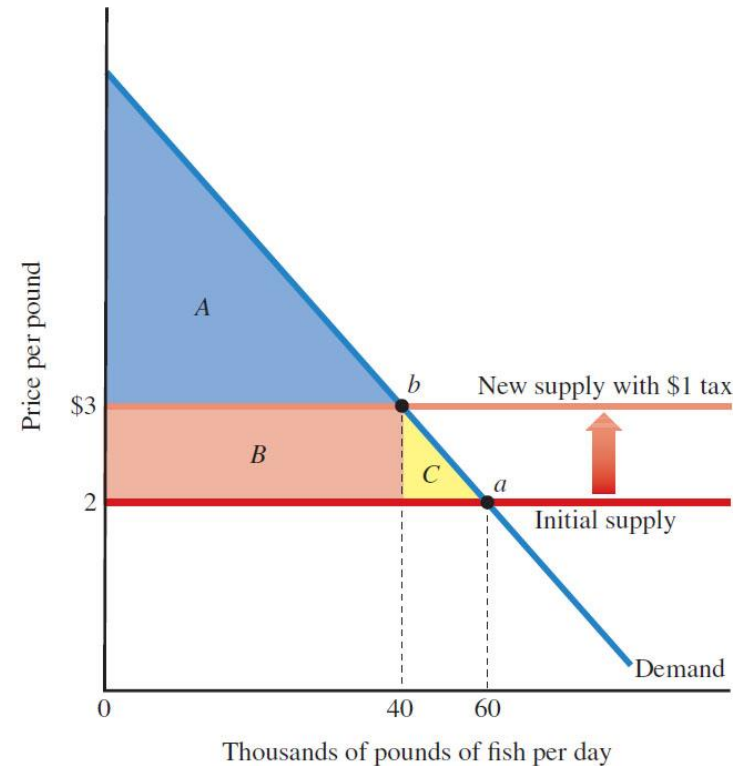
6.5 WHO REALLY PAYS TAXES?

Tax Burden and Deadweight Loss

When the supply curve is horizontal, a tax increases the equilibrium price by the tax (\$1 per pound in this example).

Consumer surplus decreases by the areas *B* and *C*. Total tax revenue collected is shown by rectangle *B*, so the total burden exceeds tax revenue by triangle *C*.

Triangle *C* is sometimes known as the deadweight loss or excess burden of the tax.



▲ FIGURE 6.10 The Deadweight Loss or Excess Burden of a Tax

6.5 WHO REALLY PAYS TAXES?

Tax Burden and Deadweight Loss

- **Deadweight loss from taxation**

The difference between the total burden of a tax and the amount of revenue collected by the government.

- **Excess burden of a tax**

Another name for deadweight loss.

Learning Objectives

- 6.1** Use demand and supply curves to compute the value of markets
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KEY TERMS

Consumer surplus

Deadweight loss

Deadweight loss from taxation

Efficiency

Excess burden of a tax

Price ceiling

Price floor

Producer surplus

Total surplus

Willingness to accept

Willingness to pay

Questions?

Homework:

Ch5, pp 121-125

1.8, 2.14, 3.7, 5.6, 6.3

Ch6, pp. 136-140

1.1, 1.2, 2.1, 5.8