

CHAPTER 7

Taxation and Government Intervention

Chapter Goals

- Show how equilibrium maximizes consumer and producer surplus.
- Demonstrate the burden of taxation to consumers and producers.
- Explain how government intervention is a type of implicit taxation.
- Define *rent seeking* and show how it is related to elasticity.

Producer and Consumer Surplus

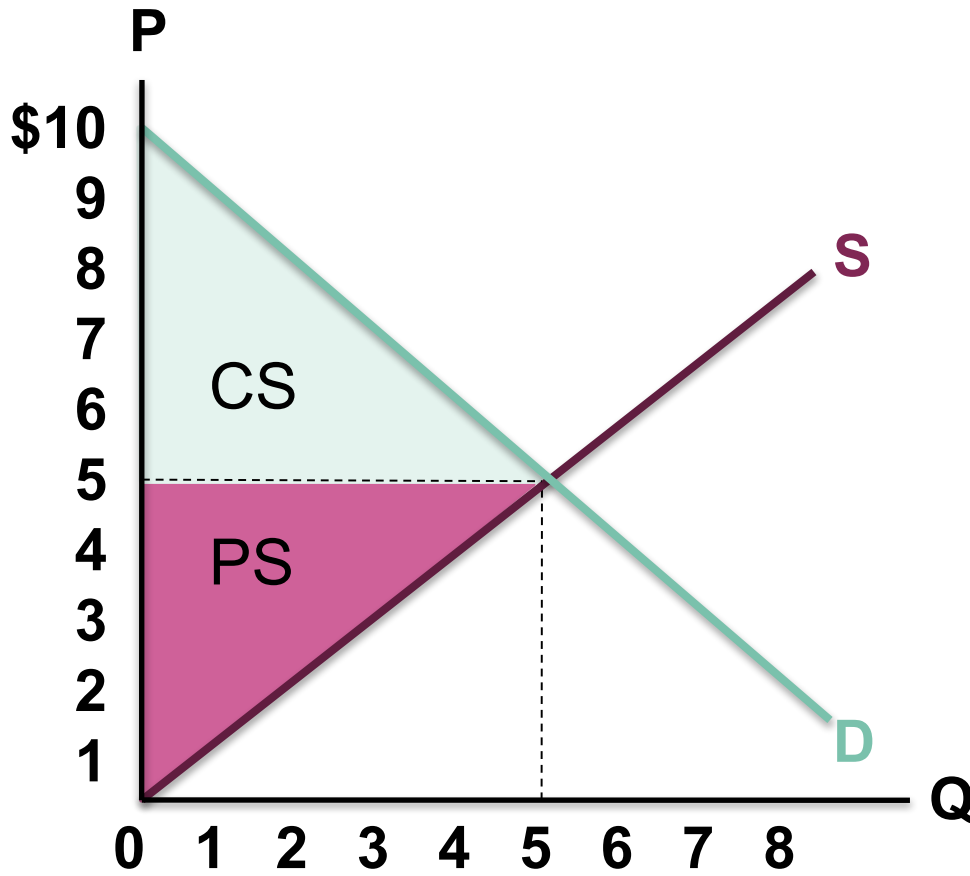
Consumer surplus is the value the consumer gets from buying a product, less its price.

It is the area below the demand curve and above the price.

Producer surplus is the price the producer sells a product for less the cost of producing it.

It is the area above the supply curve but below the price the producer receives.

Consumer and Producer Surplus



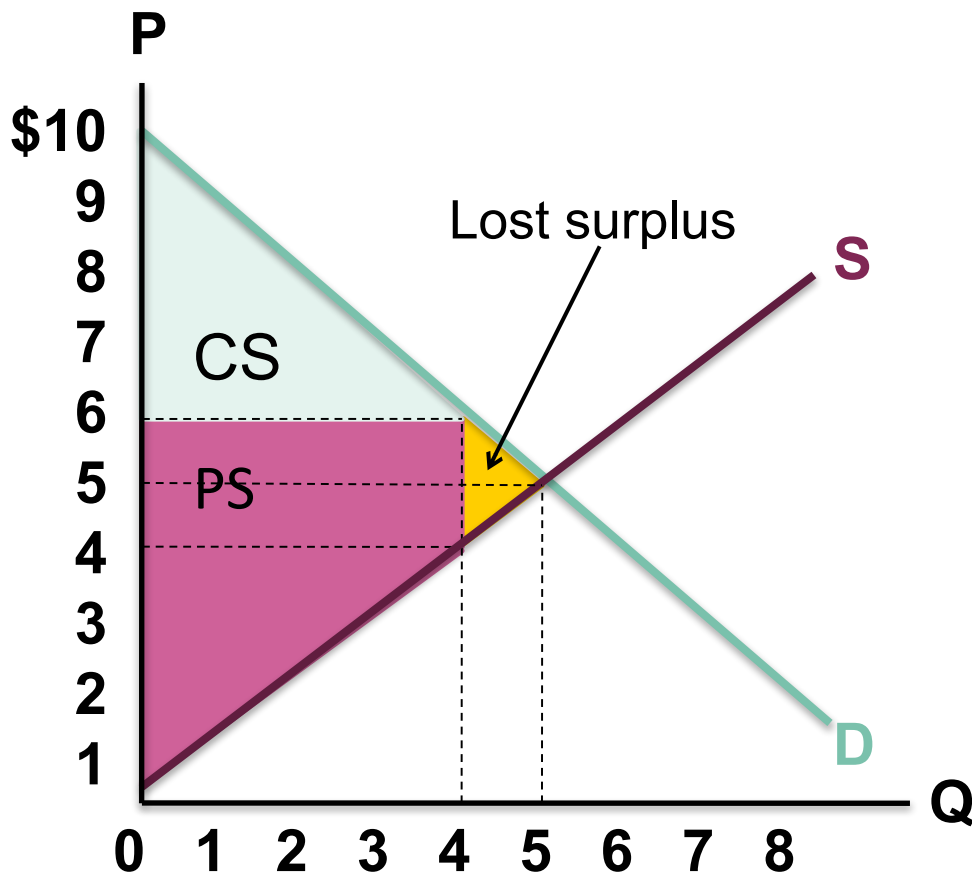
Consumer surplus = area of red triangle = $\frac{1}{2}(\$5)(5) = \12.5

Producer surplus = area of green triangle = $\frac{1}{2}(\$5)(5) = \12.5

The combination of producer and consumer surplus is maximized at market equilibrium.

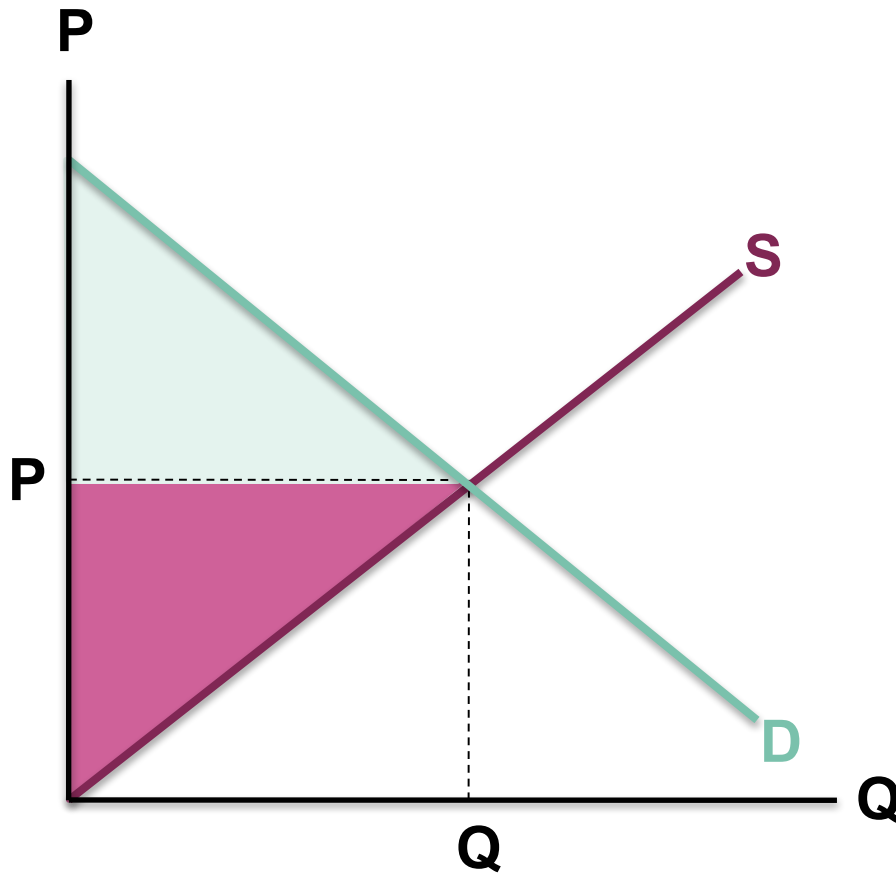
Lost Surplus

When price deviates from its equilibrium, combined consumer and producer surplus falls. There is a loss of total surplus when price is \$1 higher than equilibrium price.



The Burden of Taxation (1 of 2)

If there is **no tax**, market equilibrium is reached and consumer and producer surplus is maximized.



The Burden of Taxation (1 of 2)

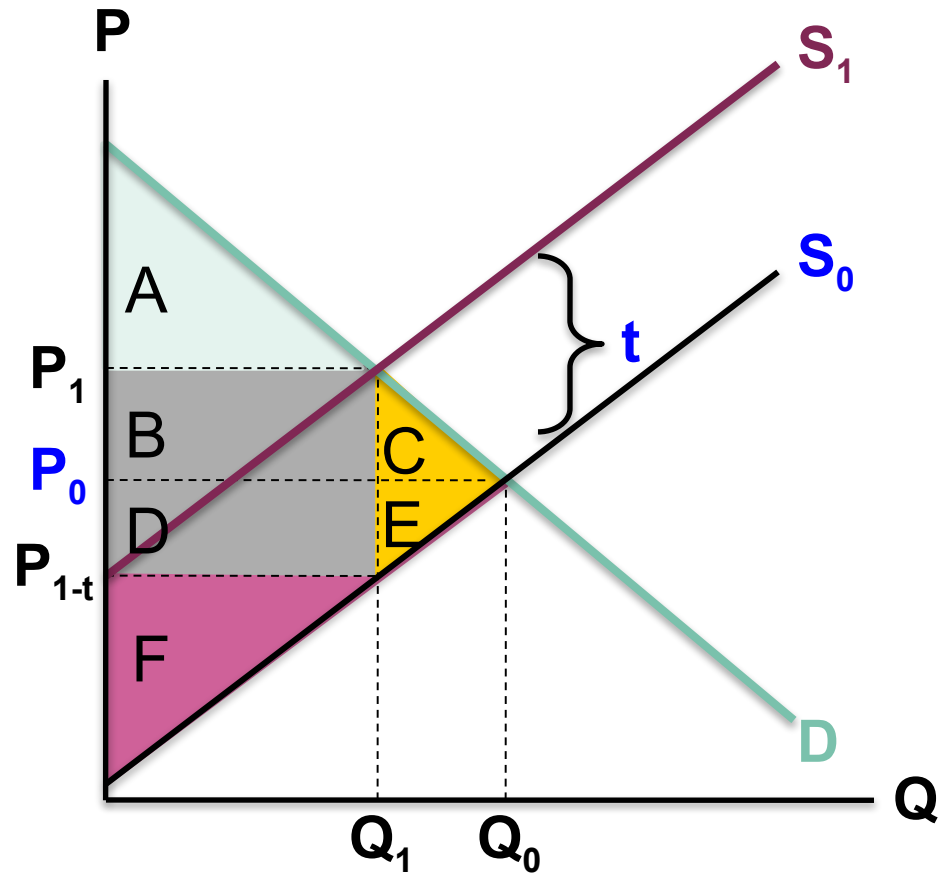
A tax paid by the supplier shifts the supply curve up by the amount of the tax (t).

Consumer surplus is represented by areas A , B , and C before the tax and area A after the tax.

Producer surplus is represented by areas D , E , and F before the tax and area F after the tax.

Government collects tax shown by areas B and D .

Deadweight loss shown by areas C and E .



The Costs of Taxation

Direct cost of the tax paid to the government by consumers and producers.

The **deadweight loss**, which is the loss of consumer and producer surplus that is not gained by the government.

The **administrative costs of compliance**, which are the resources used by the government to administer the tax and individuals and businesses to comply with it.

Who Bears the Burden of a Tax?

The person who physically pays the tax is not necessarily the person who bears the burden of the tax.

The more *inelastic* one's relative demand and supply, the *larger* the tax burden one will bear.

If demand is more inelastic than supply, consumers will pay the higher share.

If supply is more inelastic than demand, suppliers will pay the higher share.

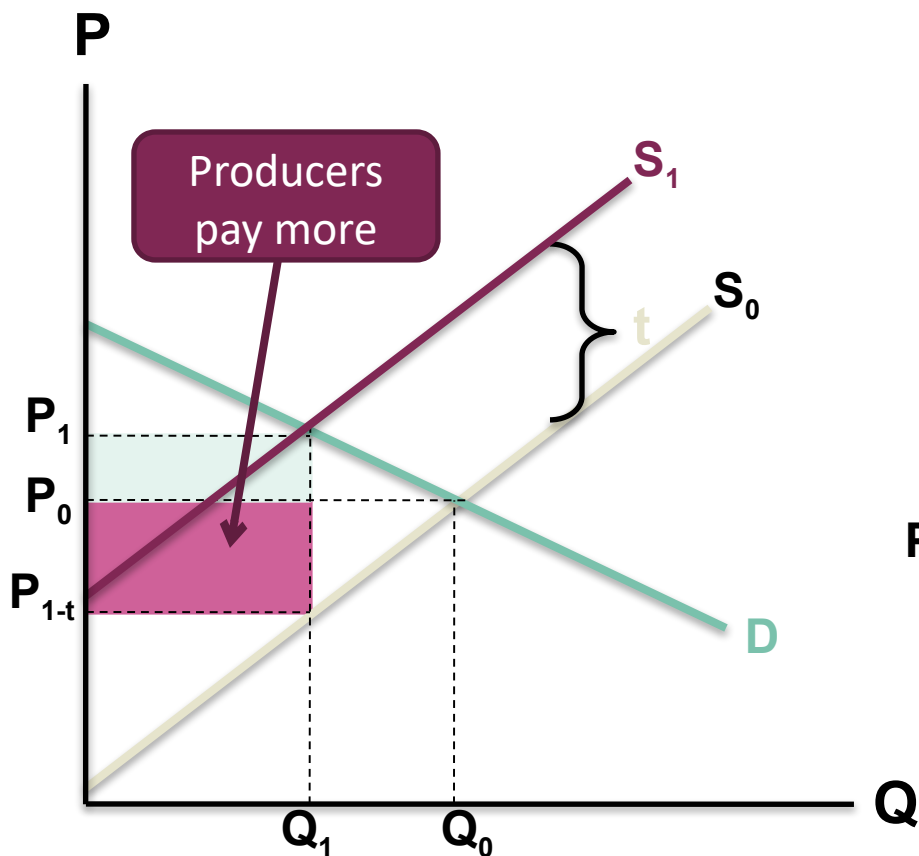
What Goods Should Be Taxed?

Goal of Government	Most effective when
Raise revenue, limit deadweight loss	Demand or supply is <i>inelastic</i>
Change behavior	Demand or supply is <i>elastic</i>

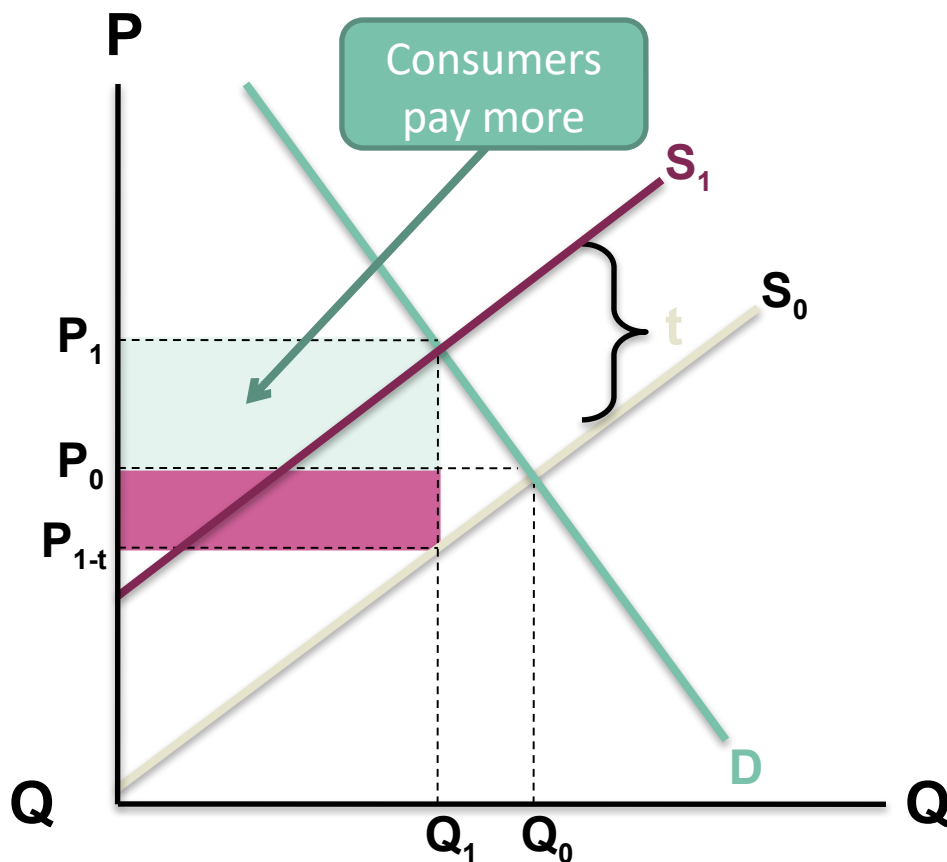
Elasticity	Who bears the burden?
Demand <i>inelastic</i> and supply <i>elastic</i>	Consumers
Supply <i>inelastic</i> and demand <i>elastic</i>	Producers
Both supply and demand <i>elastic</i>	Shared, but the group whose S or D is more <i>inelastic</i> pays more

Demand Elasticity and the Burden of Taxation

Demand is relatively elastic.



Demand is relatively inelastic.



Calculating the Burden of Taxation

How to calculate the fraction of the tax borne by consumers and producers:

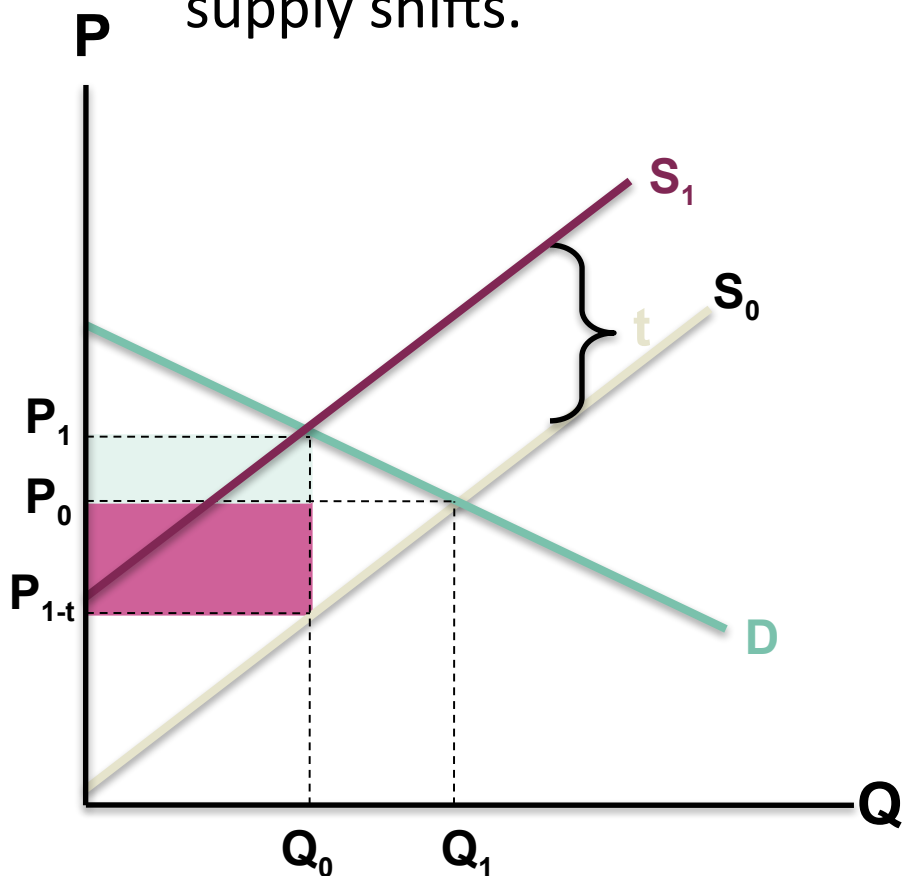
$$\text{Fraction of tax borne by demander} = \frac{E_S}{E_D + E_S}$$

$$\text{Fraction of tax borne by supplier} = \frac{E_D}{E_D + E_S}$$

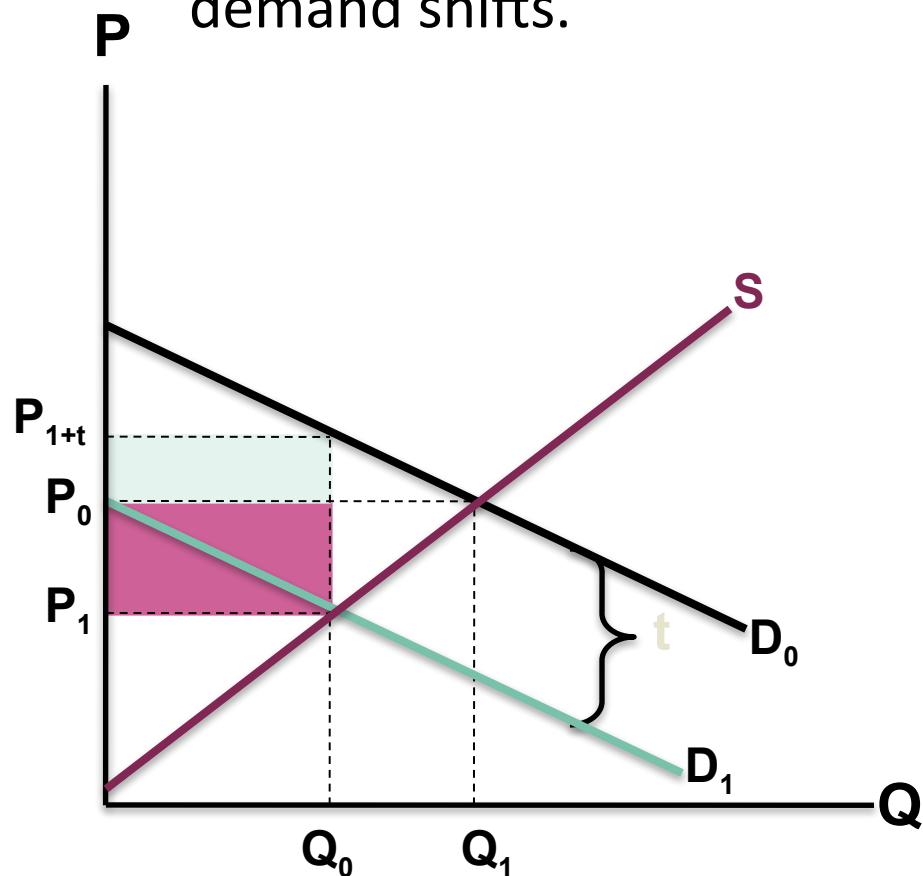
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The Tax Burden Is Independent of Who Pays the Tax

Supplier pays the tax,
supply shifts.



Consumer pays the tax,
demand shifts.



Tax Incidence and Current Policy Debates: Social Security Taxes

Both employer and employee contribute the same percentage of before-tax wages to the Social Security fund.

Although the employer and employee contribute the same percentage, they do not share the burden equally.

On average, labor supply tends to be less elastic than labor demand, so the Social Security tax burden is primarily on employees.

Tax Incidence and Current Policy Debates: Sales Taxes

Sales taxes are paid by retailers on the basis of their sales revenue.

Since sales taxes are broadly defined to include most goods and services, consumers find it hard to substitute to avoid the tax.

Demand is inelastic so consumers bear the greater burden of the tax.

As consumers increase purchases on the Internet where sales are not taxed, retail stores will bear a greater burden of the sales tax.

Government Intervention as Implicit Taxation

Government intervention in the form of price controls can be viewed as a combination tax and subsidy.

An effective **price ceiling** is a government set price below the market equilibrium price.

It acts as an implicit tax on producers and an implicit subsidy to consumers that causes a welfare loss identical to the loss from taxation.

Government Intervention as Implicit Taxation

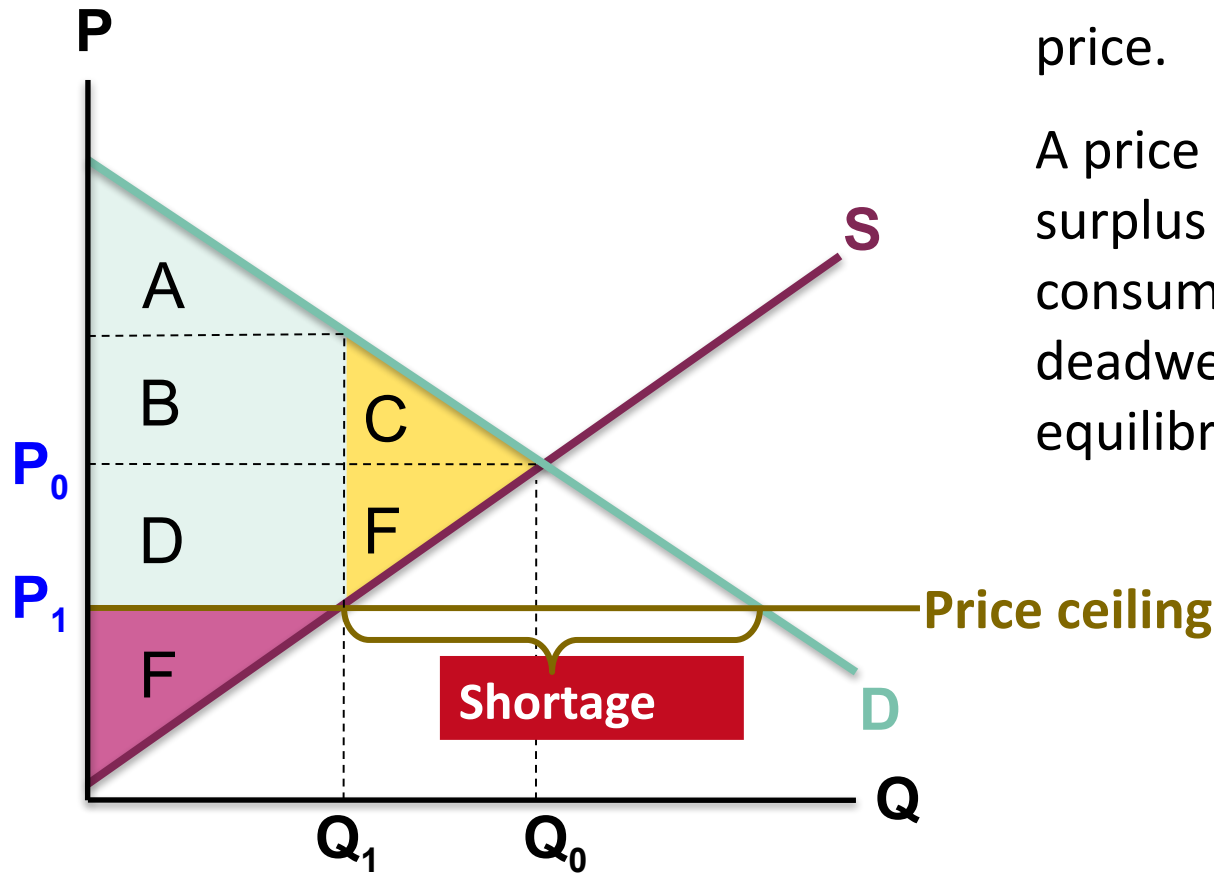
An effective **price floor** is a government set price above the market equilibrium.

It acts as a tax on consumers and a subsidy for producers that transfers consumer surplus to producers.

Application: The Effect of a Price Ceiling

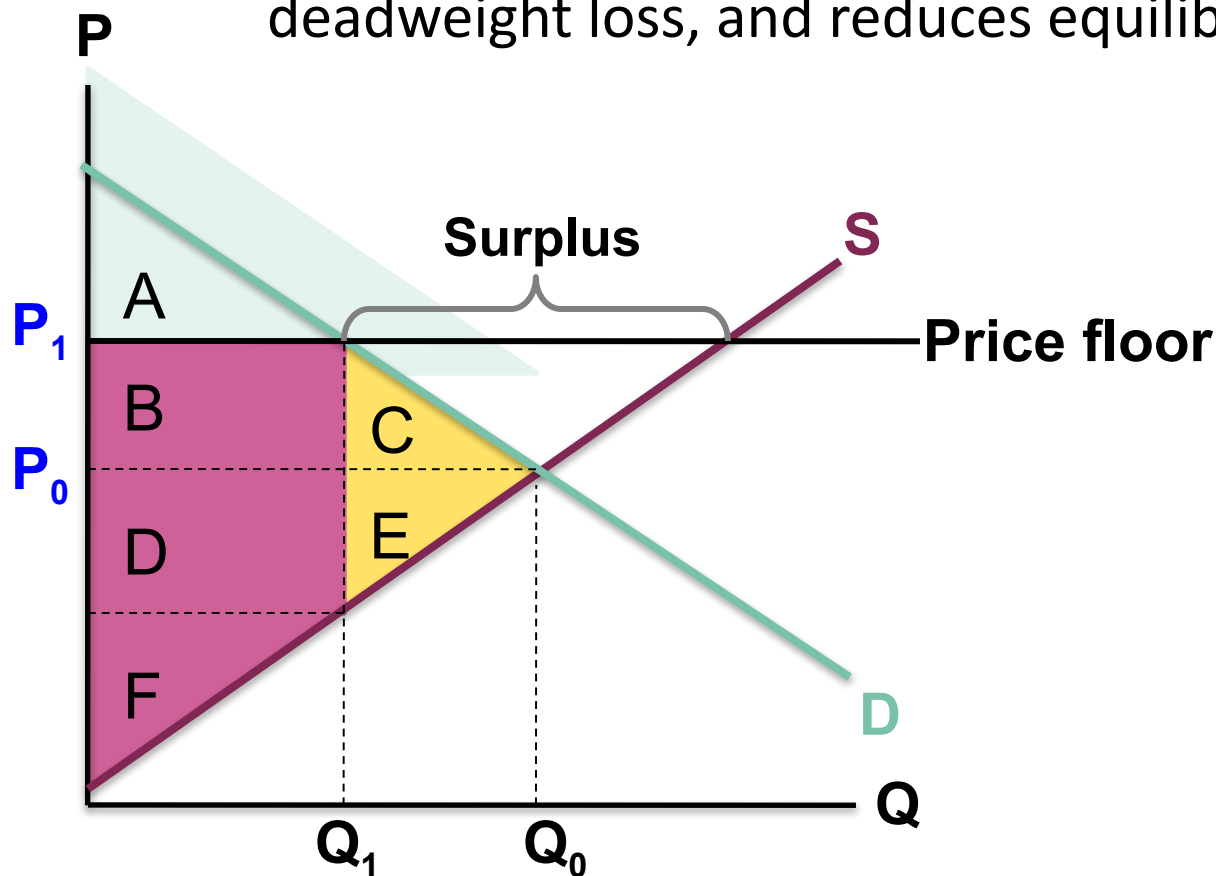
An effective price ceiling is set below market equilibrium price.

A price ceiling transfers surplus D from producers to consumers, generates deadweight loss, and reduces equilibrium quantity.



Application: The Effect of a Price Floor

An effective price floor is set above market equilibrium price. A price floor transfers surplus B from consumers to producers, generates deadweight loss, and reduces equilibrium quantity.



The Difference Between Taxes and Price Controls

Price ceilings create shortages; taxes do not.

Taxes leave people free to choose how much they want to supply and consume as long as they pay the tax.

Shortages may also create black markets.

Rent Seeking, Politics, and Elasticities

Rent-seeking activities are activities designed to transfer surplus from one group to another

Lobbying for price controls, which transfer surplus from one group to another, is an example of rent-seeking behavior

Individuals spend money and use resources to lobby governments to institute policies that increase their own surplus

Public choice economists argue that the taxes and the benefits of government programs offset each other and do not help society significantly, but they do cost resources

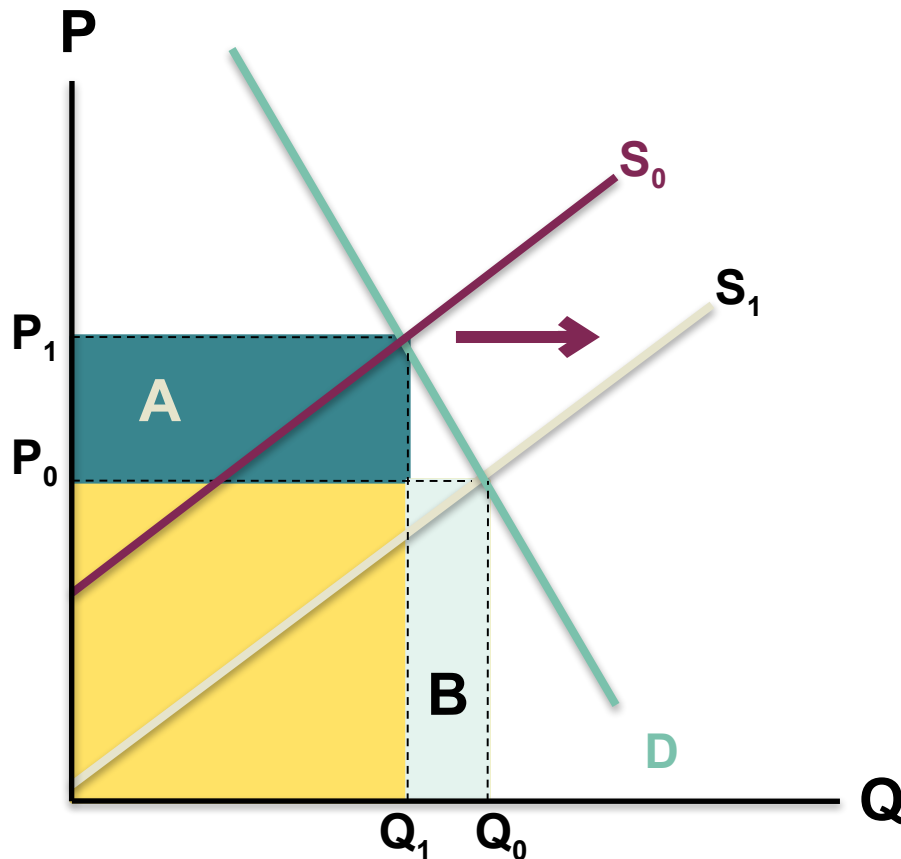
Inelastic Demand and Incentives to Restrict Supply

When demand is inelastic, increases in productivity that shift the supply curve out result in lower revenue for the suppliers.

To counteract this trend, suppliers have an incentive to get government to restrict supply or create a price floor, thereby raising their revenue.

The general rule of political economy states that small groups that are significantly affected by a government policy will lobby more effectively than large groups that are equally affected by that same policy.

Graphed: Inelastic Demand and Incentives to Restrict Supply



When demand is inelastic, increases in productivity cause suppliers to gain area B, but they lose the much larger area A. Suppliers have an incentive to restrict supply when demand is inelastic so they can increase their revenues.

Inelastic Supplies and Incentives to Restrict Prices

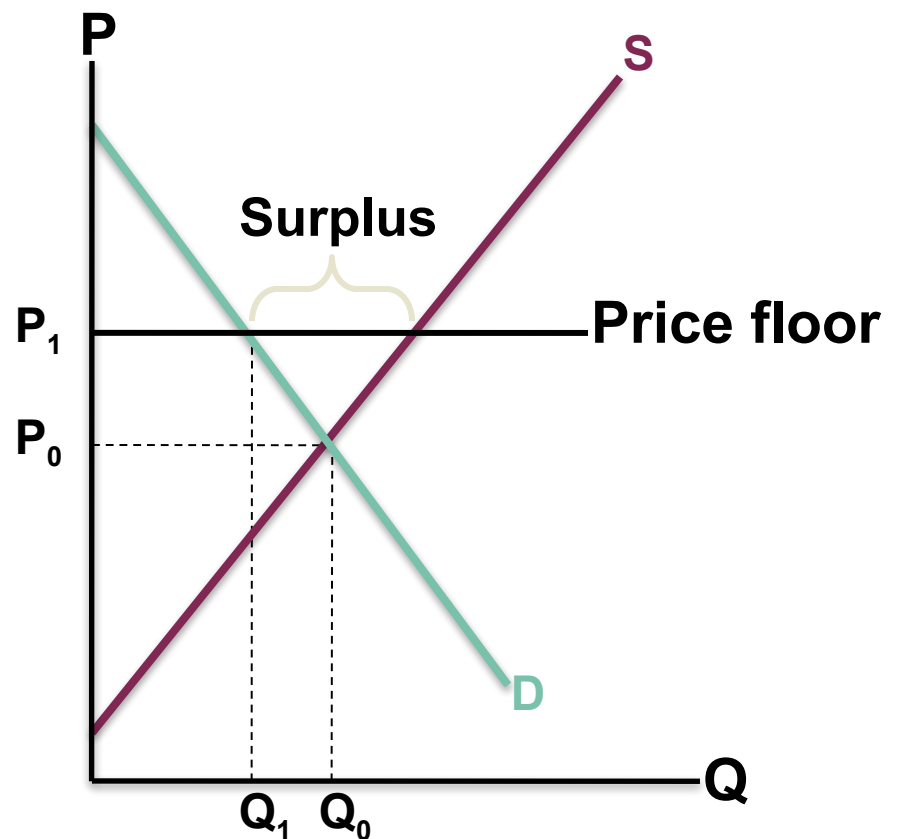
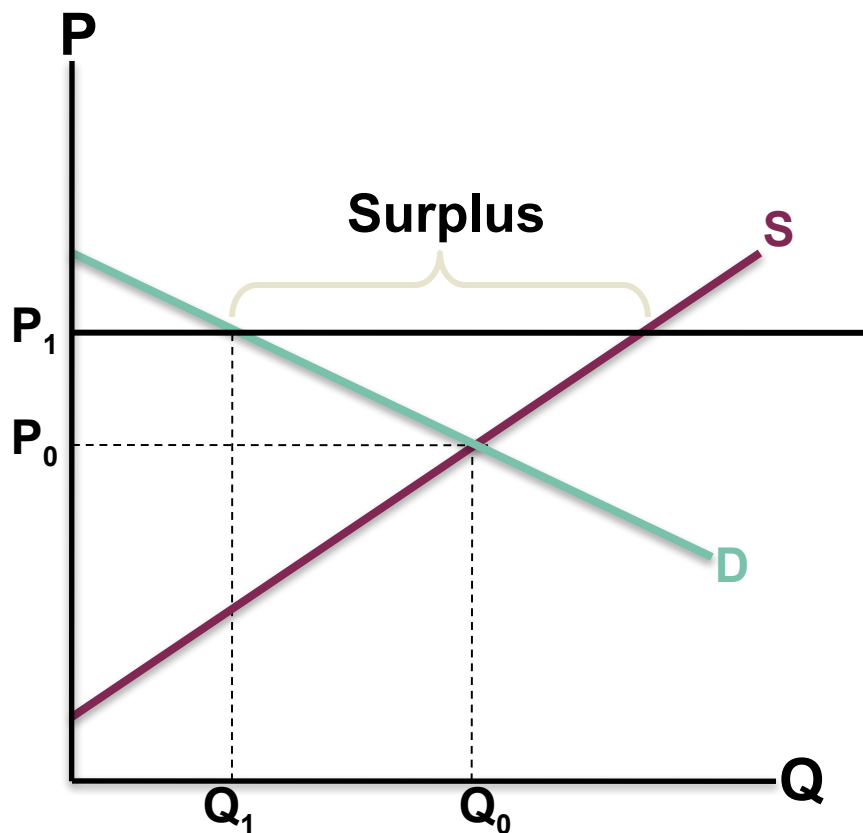
When supply is inelastic, consumers have incentives to restrict prices.

When supply is inelastic and demand increases, prices increase causing consumers to lobby for price controls.

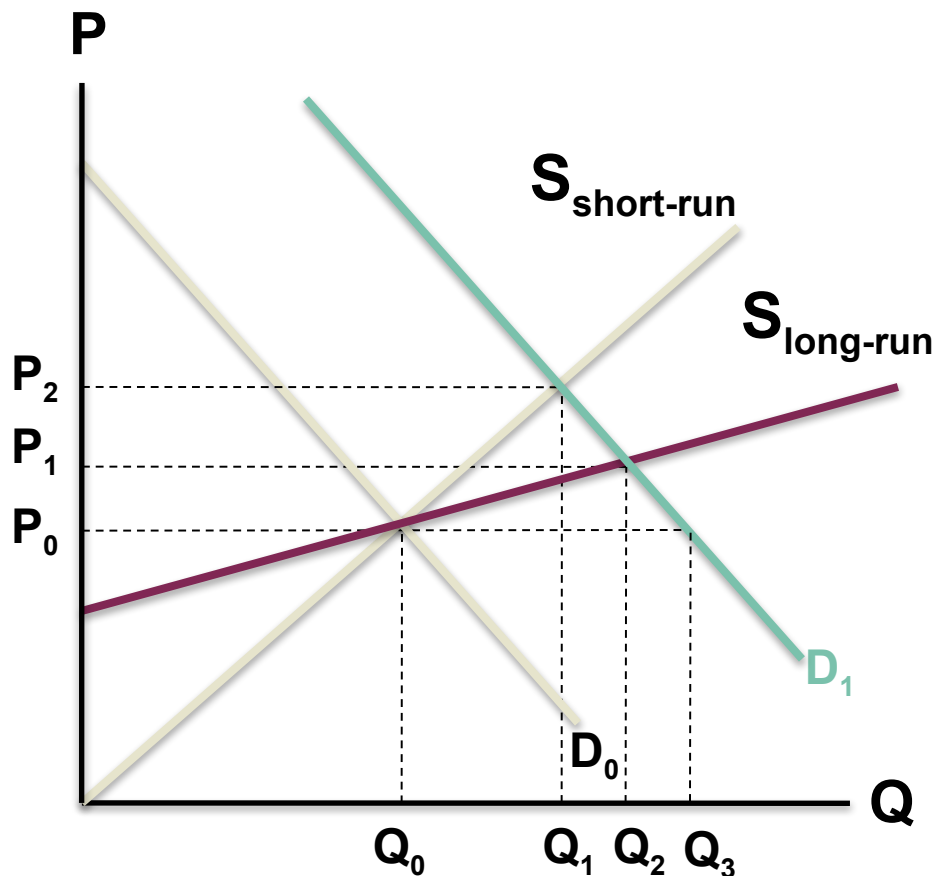
Rent control in New York City is an example.

Application: Price Floors and Elasticity

With elastic curves, a large surplus is created by price controls; with inelastic curves, a small surplus is created.



Long-Run and Short-Run Effects on Price Control



Lower long-run elasticities result in smaller price increases when demand increases. Price ceilings keep the long-run supply from lowering price impacts of shocks to housing markets.

Chapter Summary (1 of 3)

Consumer surplus is the net benefit a consumer gets from purchasing a good, while producer surplus is the net benefit a producer gets from selling a good.

Equilibrium maximizes the combination of consumer and producer surplus.

Taxes create a loss of consumer and producer surplus known as deadweight loss, which is graphically represented by the welfare loss triangle.

The cost of taxation to consumers and producers includes the actual tax paid, the deadweight loss, and the costs of administering the tax.

Chapter Summary (2 of 3)

Relative elasticities determine who bears the burden of the tax. The more inelastic one's demand or supply, the larger the burden of the tax.

Price ceilings and floors, like taxes, result in loss of consumer and producer surplus.

Price ceilings transfer producer surplus to consumers; they are a tax on producers and a subsidy to consumers. Price floors have the opposite effect.

Chapter Summary (3 of 3)

Rent-seeking activities transfer surplus from group to group.

Producers facing inelastic demand and consumers with inelastic supply benefit more from rent-seeking activities than those with elastic demand and supply.

The more elastic supply and/or demand is, the greater the surplus with an effective price floor and the greater the shortage is with an effective price ceiling.

Producers facing inelastic demand and consumers with inelastic supply benefit more from rent-seeking activities than those with elastic demand and supply.