

# Government Policy, Efficiency, and Welfare

Econ 102: Introduction to Microeconomics

## 1

### 1.1 Goals of today's class

#### Goals of today's class

- Learn about consumer surplus and producer surplus, a convenient way for measuring welfare and efficiency.
- Learn about price ceilings and floors and impacts on welfare.
- Learn about taxes and impacts on welfare.

### 1.2 Reading

#### Reading

- Consumer surplus - Chapter 5: pages 106-107.
- Producer surplus - Chapter 5: pages 108-109.
- Price ceilings and floors - Chapter 6: pages 124-131.
- Taxes - Chapter 6: pages 132-136.

## 2 Measuring Welfare

### 2.1 Consumer Surplus

#### Marginal Benefit

- Recall: Demand curve shows how much of a good consumers are willing and able to buy at different prices.
- Equivalently: Demand curve shows how much consumers are willing and able to pay at different quantities.
- Demand curves are marginal benefit curves.
- **Marginal benefit:** the additional benefit from consuming *one additional unit* of a good.

### Example

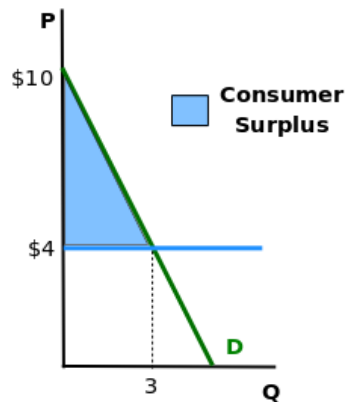
- If the price is \$4, how many units will consumers purchase?
- How much did the consumer(s) value...
  - the first item?
  - the second item?
  - the third item?

Quantity	Marginal Benefit
1	\$8
2	\$6
3	\$4
4	\$2
5	\$0

**Consumer surplus:** the difference between the value consumers place on a product (as measured by the marginal benefit) and the price actually paid for a product.

### Consumer Surplus

- Assuming goods are divisible or.. demand is for a large number of goods.
- The consumer surplus is the area between the demand curve and the price, up to the quantity of the good purchased.
- What is the area of the consumer surplus shown?



## 2.2 Producer Surplus

### Marginal Cost

- Recall: Supply curve shows how much of a good producers are willing and able to produce and sell at different prices.
- Equivalently: Supply curve shows prices producers are willing and able to charge for different production levels.
- Supply curves are marginal cost curves.
- **Marginal cost:** the additional cost from producing *one additional unit* of a good.

### Marginal Cost

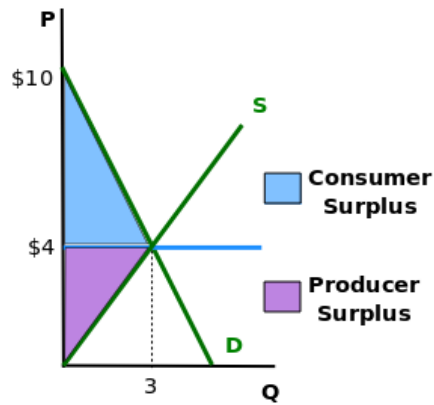
- If the price is \$4, how many units will be produced?
- What was the marginal cost of the...
  - the first item?
  - the second item?
  - the third item?

Quantity	Marginal Cost
1	\$1.33
2	\$2.67
3	\$4.00
4	\$5.33
5	\$6.67

**Producer surplus:** the difference between the marginal cost and the price actually received for a product.

### Producer Surplus

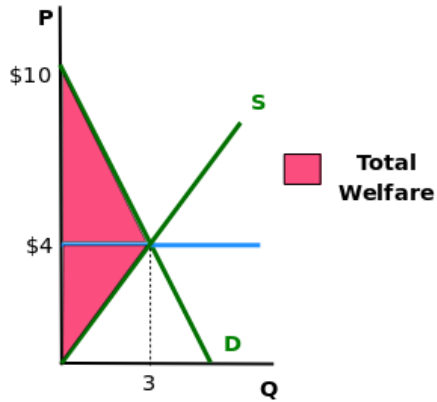
- Assuming goods are divisible or.. demand is for a large number of goods.
- The producer surplus is the area between the supply curve and the price, up to the quantity of the good produced.
- What is the area of the producer surplus shown?



## 2.3 Total Welfare

### Total Welfare

- **Total Welfare**, aka **total surplus** is the sum of consumer and producer surplus.
- One measure of the total well being of an economy/market.
  - Difficult, perhaps not very practical, to measure.
  - Provides useful framework for analyzing efficiencies of markets or government policies.
  - Does not measure distribution/equity.

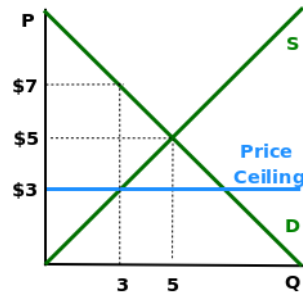


## 3 Ceilings and Floors

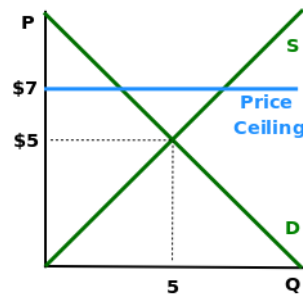
### 3.1 Price Ceilings

#### Price Ceilings

**Price ceiling:** regulation that makes it illegal to charge a price above a specified level.



**Effective Price Ceiling** Equilibrium Price: \$5 Price ceiling: \$3



**Ineffective Price Ceiling** Equilibrium Price: \$5 Price ceiling: \$7

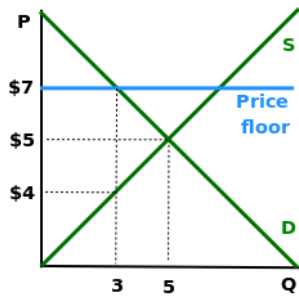
### Examples

- Rent Ceilings in New York City.
  - Written into law during World War II, still remain.
- Price ceilings on gasoline during 1970s.
- Last year: ceilings placed on food staples in Russia and Venezuela.
- Do effective price ceilings result in shortages, surpluses, or neither?
- Do ineffective price ceilings result in shortages or surpluses?

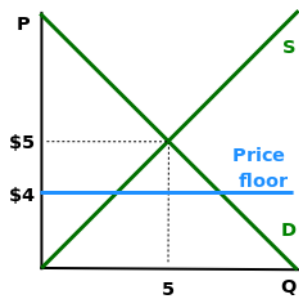
## 3.2 Price Floors

### Price Floors

**Price floor:** regulation that makes it illegal to charge a price below a specified level.



**Effective Price Floor** Equilibrium Price: \$5 Price floor: \$7



**Ineffective Price Floor** Equilibrium Price: \$5 Price floor: \$3

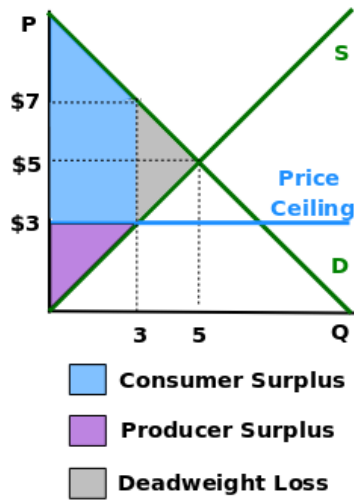
### Examples

- Do effective price floors result in shortages, surpluses, or neither?
- Minimum wage
  - What is another word for a labor surplus?
  - What labor sector is most affected?
- Total income earned by minimum wage earners = total hours  $\times$  wage.
  - Unskilled labor demand is *elastic*.
  - Do minimum wages increase or decrease the total wages in unskilled sector?
- About half of U.S. states have minimum prices for tobacco.
- Lots of federal regulations for agricultural products.

### 3.3 Impacts on Welfare

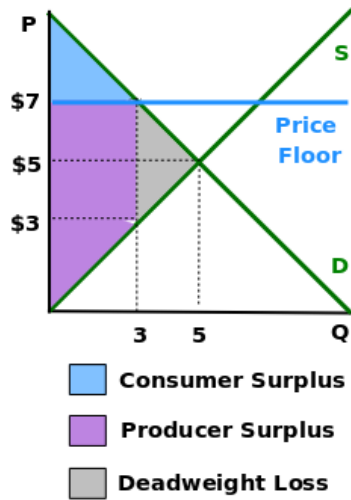
#### Price Ceiling and Welfare

- Reallocate some surplus from producers to consumers.
- Creates **deadweight loss**: reduction in total welfare.
- Compute the size of the deadweight loss in this example.



#### Price Floor and Welfare

- Reallocate some surplus from consumers to producers.
- Creates **deadweight loss**.
- Compute the size of the deadweight loss in this example.



## 4 Taxes

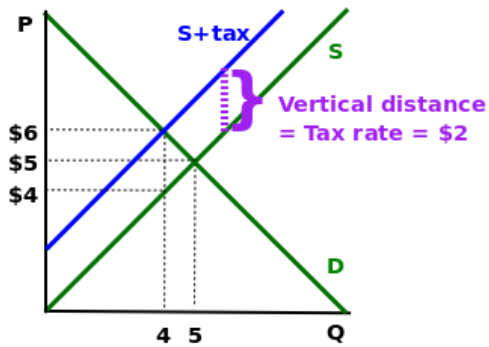
### 4.1 Tax on Sellers

#### Taxes

- What is the effect of sales taxes on...
  - how much consumers pay for a product?
  - how much producers receive for a product?
- For simplicity - assume a fixed tax per unit.
  - Example: \$1 tax per unit of a good sold.
  - Many state gasoline taxes work this way.
  - State sales tax does not.

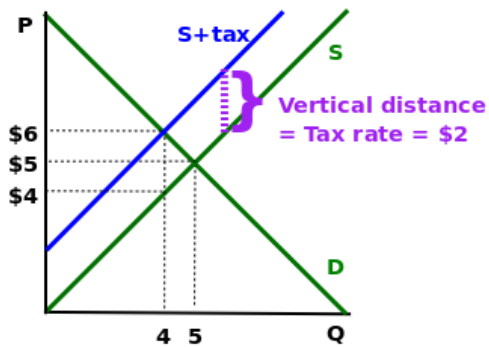
#### Tax on Sellers

- Suppose producers are taxed based on how much is produced.
- Tax acts like an increase in costs, therefore decreases supply.
- Price that producers are willing to accept is increased by tax rate.



### Tax on Sellers

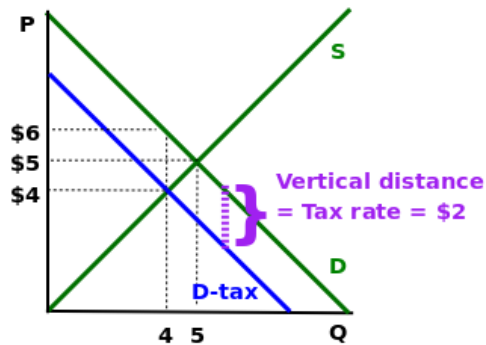
- What is the effect on equilibrium price and quantity?
- Original supply curve: price producers get to keep.



## 4.2 Tax on Consumers

### Tax on Consumers

- Suppose instead tax is collected from consumers.
- Having to pay tax reduces how much consumers are willing to pay, by the size of the tax.
- New equilibrium: shows quantity and how much producers receive.
- Original demand curve: price consumers pay including the tax.



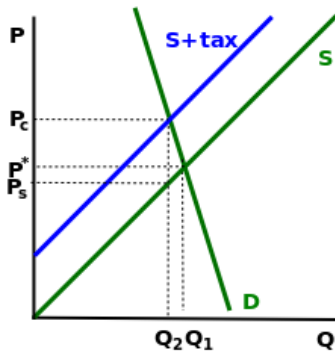
### Should we Tax Producers or Consumers?

- During the Democratic Presidential Nomination Race, Hillary Clinton suggested:
  - Eliminating Federal gasoline tax to help struggling consumers paying very high prices for energy.
  - Increasing tax on oil companies making record profits.
- What would be the impact of such change a policy?

### 4.3 Tax and Elasticity

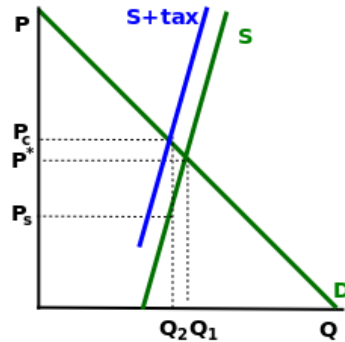
#### Inelastic Demand

- This picture shows a case when demand is *relatively more inelastic* than supply.
- Who has a higher **tax incidence**, i.e. **tax burden**?



### Inelastic Supply

- This picture shows a case when supply is *relatively more inelastic* than demand.
- Who has a higher **tax incidence**, i.e. **tax burden**?



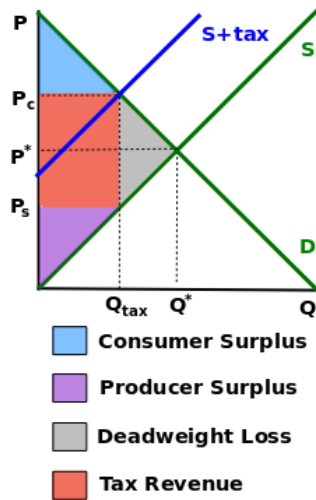
### Tax and Elasticity

- When demand is relatively more inelastic than supply, consumers have larger tax incidence.
- When supply is relatively more inelastic than demand, producers have larger tax incidence.
- When demand is *perfectly inelastic*, consumers have entire tax incidence.
  - That is, price producers receive and keep is completely unaffected and price consumers pay is increased by the size of the tax.
- When supply is *perfectly inelastic*, producers have entire tax incidence.

## 4.4 Taxes and Welfare

### Taxes and Welfare

- Taxes cause a decrease in equilibrium quantity.
- Pink area = (quantity) x (tax rate) = Tax Revenue.
- Tax revenue steals some CS and PS.
- Decrease in quantity yields deadweight loss.



## 5

### What We Have Learned

- Consumer surplus: area between demand curve and market price, measures the well-being of consumers.
- Producer surplus: area between supply curve and market price, measures the well-being of producers.
- Price ceilings - hurts total welfare, creates shortages.
- Price floors - hurts total welfare, creates surpluses.
- Minimum wage - creates unemployment, reduces total earnings among minimum wage sector.
- Taxes
  - Hurts total welfare.
  - Doesn't matter who you tax - producers or consumers.
  - Tax incidence is shared - burden depends on elasticities.