Microeconomics II

Market Power: Monopoly and Monopsony

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Introduction

Introduction

3.1 The Evolution of Global Markups.

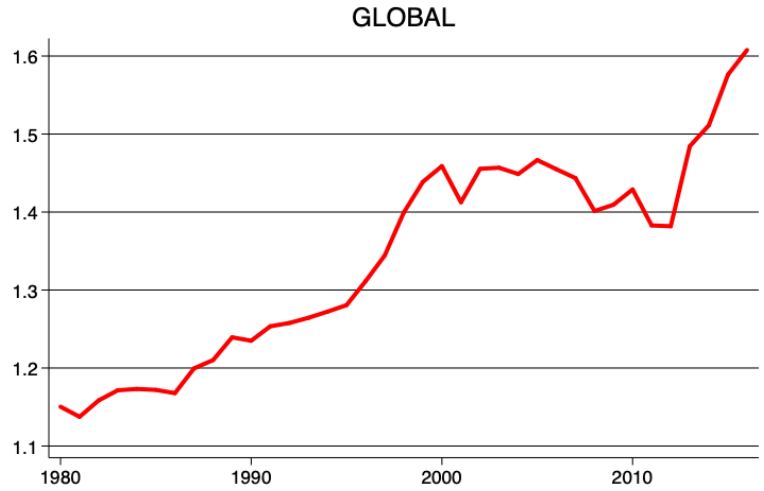


Figure 1: Global Market Power

Introduction

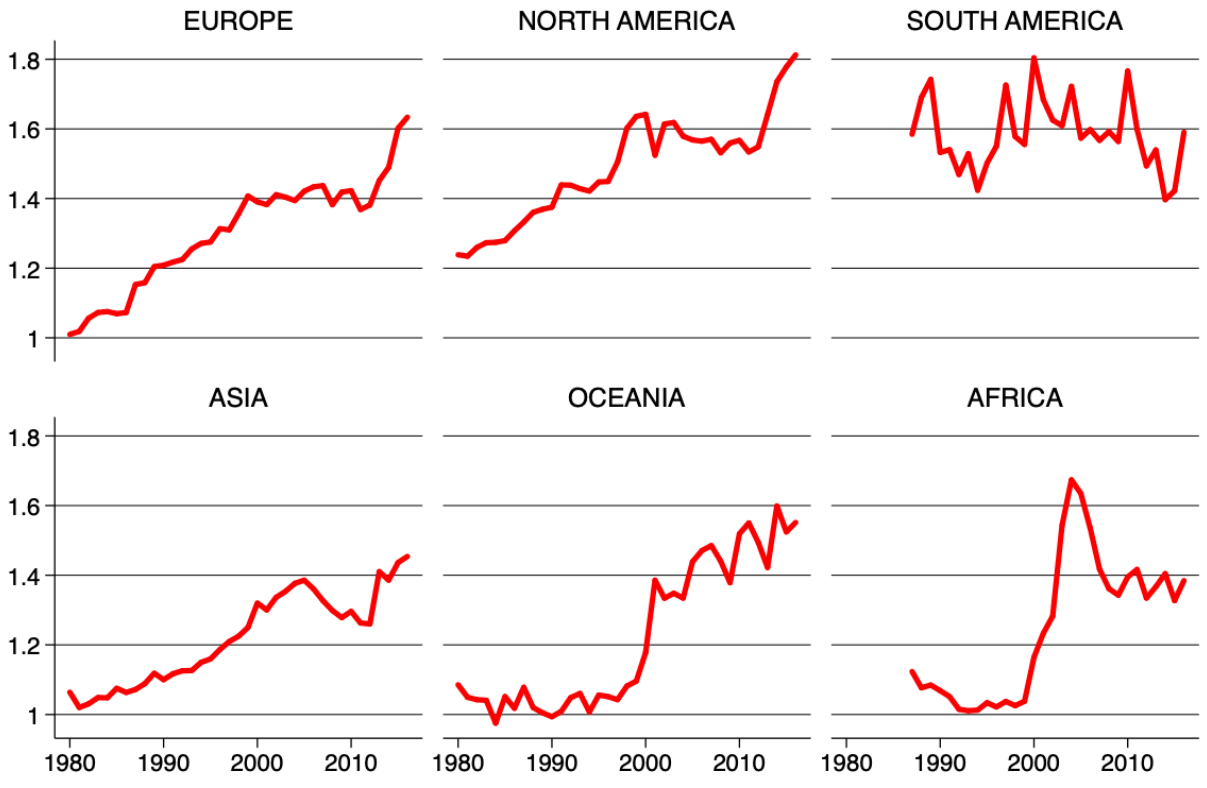
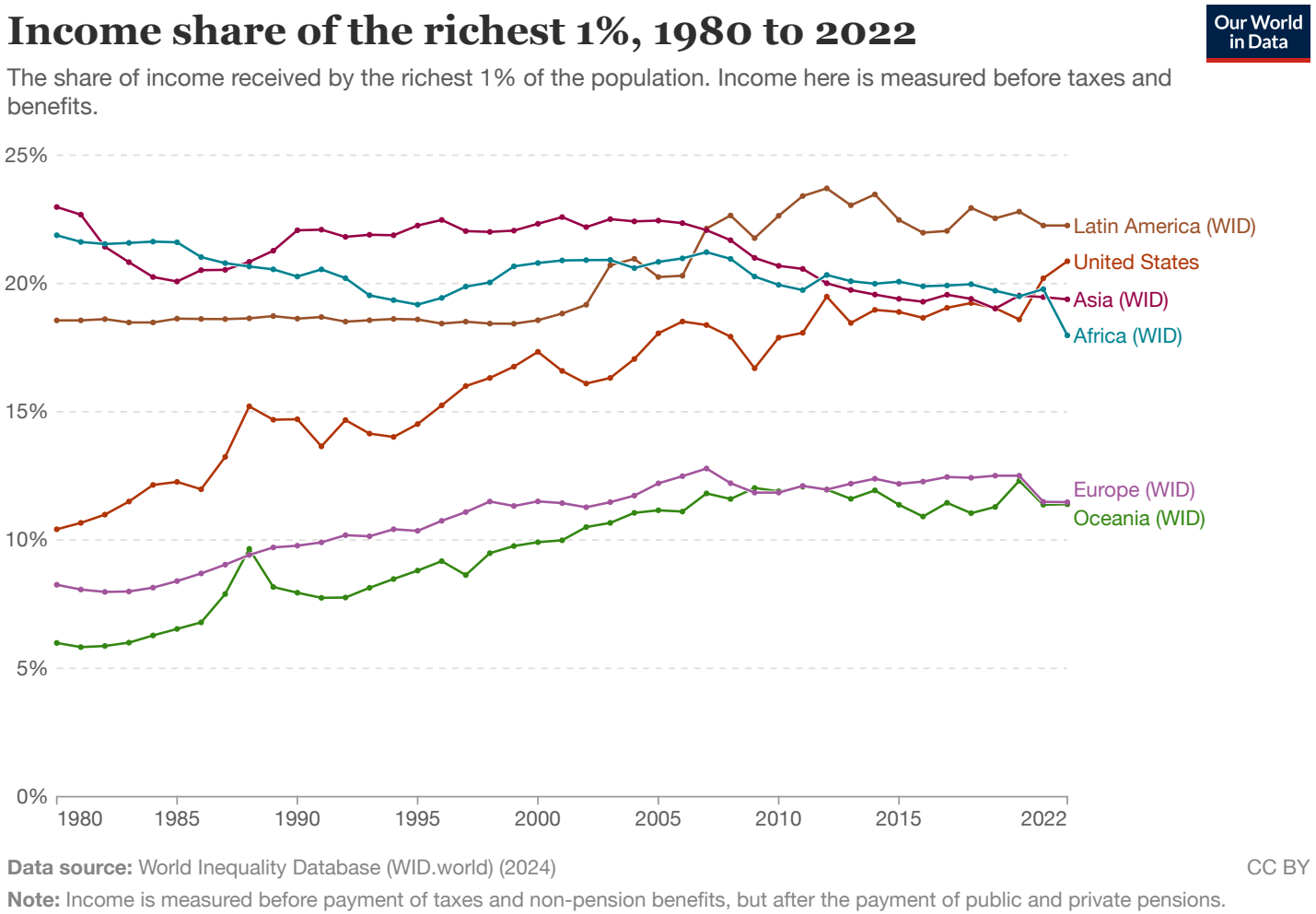


Figure 5: Global Regions

Introduction



Monopoly

Monopoly

Market with only one seller. The monopolist *is* the market and completely controls the amount of output offered for sale.

How to choose how much to sell and at what price?

- **Marginal Revenue (MR)**: Change in revenue resulting from a one-unit increase in output.
- **Marginal Costs (MC)**: Increase in cost resulting from the production of one extra unit of output.

Monopoly: Revenues

Demand curve:

$$P = a - bQ$$

Revenue (not profit):

$$Revenue = P \cdot Q$$

$$\Rightarrow Revenue = (a - bQ) \cdot Q = aQ - bQ^2$$

Average Revenue

$$Average\ Revenue = \frac{Revenue}{Q} = a - bQ = P$$

Marginal Revenue

$$Marginal\ Revenue = \frac{dRevenue}{dQ} = a - 2bQ$$

Revenue

Price (P)	Quantity (Q)	Total Revenue (R)	Marginal Revenue (MR)	Average Revenue (AR)
6	0	0	—	—

Revenue

Price (P)	Quantity (Q)	Total Revenue (R)	Marginal Revenue (MR)	Average Revenue (AR)
6	0	0	—	—
5	**1**	**5**	**5**	**5**

Revenue

Price (P)	Quantity (Q)	Total Revenue (R)	Marginal Revenue (MR)	Average Revenue (AR)
6	0	0	—	—
5	1	5	5	5
4	**2**	**8**	**3**	**4**

Revenue

Price (P)	Quantity (Q)	Total Revenue (R)	Marginal Revenue (MR)	Average Revenue (AR)
6	0	0	—	—
5	1	5	5	5
4	2	8	3	4
3	**3**	**9**	**1**	**3**

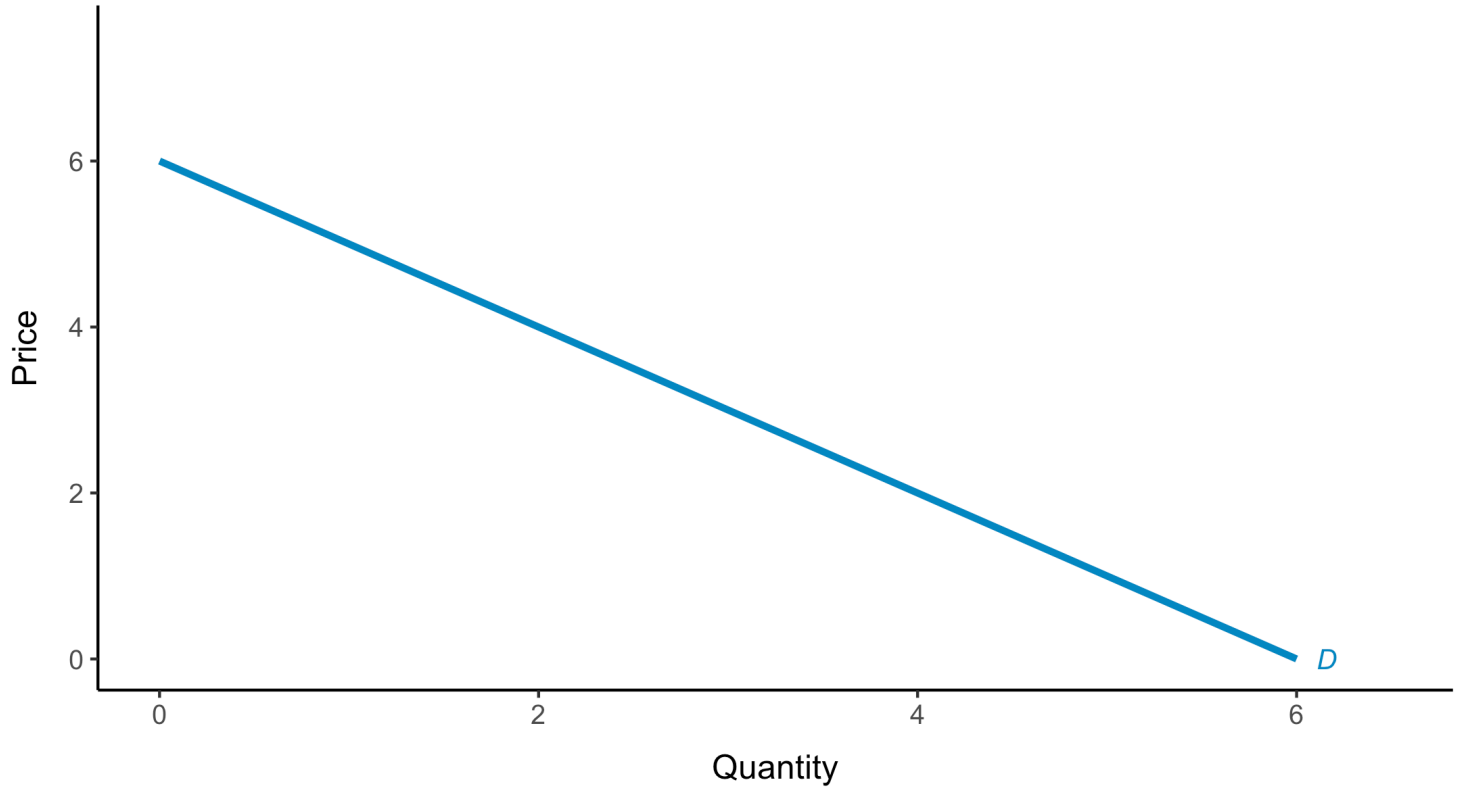
Revenue

Price (P)	Quantity (Q)	Total Revenue (R)	Marginal Revenue (MR)	Average Revenue (AR)
6	0	0	—	—
5	1	5	5	5
4	2	8	3	4
3	3	9	1	3
2	**4**	**8**	**−1**	**2**

Revenue

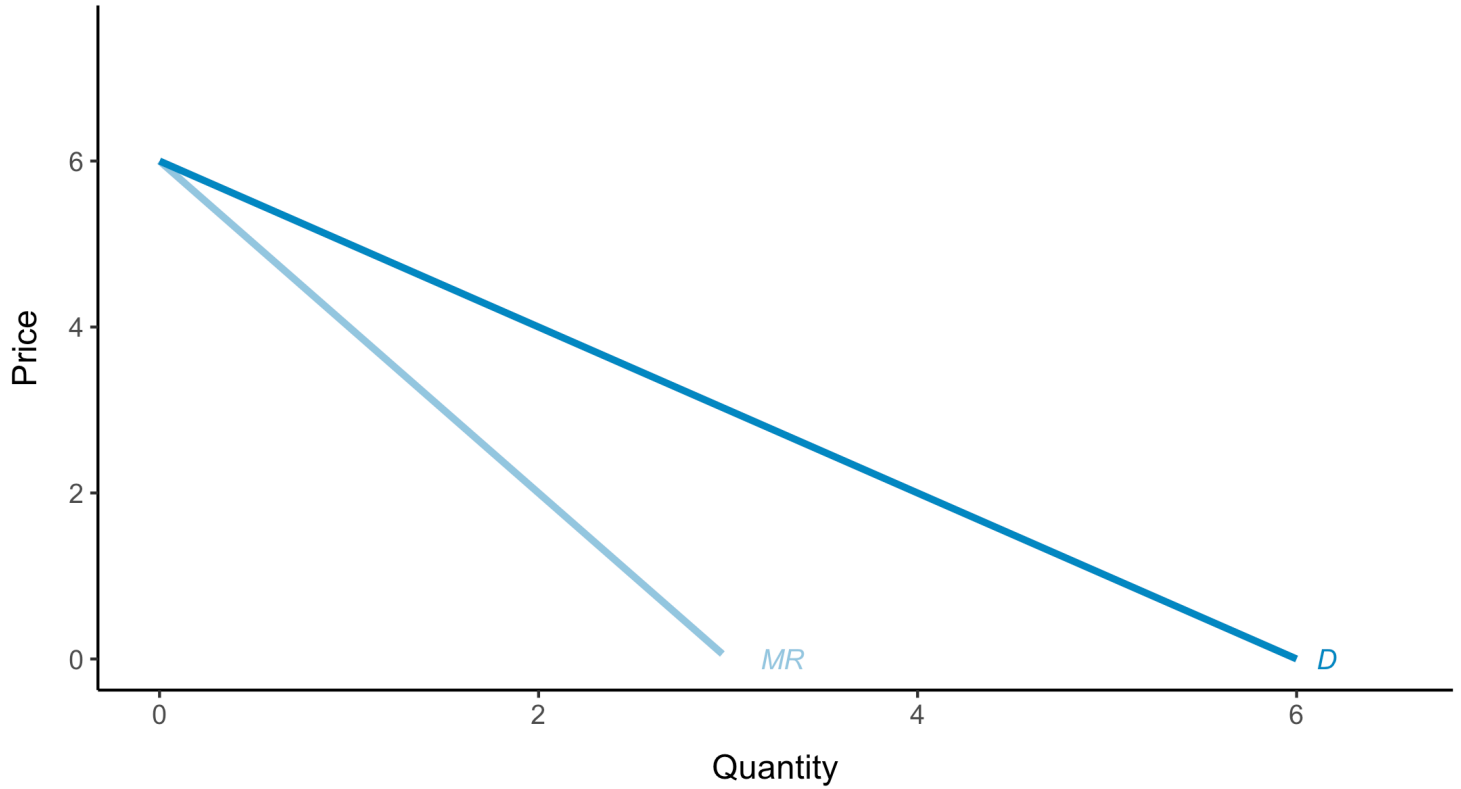
Price (P)	Quantity (Q)	Total Revenue (R)	Marginal Revenue (MR)	Average Revenue (AR)
6	0	0	—	—
5	1	5	5	5
4	2	8	3	4
3	3	9	1	3
2	4	8	−1	2
1	**5**	**5**	**−3**	**1**

Monopoly: Revenues



$$P = 6 - Q$$

Monopoly: Revenues



$$P = 6 - Q \quad \Rightarrow MR = 6 - 2Q$$

Monopolist's Output Decision

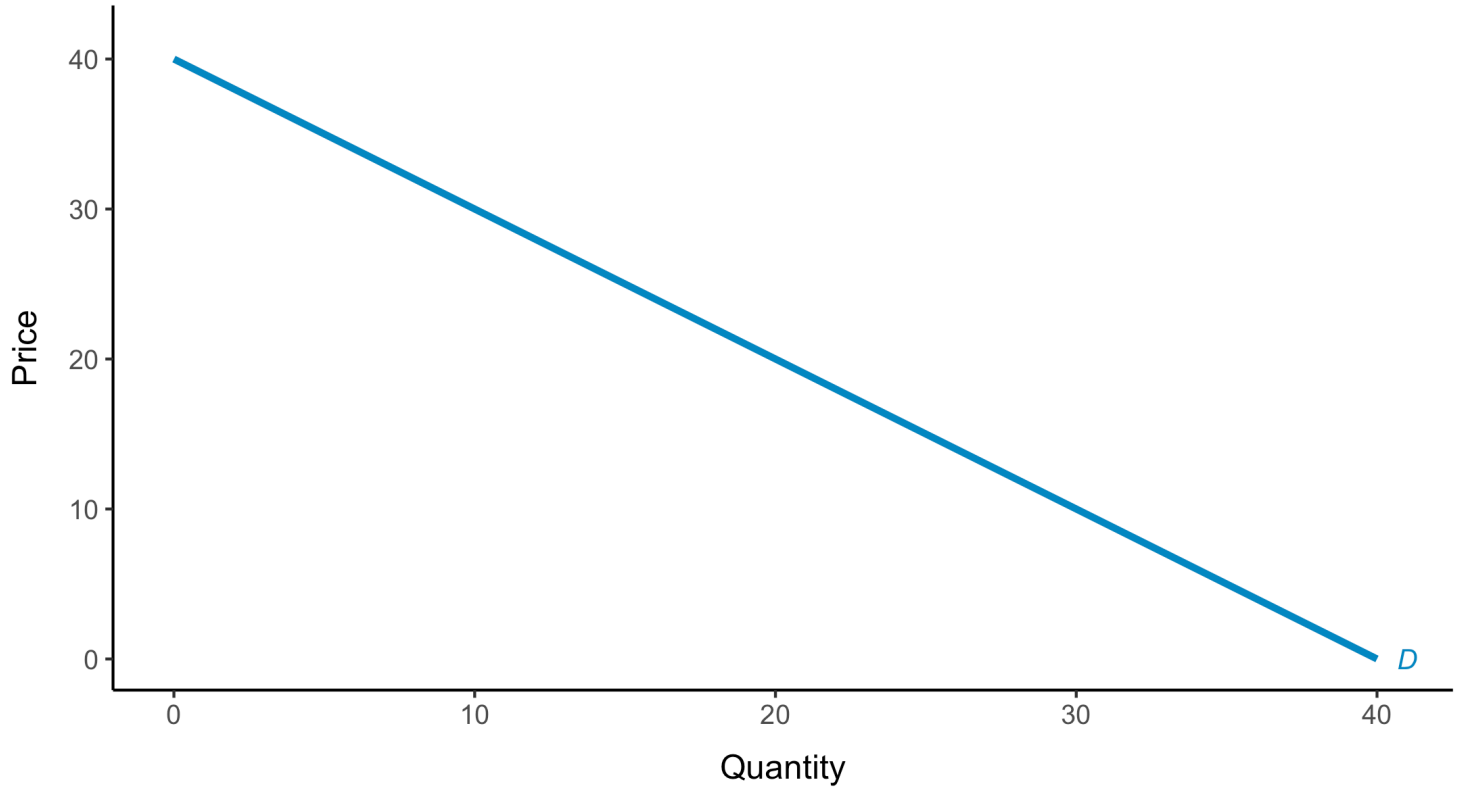
$$max_Q \, \Pi(Q) = R(Q) - C(Q)$$

$$\Rightarrow \frac{d\Pi(Q)}{dQ} = \frac{dR(Q)}{dQ} - \frac{dC(Q)}{dQ} = 0$$

$$\frac{dR(Q)}{dQ} = \frac{dC(Q)}{dQ}$$

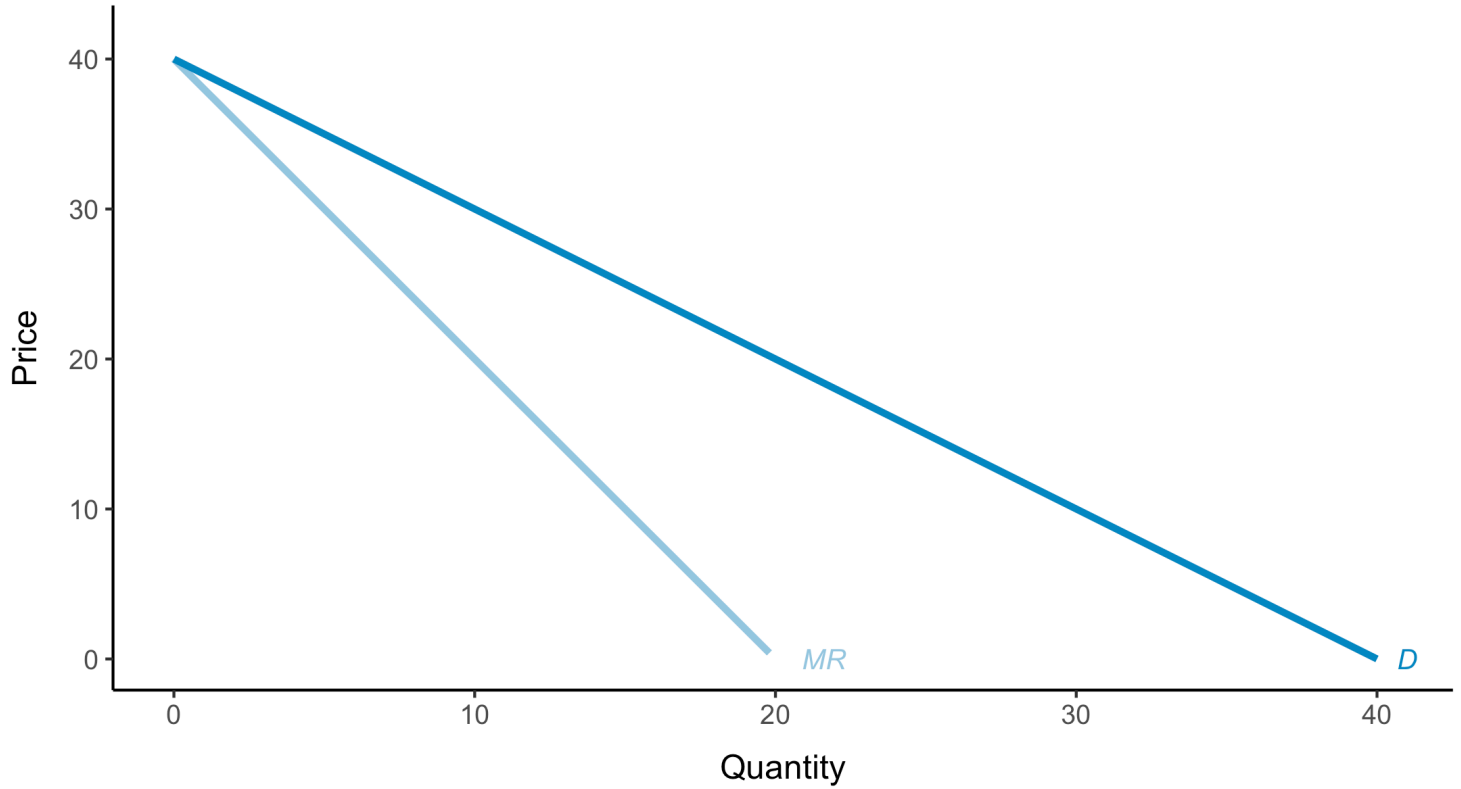
$$MR = MC$$

Monopolist's Output Decision



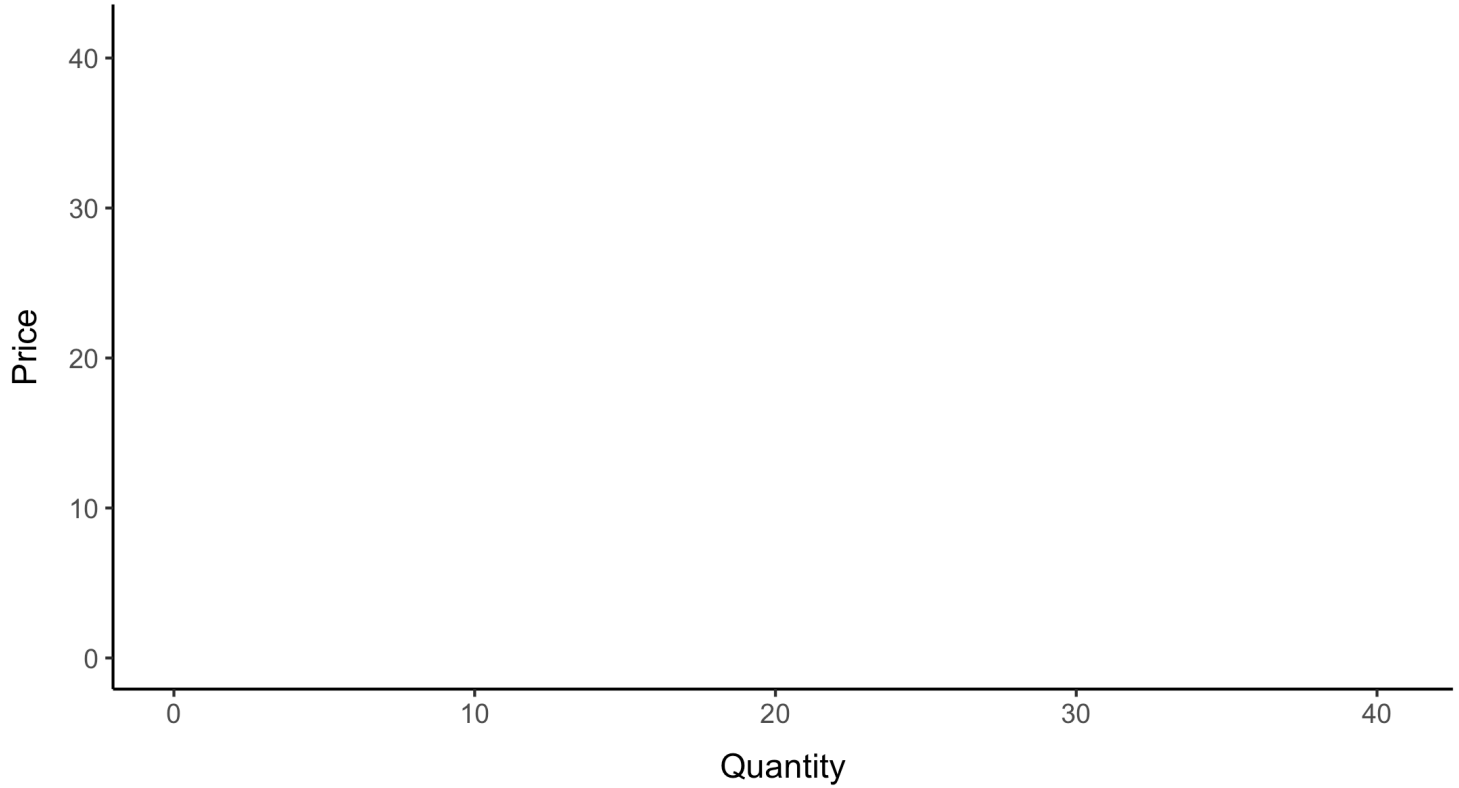
$$P = 40 - Q$$

Monopolist's Output Decision



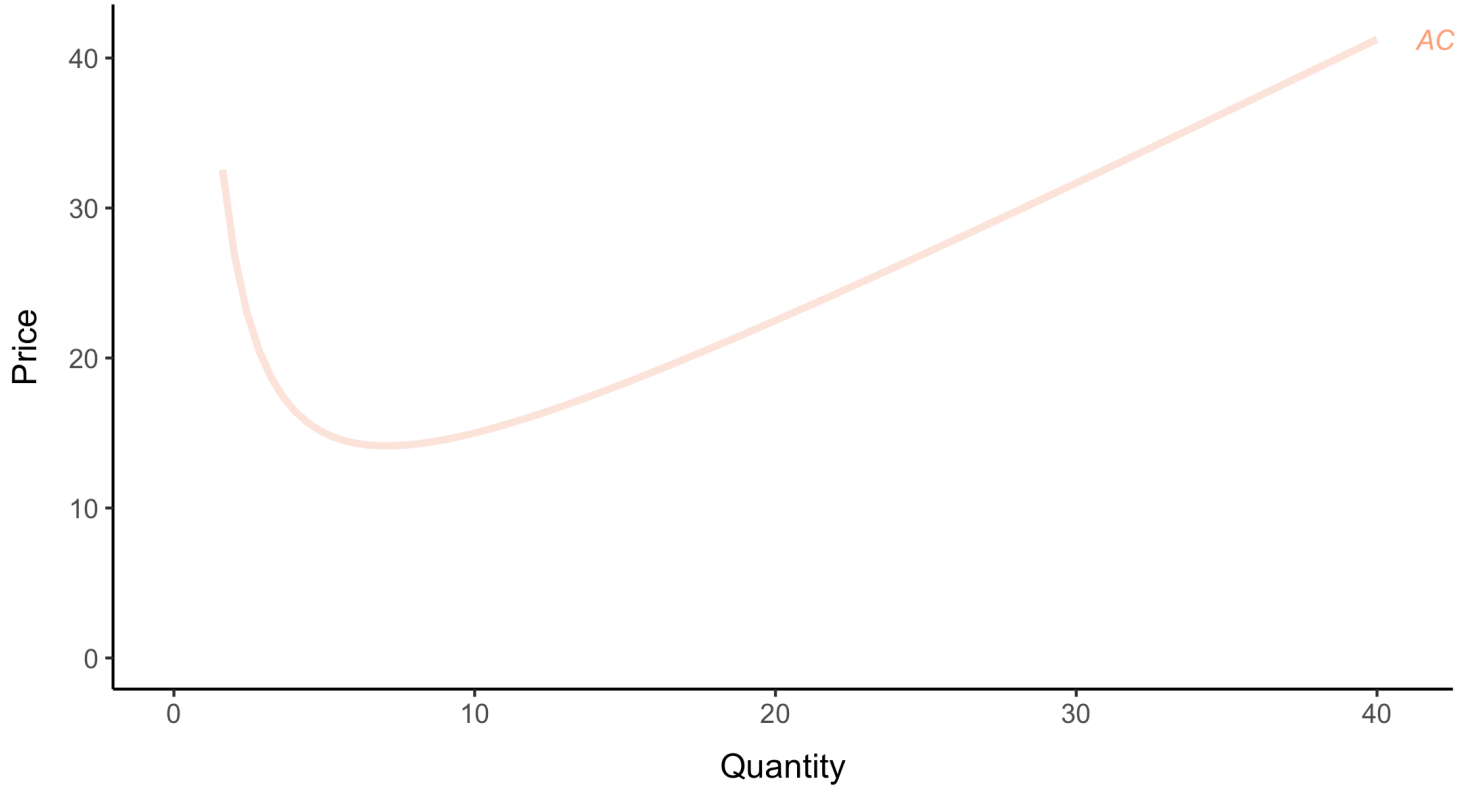
$$MR = 40 - 2Q$$

Monopolist's Output Decision



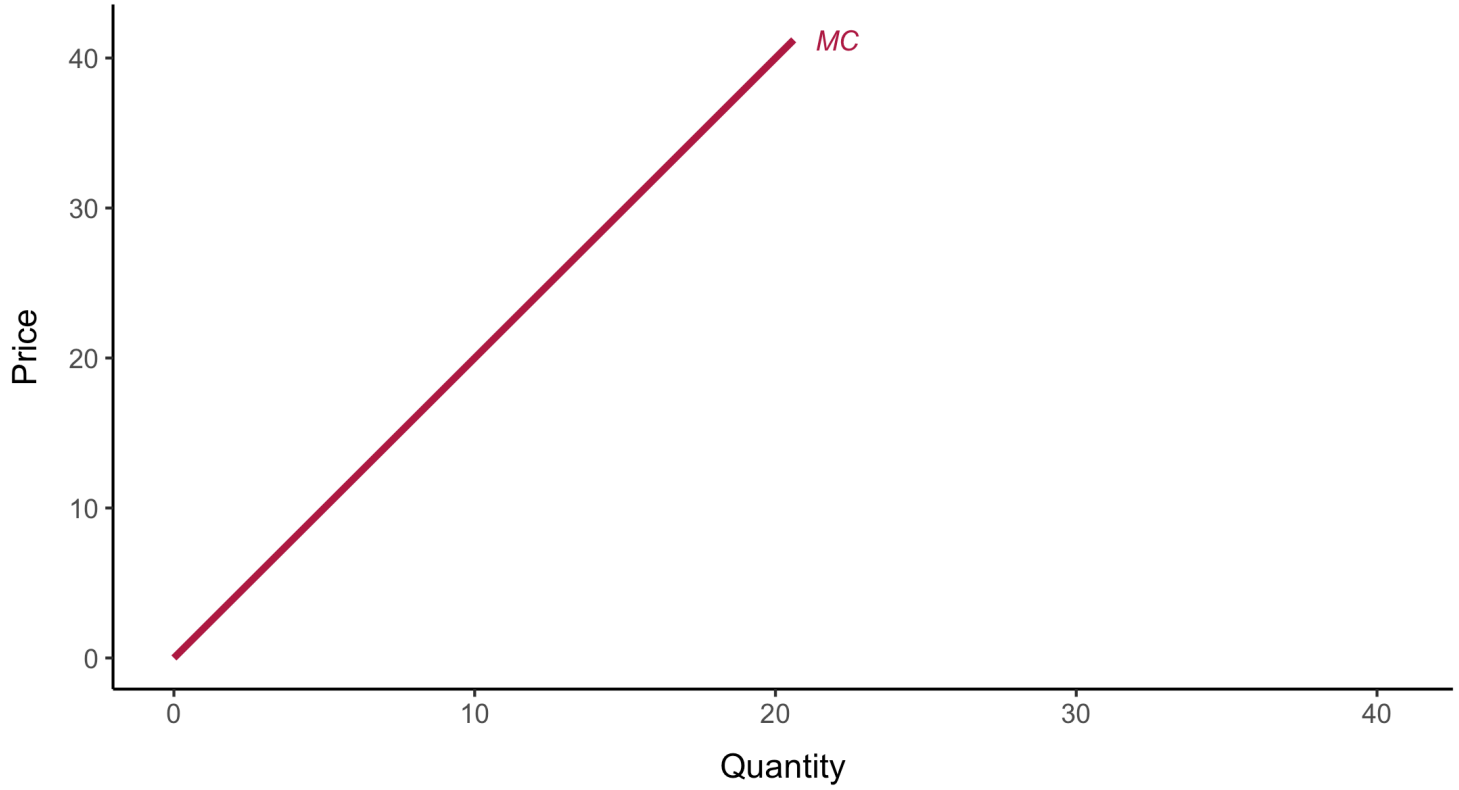
$$C(Q) = 50 + Q^2$$

Monopolist's Output Decision



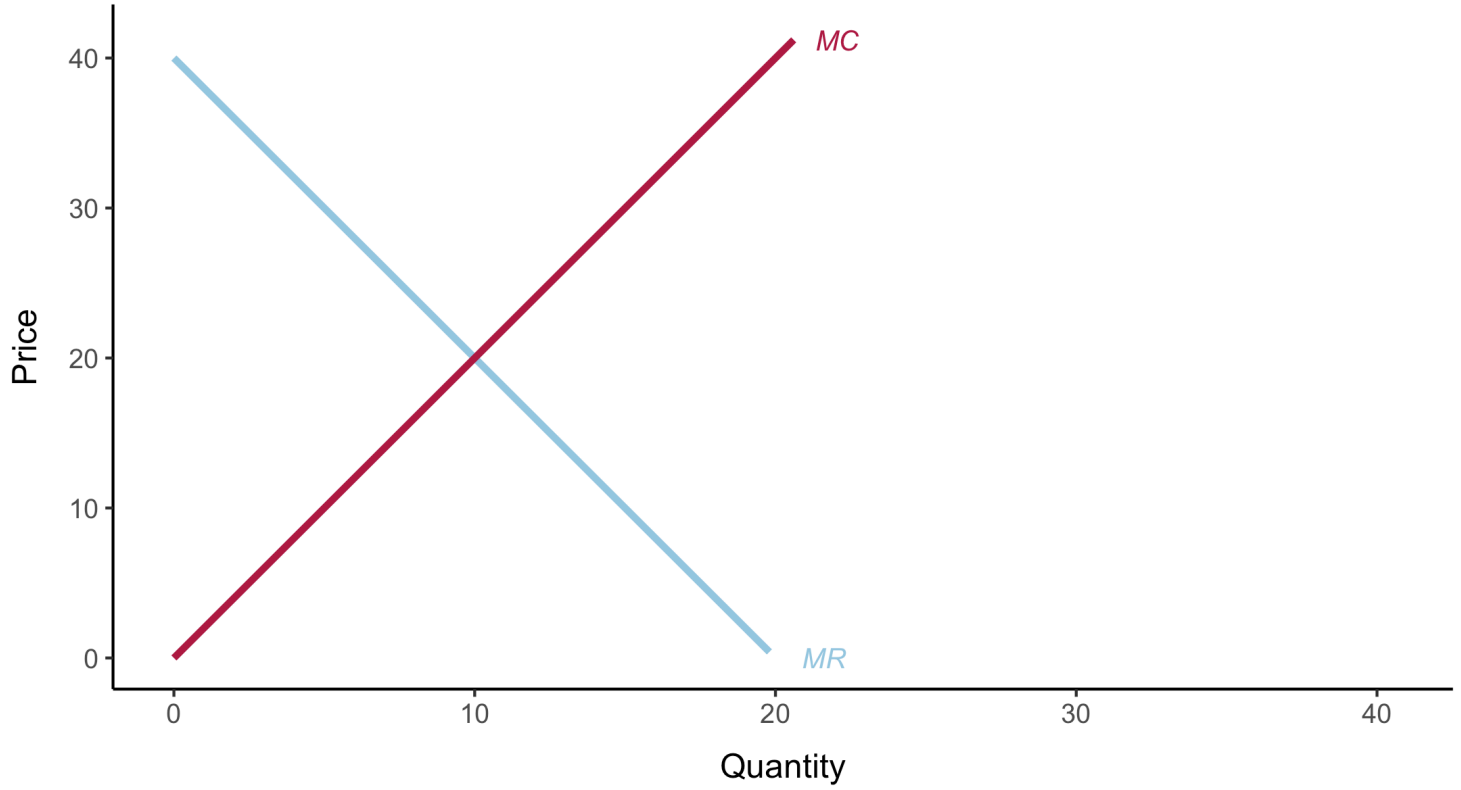
$$C(Q) = 50 + Q^2 \quad \Rightarrow AC = 50/Q + Q$$

Monopolist's Output Decision



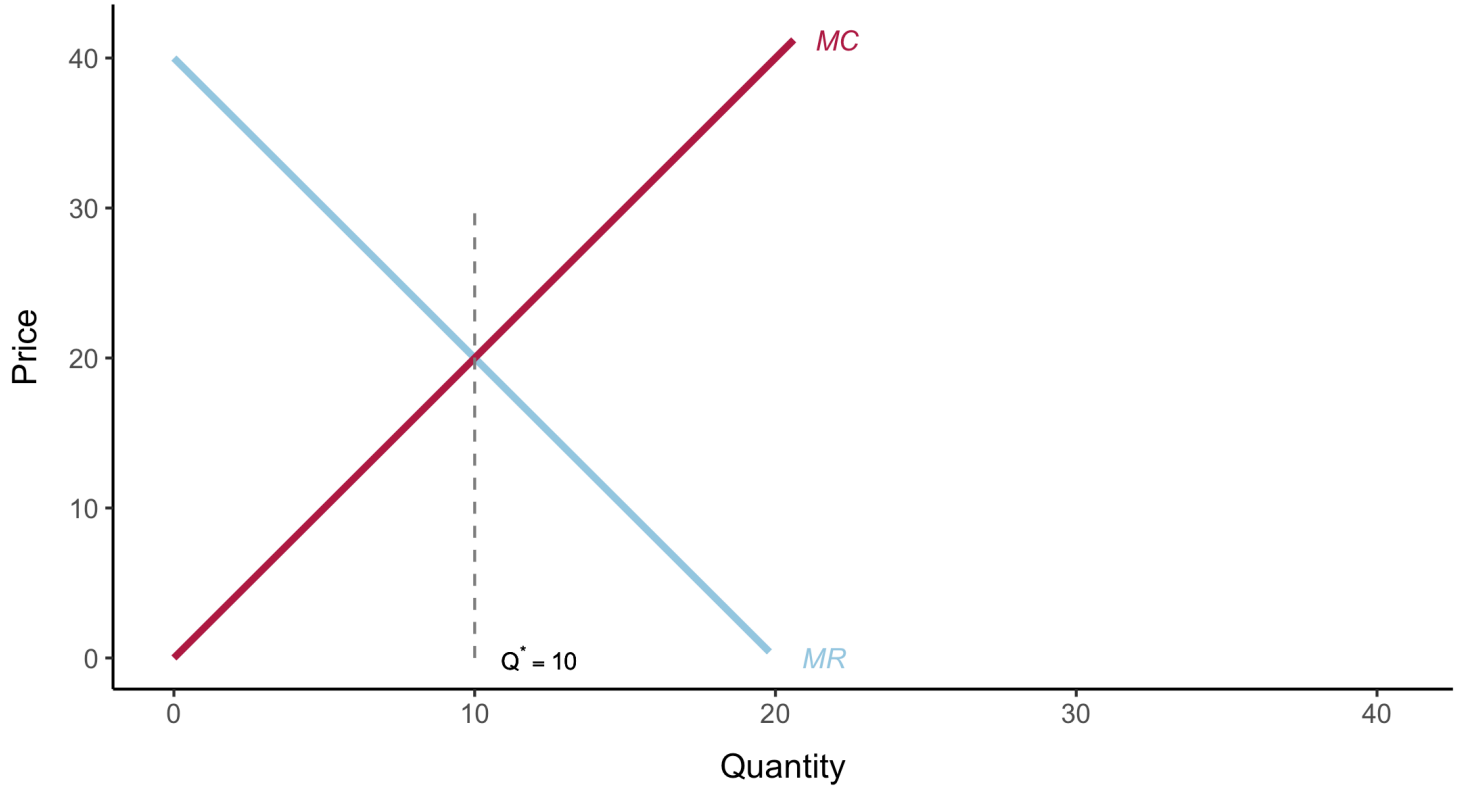
$$C(Q) = 50 + Q^2 \quad \Rightarrow MC = 2Q$$

Monopolist's Output Decision



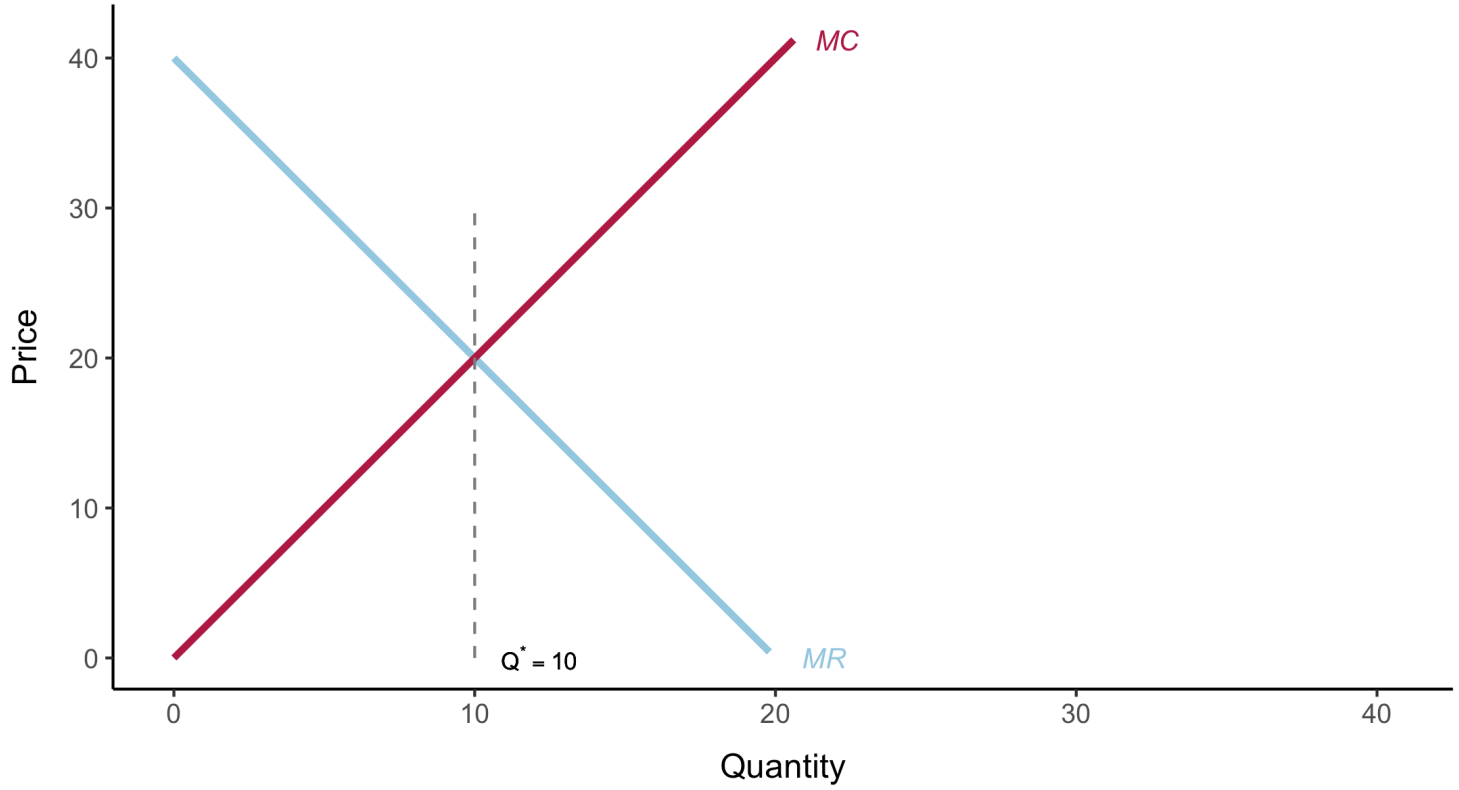
$$Q^* such\ that \quad MR = MC$$

Monopolist's Output Decision



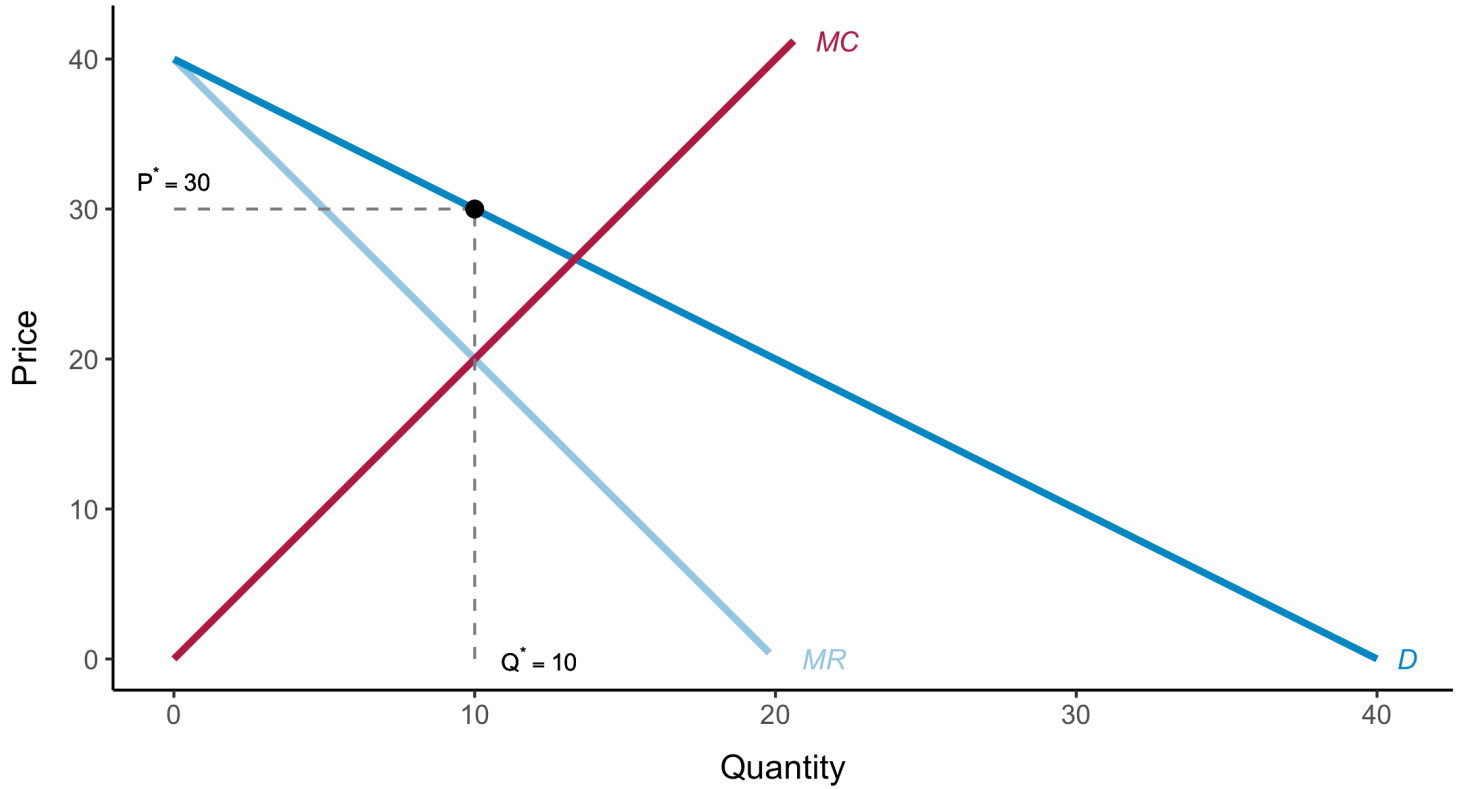
$$Q^* such\ that \quad 40 - 2Q = 2Q$$

Monopolist's Output Decision



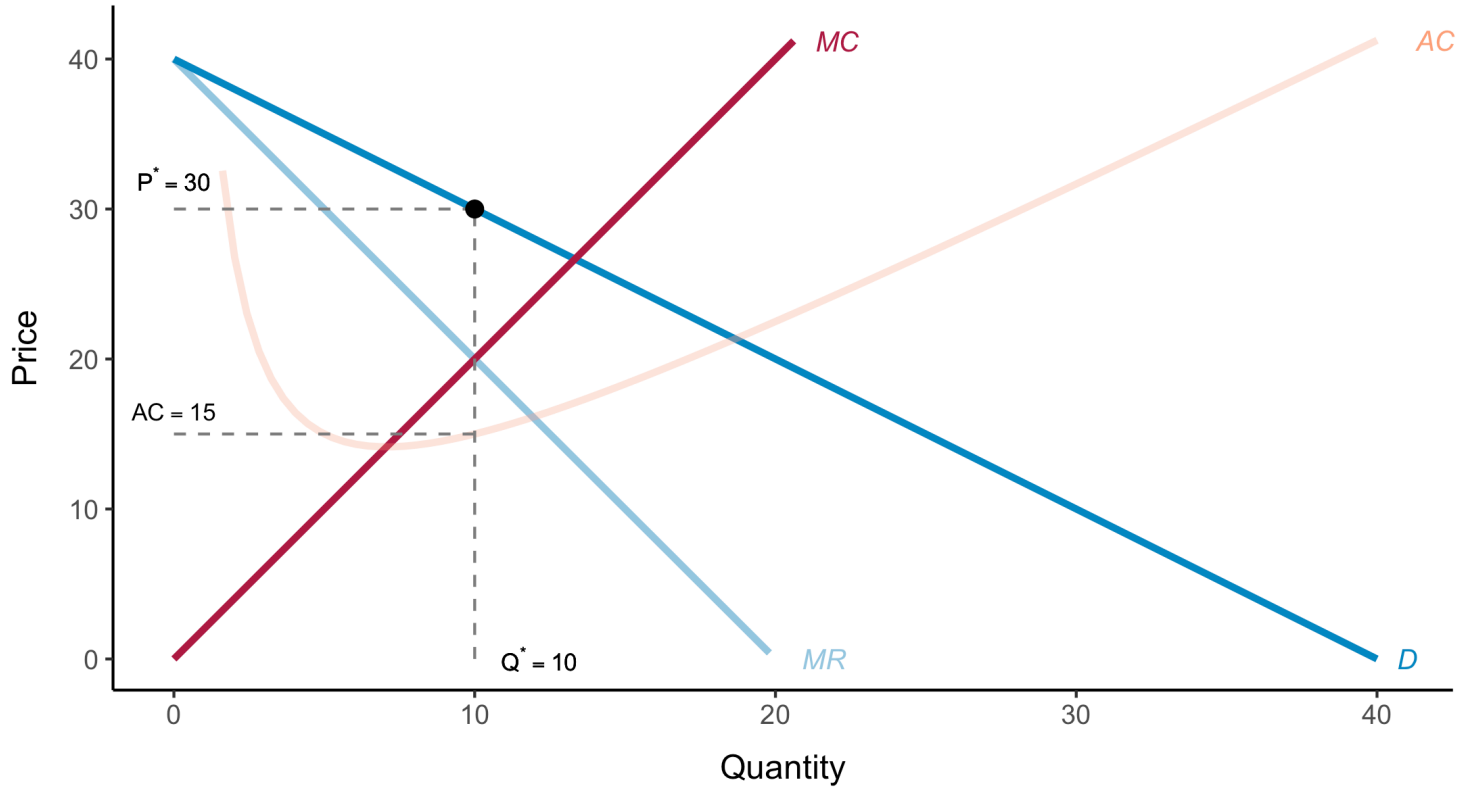
$$Q^* = 10$$

Monopolist's Output Decision



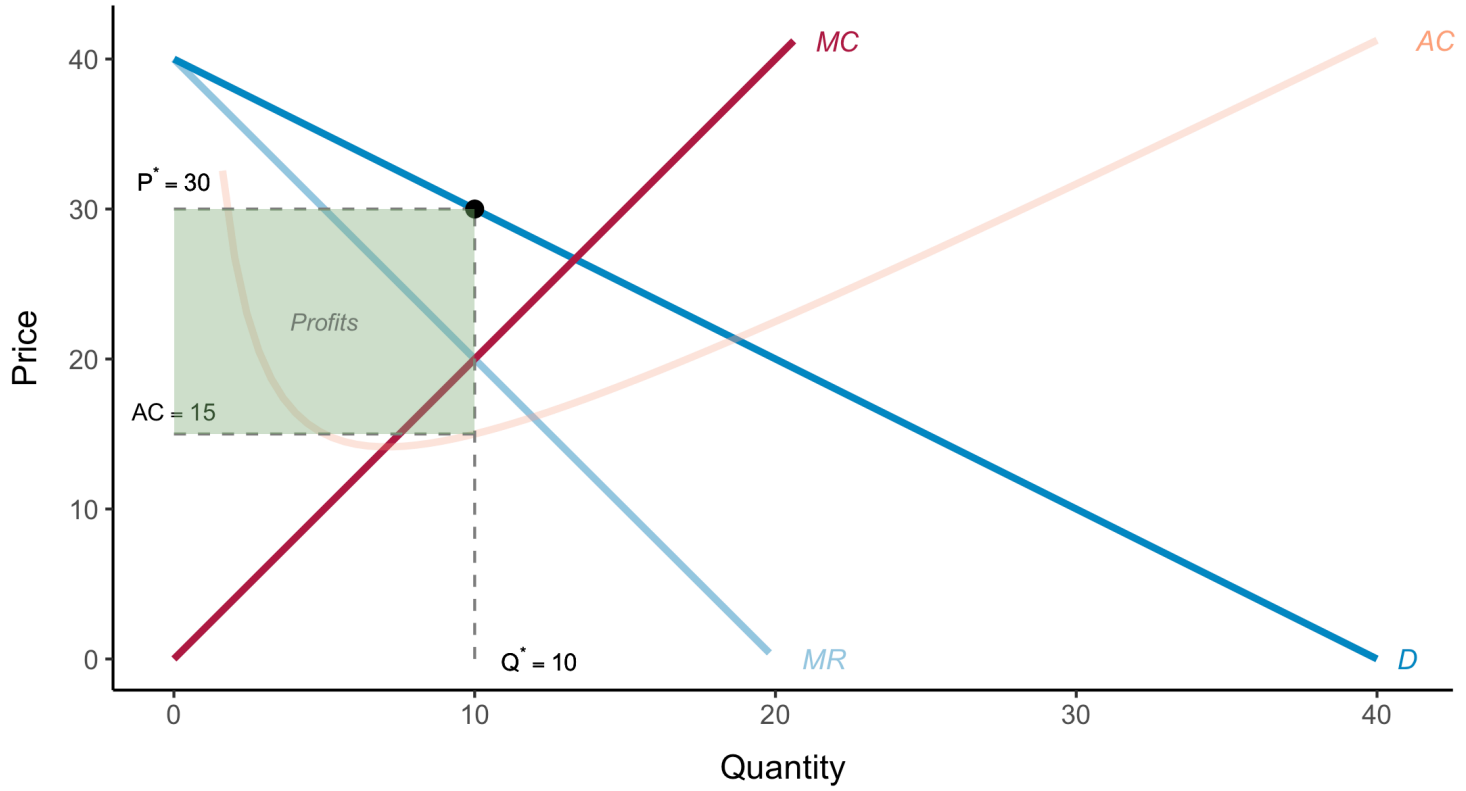
$$P^* = 40 - Q^* = 40 - 10 = 30$$

Monopolist's Output Decision



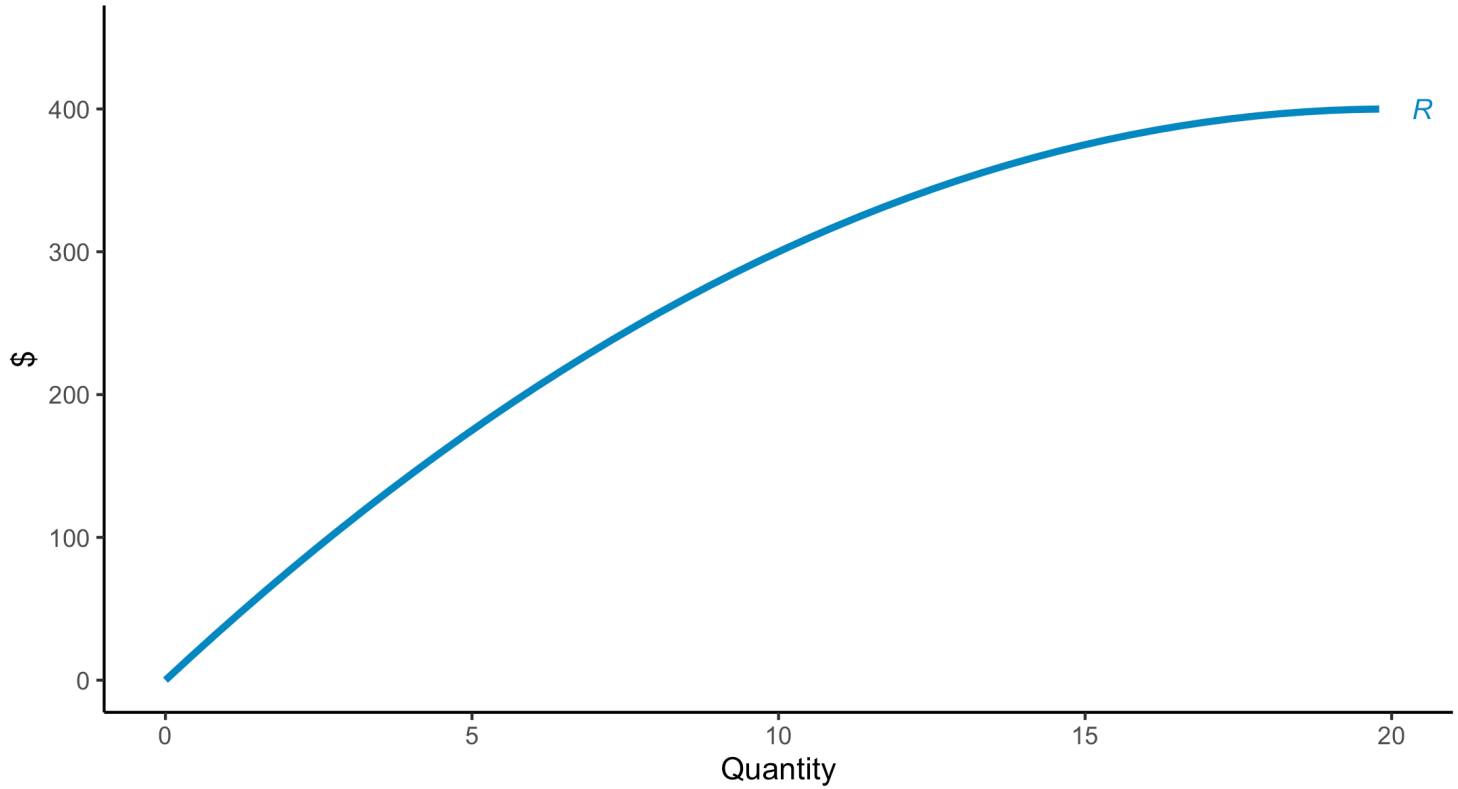
$$AC(Q^*) = 50/10 + 10 = 15$$

Monopolist's Output Decision



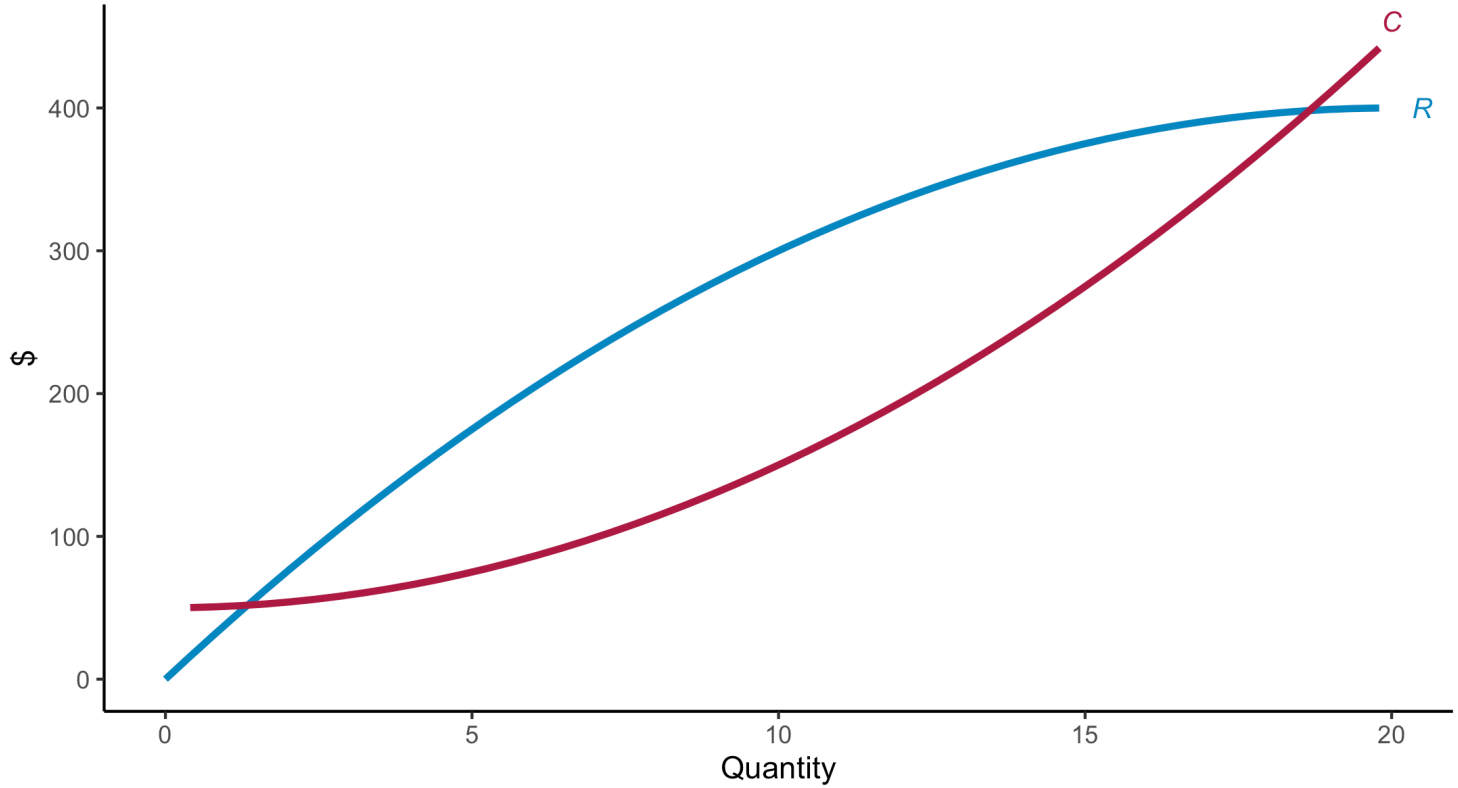
$$\Pi(Q^*) = 30 \times 10 - (50 + 10^2) = 300 - 150 = 150$$

Monopolist's Output Decision



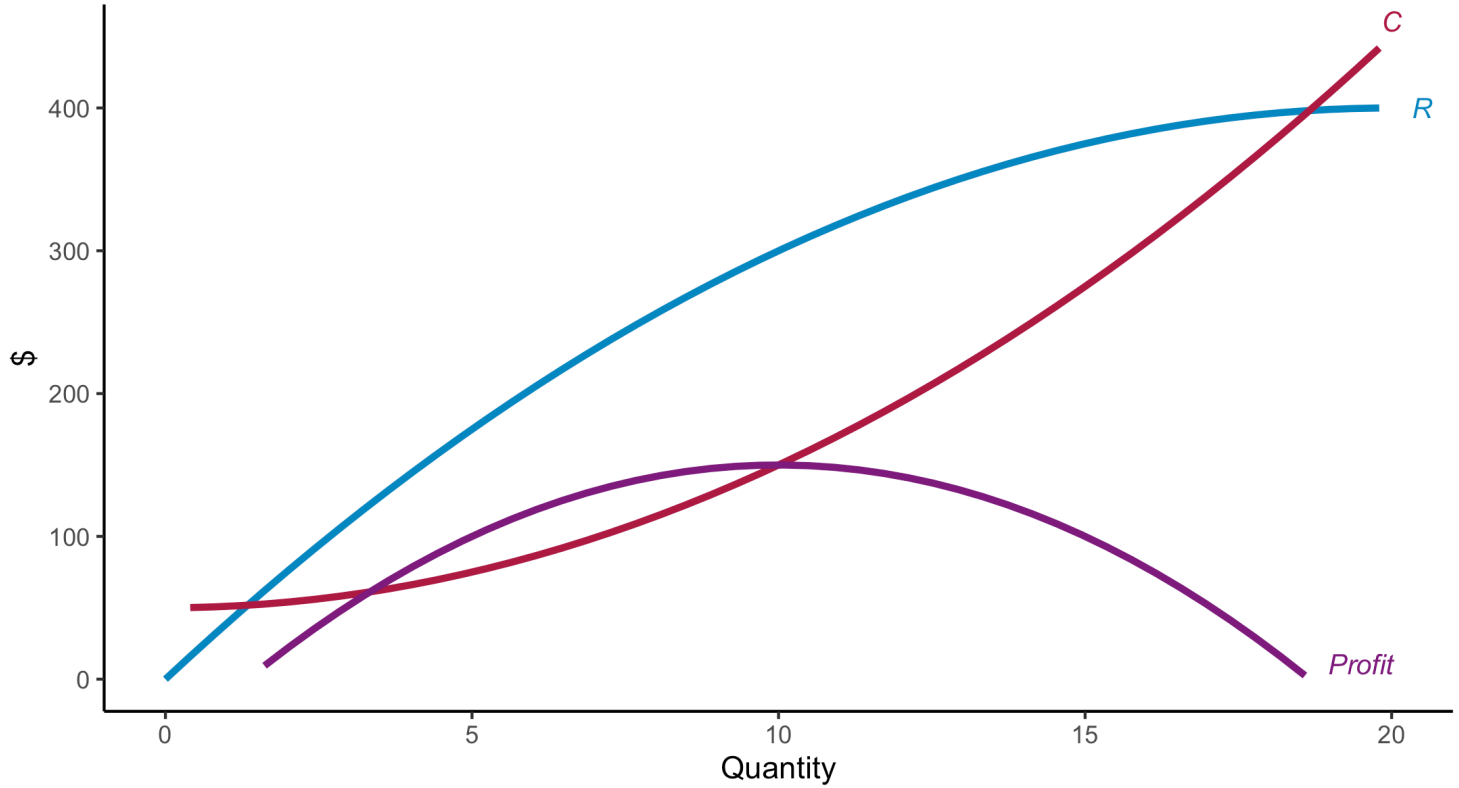
$$R = P \cdot Q \quad \Rightarrow \; R(Q) = (40 - Q)Q = 40Q - Q^2$$

Monopolist's Output Decision



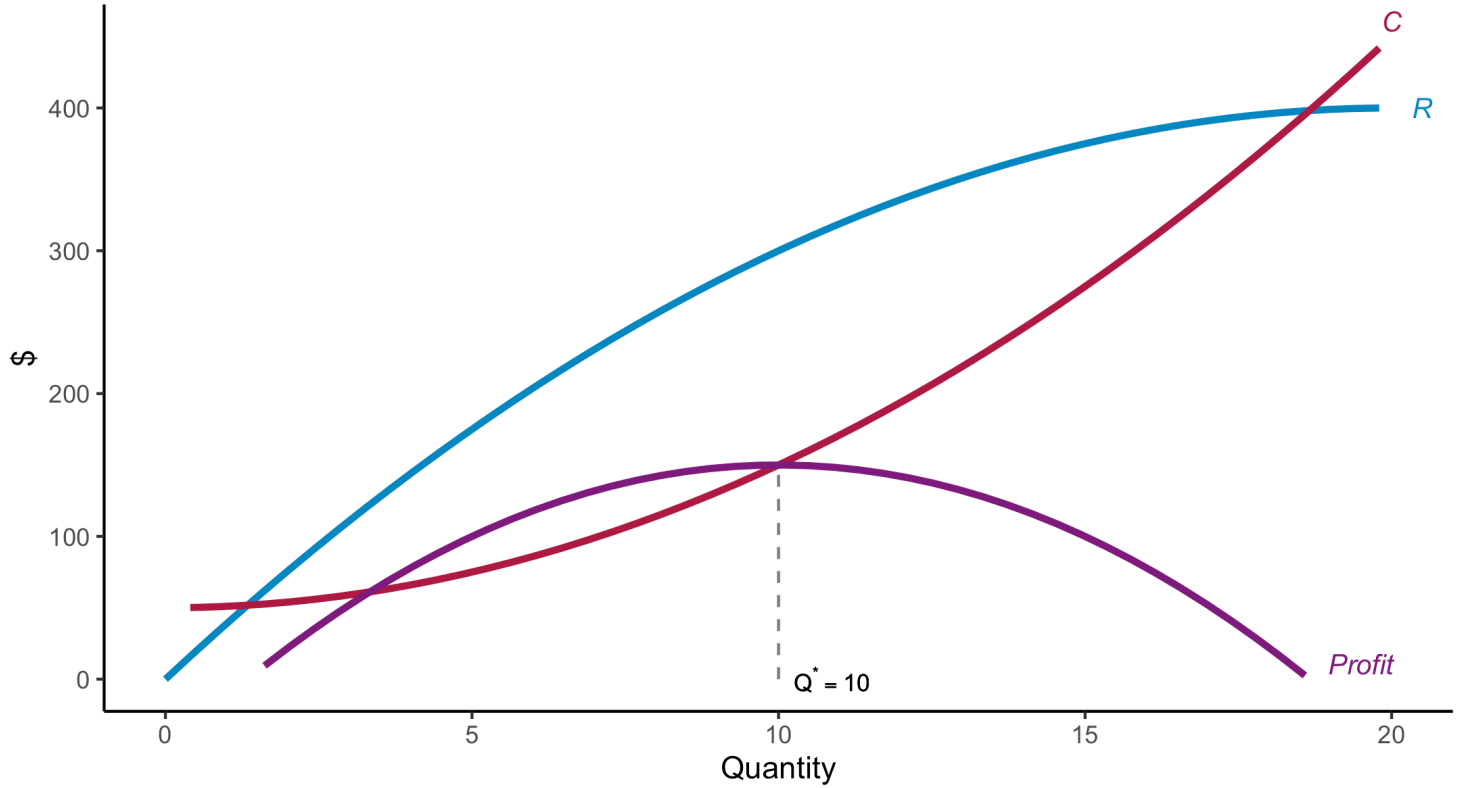
$$C(Q) = 50 + Q^2$$

Monopolist's Output Decision



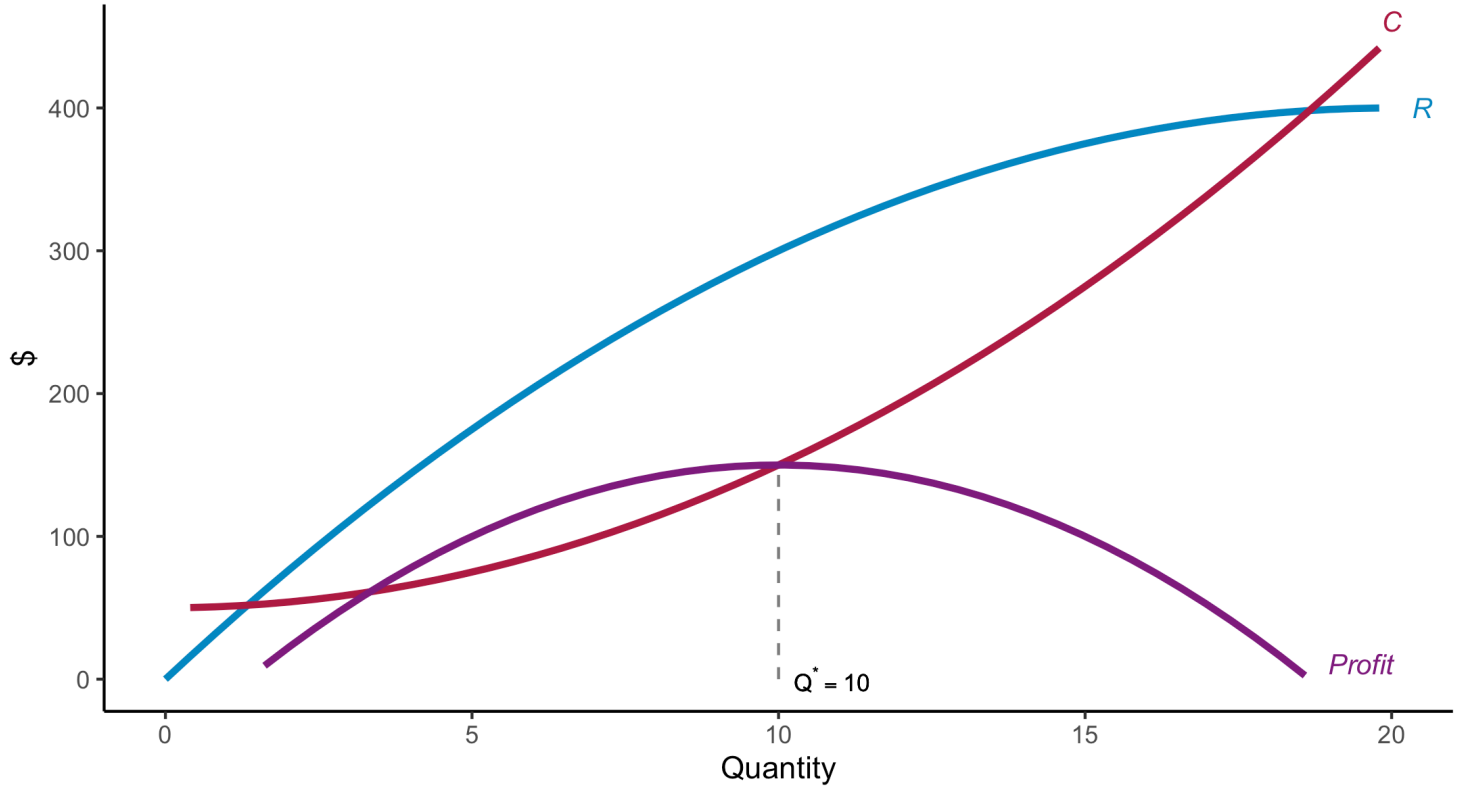
$$\Pi(Q) = R(Q) - C(Q) = [40Q - Q^2] - [50 + Q^2] = 40Q - 2Q^2 - 50$$

Monopolist's Output Decision



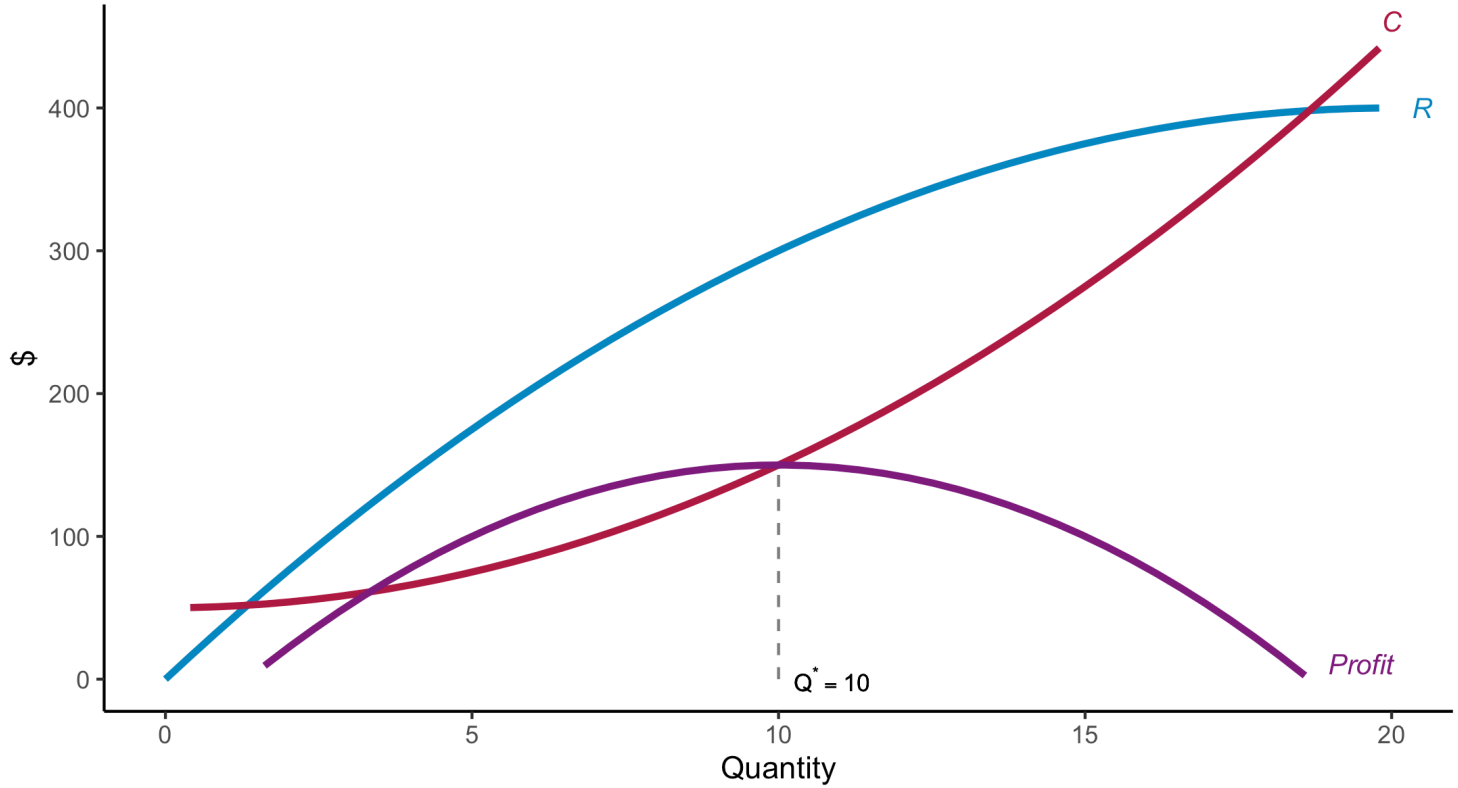
$$\Pi(10) = 40 \times 10 - 2 \times (10)^2 - 50 = 400 - 200 - 50 = 150$$

Monopolist's Output Decision



$$\Pi(11) = 40 \times 11 - 2 \times (11)^2 - 50 = 440 - 242 - 50 = 148$$

Monopolist's Output Decision



$$\Pi(9) = 40 \times 9 - 2 \times (9)^2 - 50 = 360 - 162 - 50 = 148$$

Rule of Thumb for Pricing

Most firm managers have limited knowledge of their average and marginal revenue curves.

$$MR = \frac{dR}{dQ} = \frac{d(PQ)}{dQ} = \underbrace{P}_{\text{Extra unit at price } P} + \underbrace{Q \cdot \frac{dP}{dQ}}_{\text{Extra unit reduces price, reducing revenue per unit}}$$

$$MR = P + Q \cdot \frac{dP}{dQ} = P + P \cdot \frac{Q}{P} \cdot \frac{dP}{dQ}$$

$$\Rightarrow MR = P + P \cdot (1/\varepsilon_D) \quad \& \quad MR = MC \quad \Rightarrow MC = P + P \cdot (1/\varepsilon_D)$$

$$\Rightarrow \underbrace{\frac{P - MC}{P}}_{\text{Markup}} = \underbrace{-(1/\varepsilon_D)}_{\text{Inverse elasticity of } D} \quad \Rightarrow \quad P = \frac{MC}{1 + (1/\varepsilon_D)}$$

Elasticities (detour)

(Price) Elasticity of demand: Percentage change in quantity demanded of a good resulting from a 1-percent increase in its price.

$$\varepsilon_D = \frac{\%\Delta Q}{\%\Delta P}$$

Suppose $Q_2 > Q_1$ and $P_2 < P_1$:

$$\varepsilon_D = \frac{Q_2 - Q_1}{Q_1} \Big/ \frac{P_2 - P_1}{P_1}$$

Define $\Delta Q = Q_2 - Q_1$ and $\Delta P = P_2 - P_1$

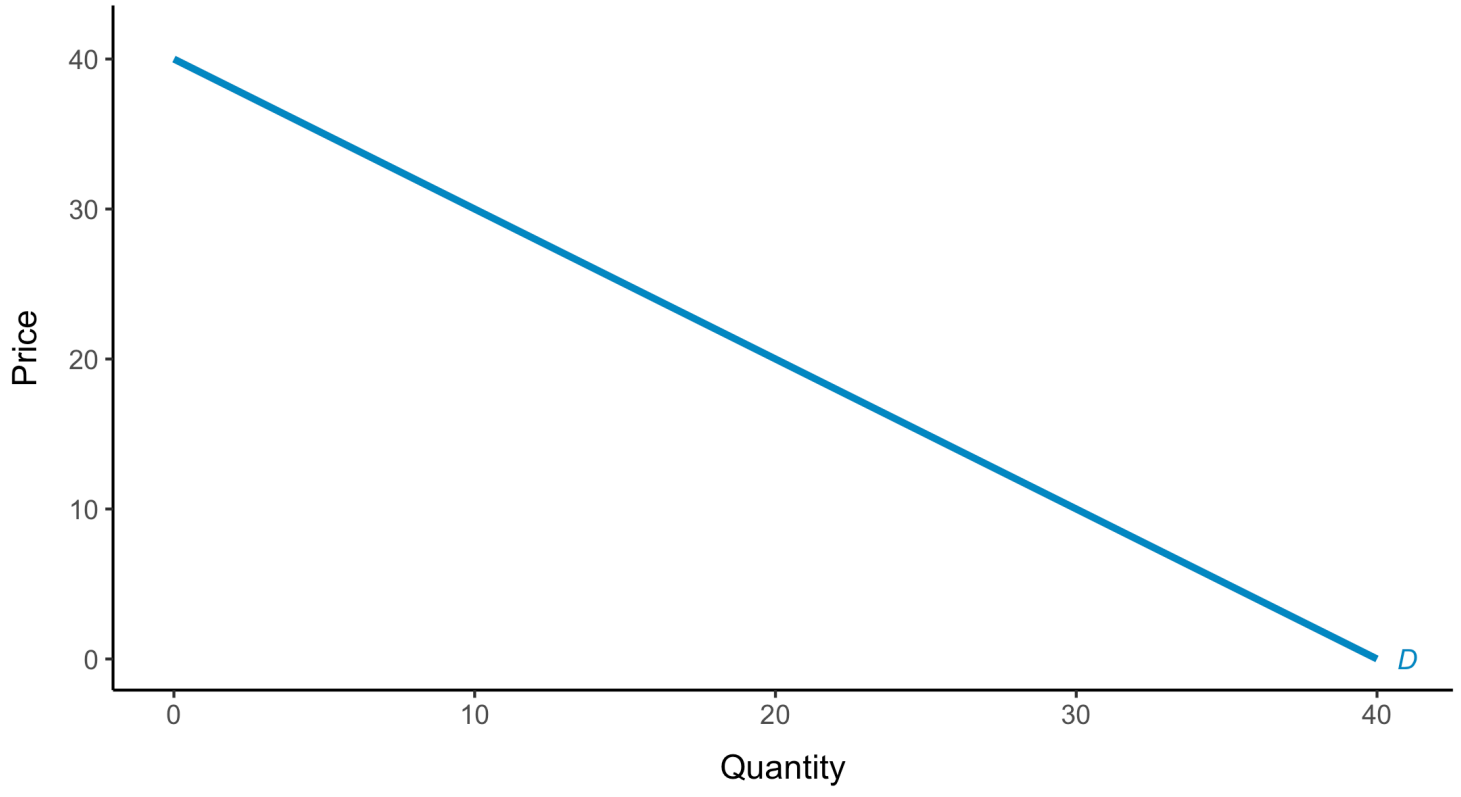
$$\varepsilon_D = \frac{\Delta Q}{Q_1} \Big/ \frac{\Delta P}{P_1} = \frac{P_1 \cdot \Delta Q}{Q_1 \cdot \Delta P}$$

If we are interested in hypothetically predicting the change from a given point $(P_1 = P, Q_1 = Q)$

$$\varepsilon_D = \frac{P}{Q} \cdot \frac{\Delta Q}{\Delta P} < 0$$

Rule of Thumb for Pricing

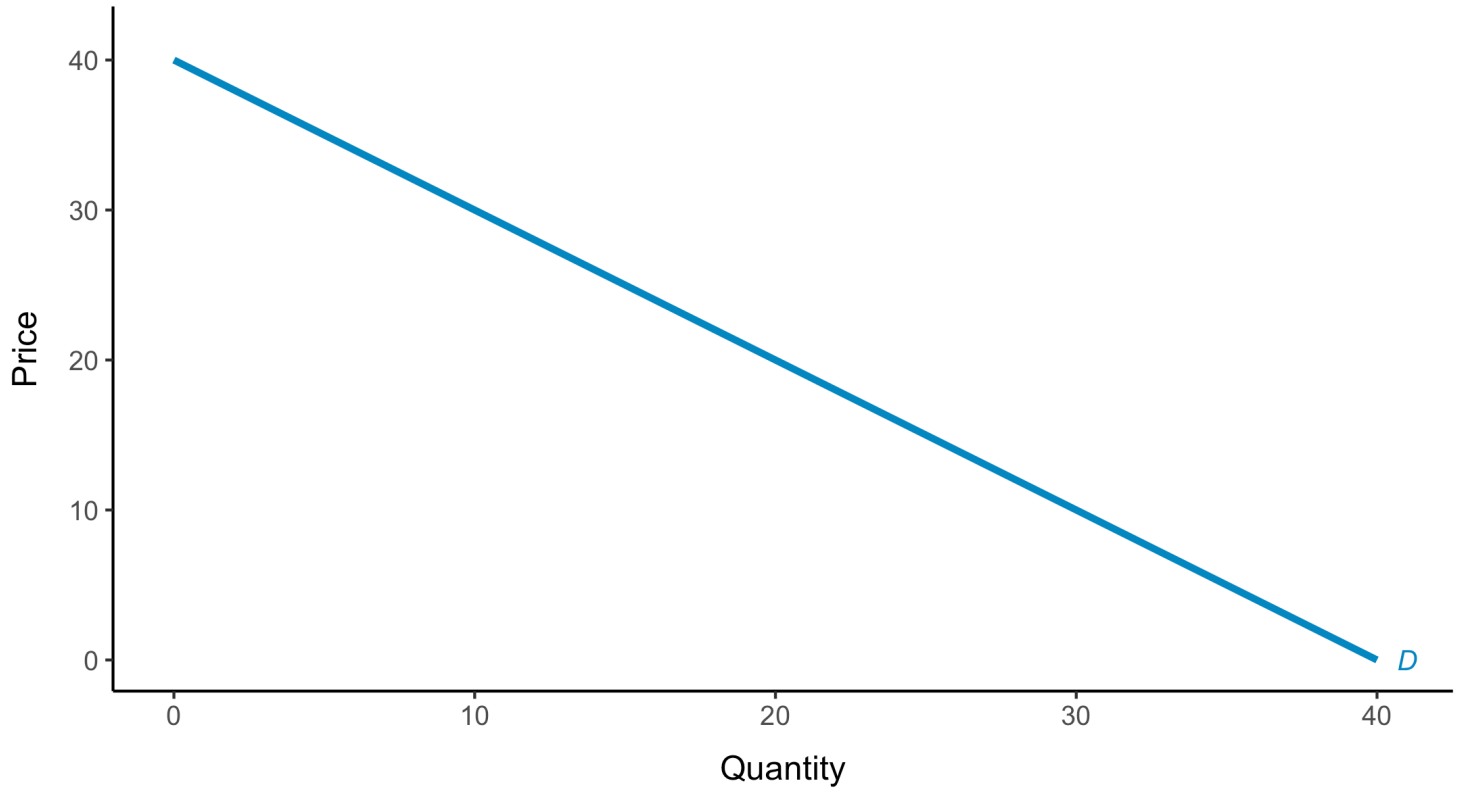
Recall that the demand curve has different elasticities at each point.



$$\underbrace{P = 40 - Q}_{Inverse\ Demand} \iff \underbrace{Q = 40 - P}_{Direct\ Demand}$$

Rule of Thumb for Pricing

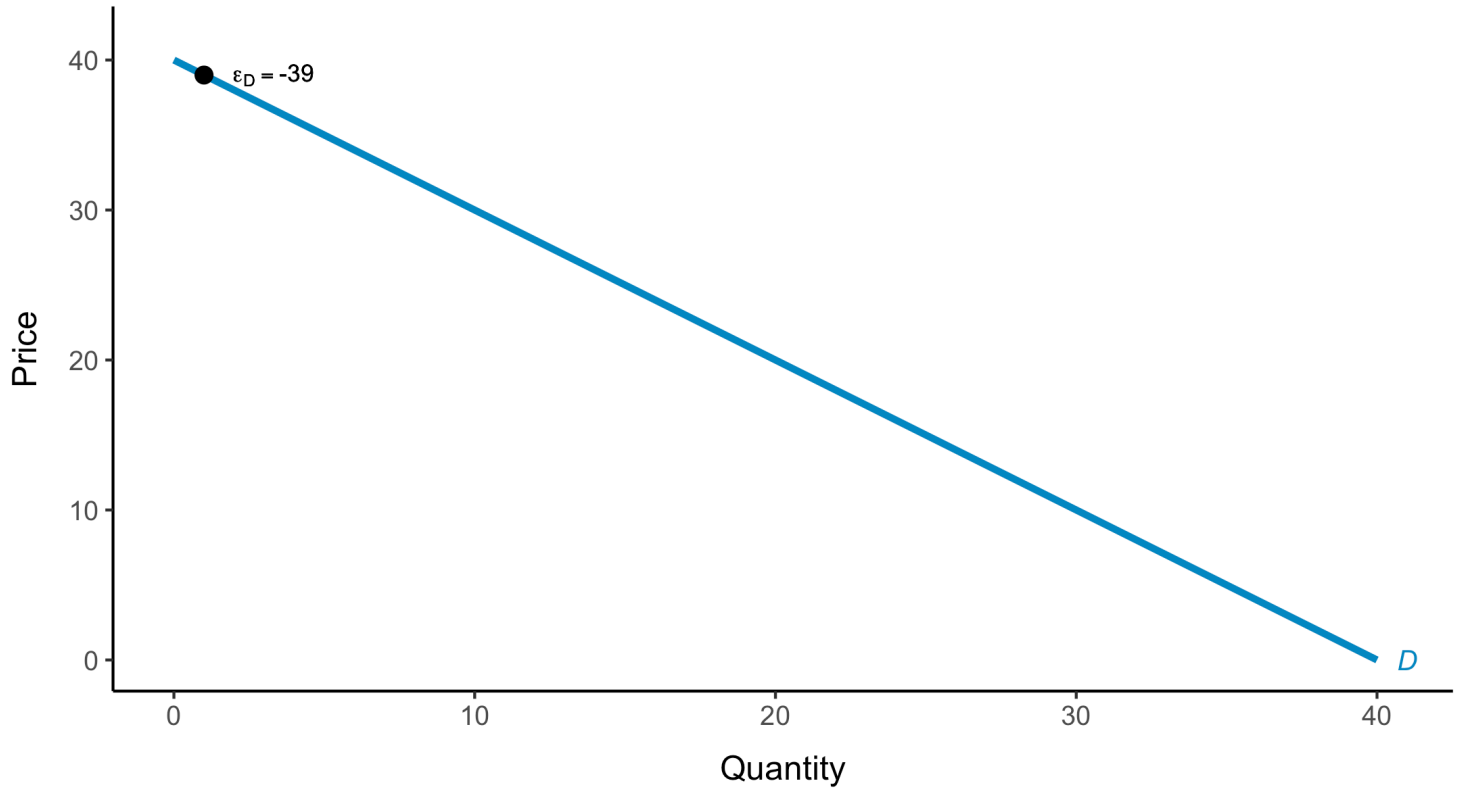
Recall that the demand curve has different elasticities at each point.



$$dQ/dP = -1$$

Rule of Thumb for Pricing

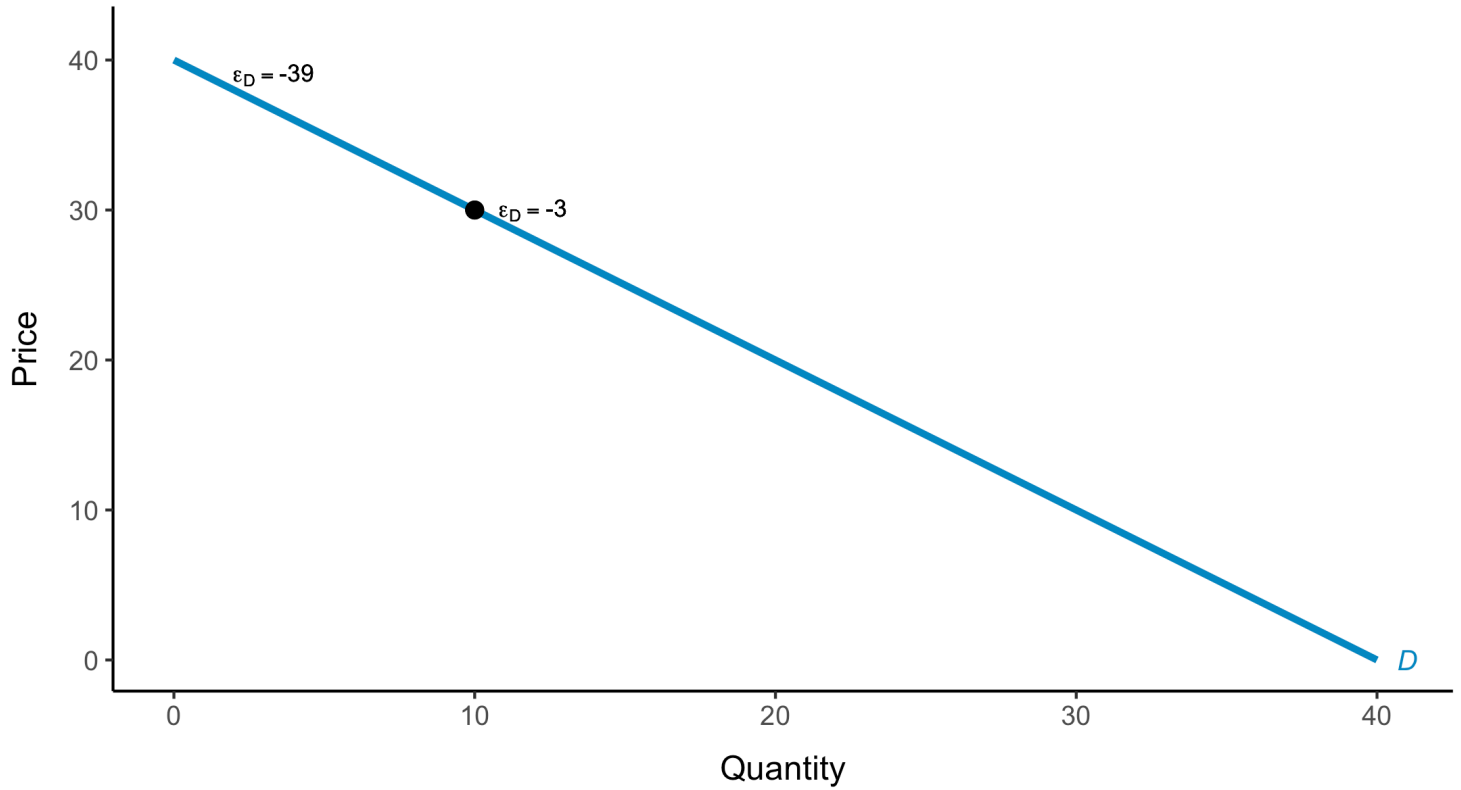
Recall that the demand curve has different elasticities at each point.



At $Q = 1, P = 39 \quad \Rightarrow \varepsilon_D = \frac{39}{1} \cdot (-1) = -39$

Rule of Thumb for Pricing

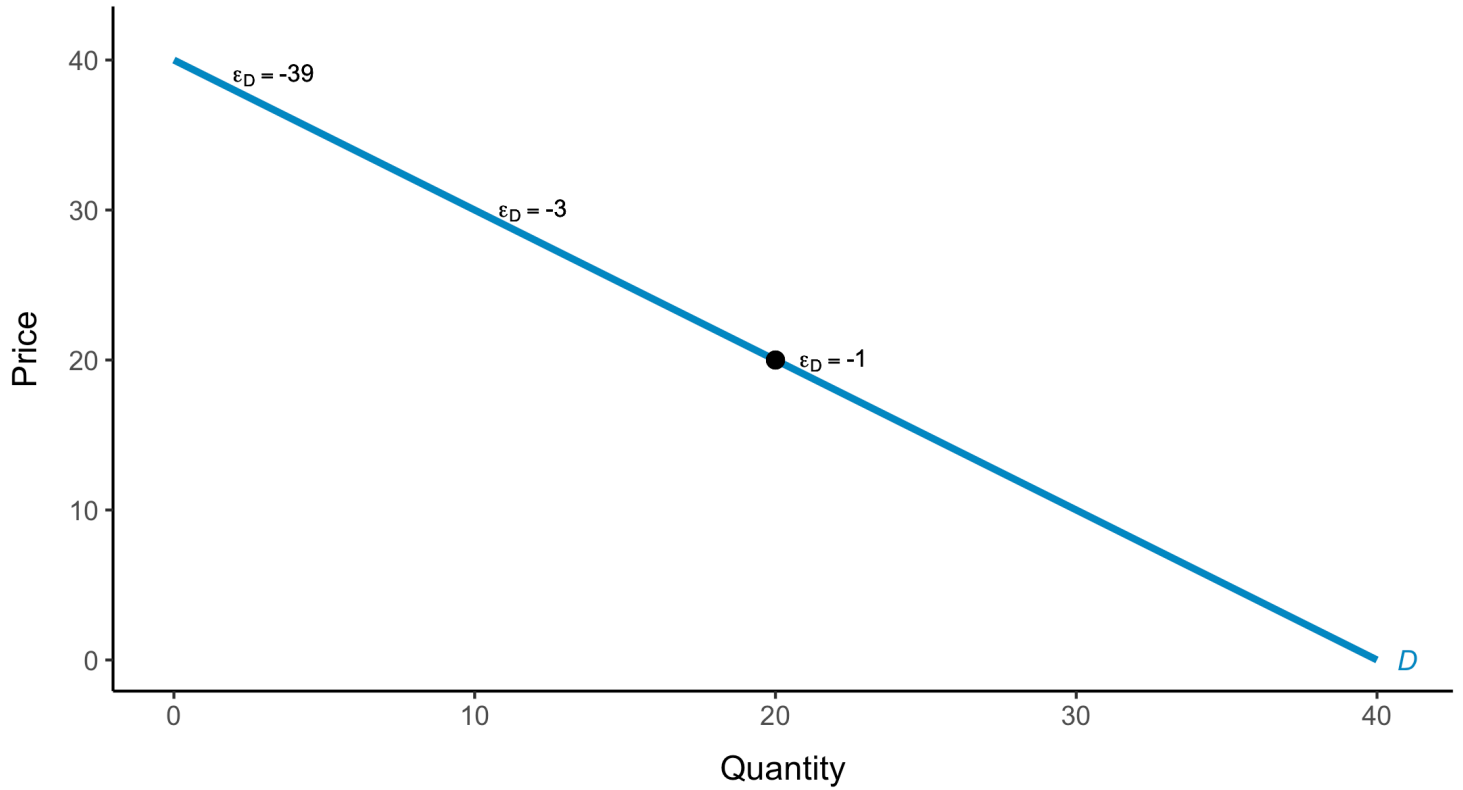
Recall that the demand curve has different elasticities at each point.



At $Q = 10, P = 30 \quad \Rightarrow \varepsilon_D = \frac{30}{10} \cdot (-1) = -3$

Rule of Thumb for Pricing

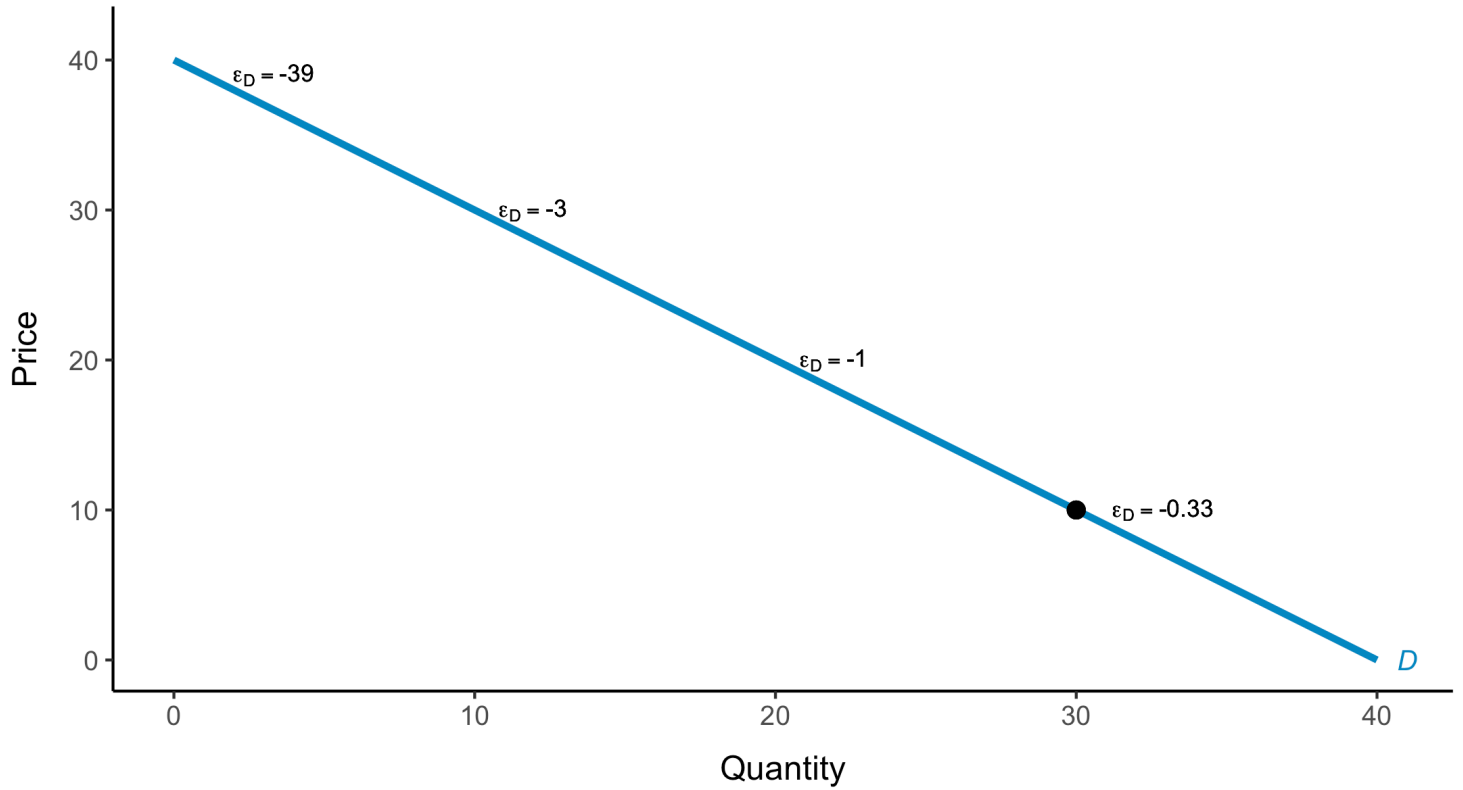
Recall that the demand curve has different elasticities at each point.



At $Q = 20, P = 20 \quad \Rightarrow \varepsilon_D = \frac{20}{20} \cdot (-1) = -1$

Rule of Thumb for Pricing

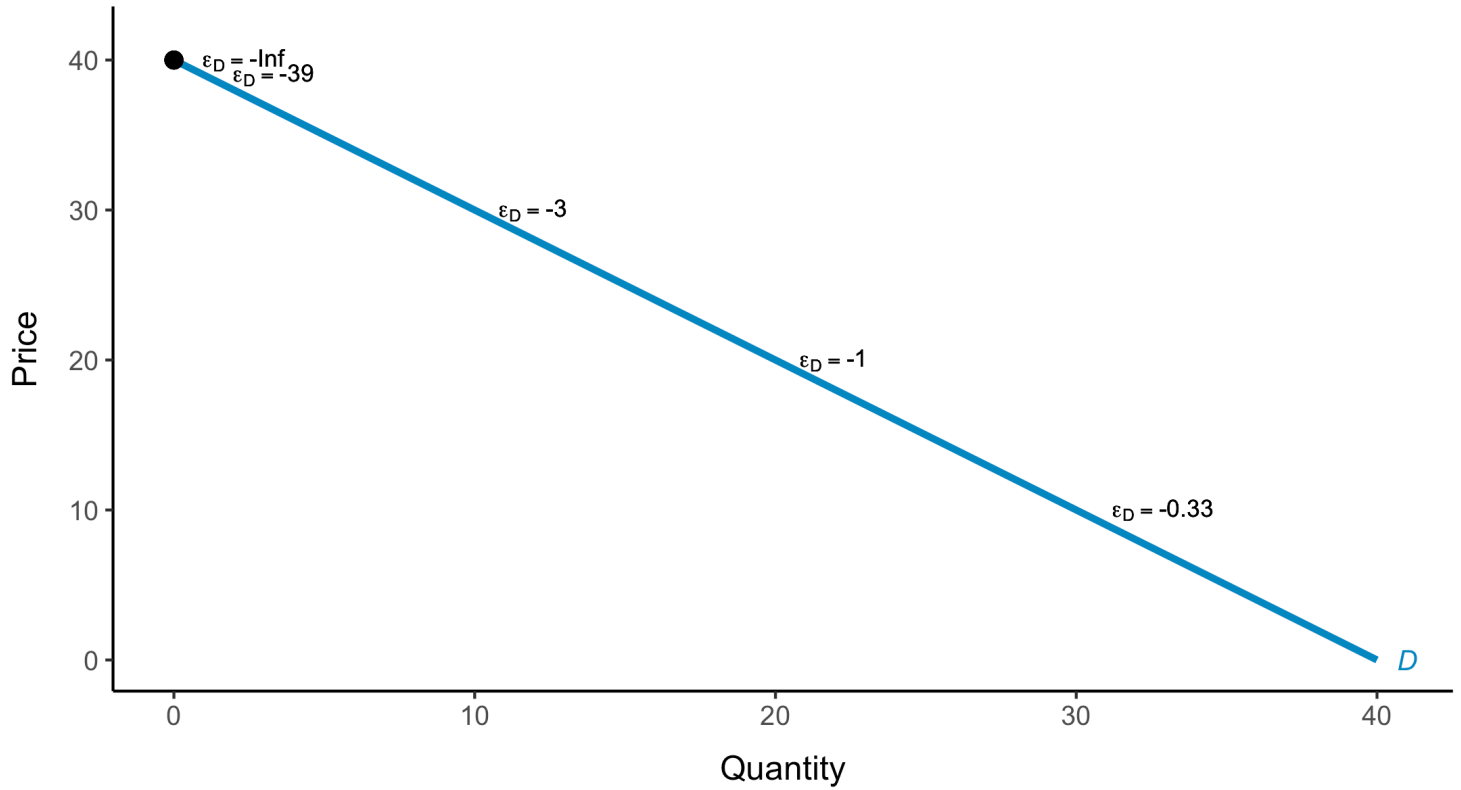
Recall that the demand curve has different elasticities at each point.



At $Q = 30, P = 10 \quad \Rightarrow \varepsilon_D = \frac{10}{30} \cdot (-1) = -1/3$

Rule of Thumb for Pricing

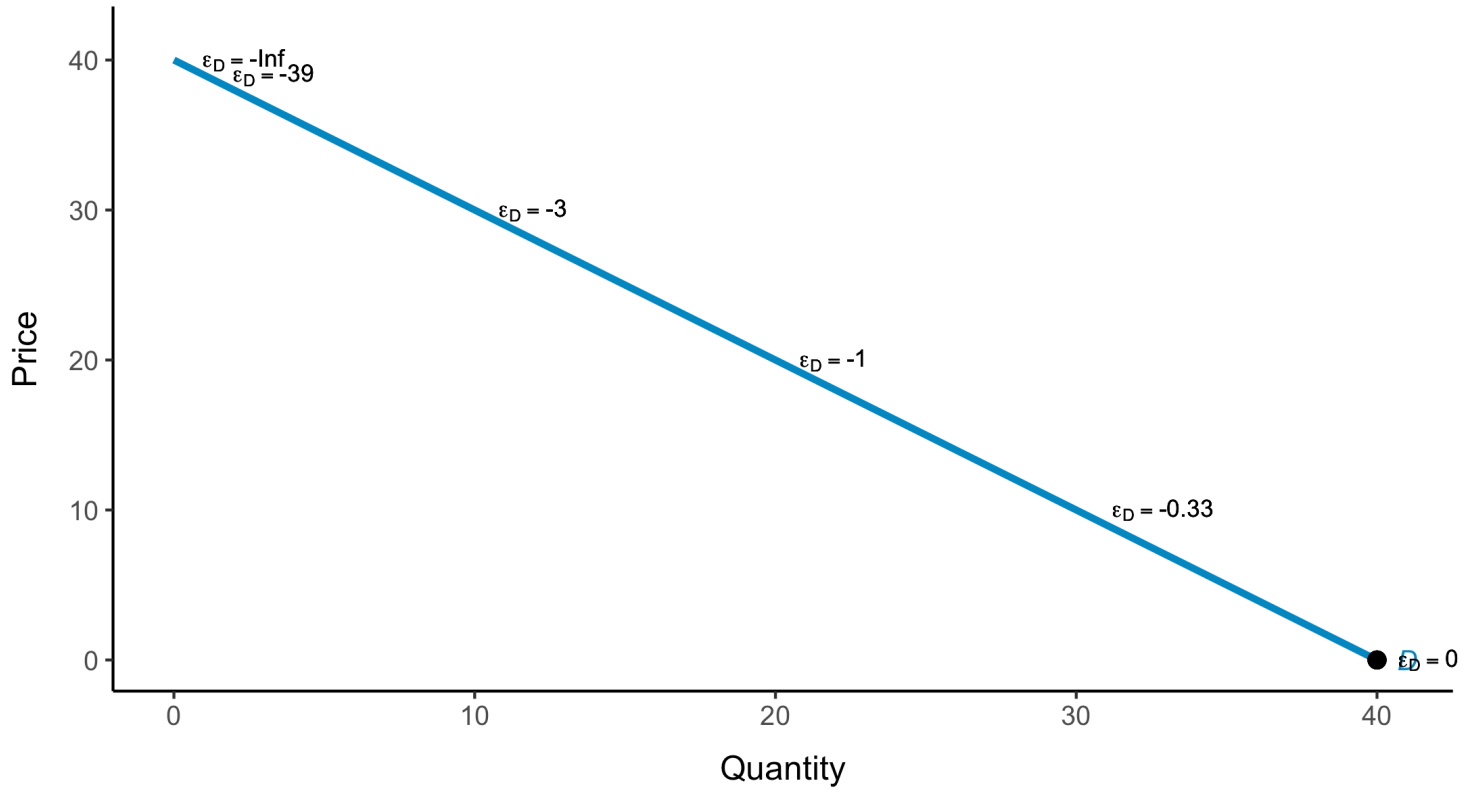
Recall that the demand curve has different elasticities at each point.



At $Q = 0, P = 40 \quad \Rightarrow \varepsilon_D = \frac{40}{0} \cdot (-1) = -\infty$

Rule of Thumb for Pricing

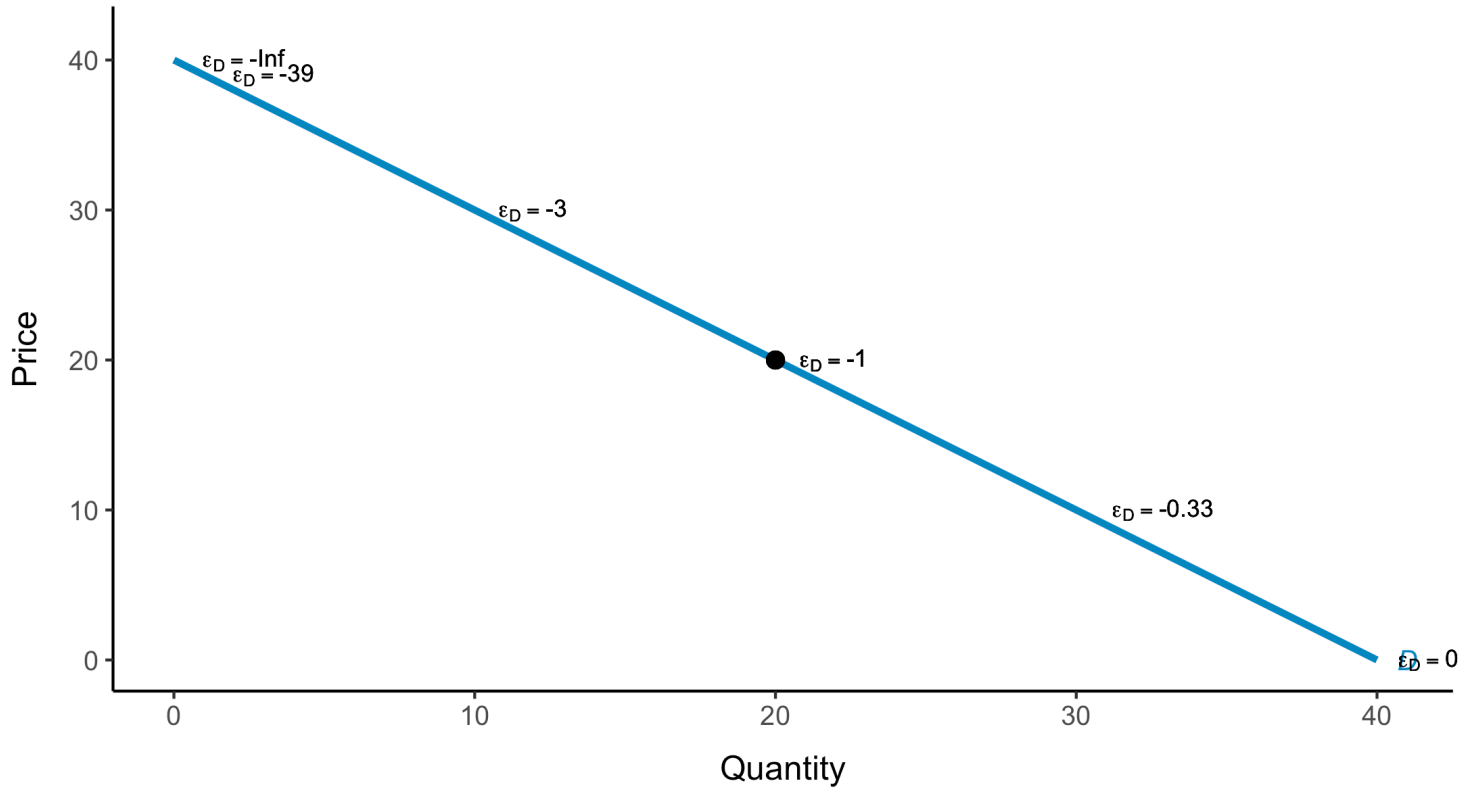
Recall that the demand curve has different elasticities at each point.



At $Q = 40, P = 0 \quad \Rightarrow \varepsilon_D = \frac{0}{40} \cdot (-1) = 0$

Rule of Thumb for Pricing

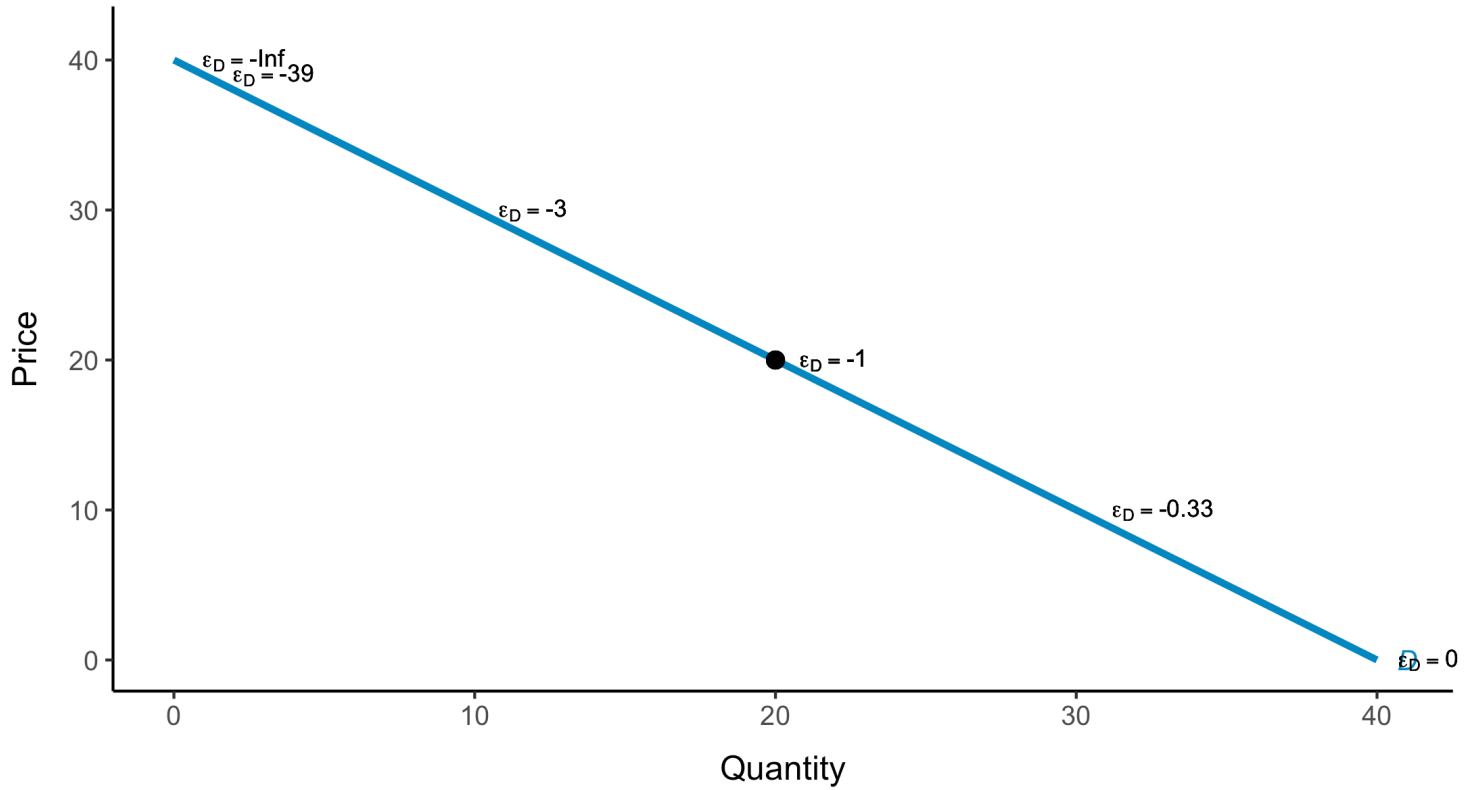
Recall that the demand curve has different elasticities at each point.



Recall Arc-Elasticity: Elasticity across the demand curve $\varepsilon_{\bar{D}} = \frac{dQ}{dP} \cdot \frac{\bar{P}}{\bar{Q}}$

Rule of Thumb for Pricing

Recall that the demand curve has different elasticities at each point.

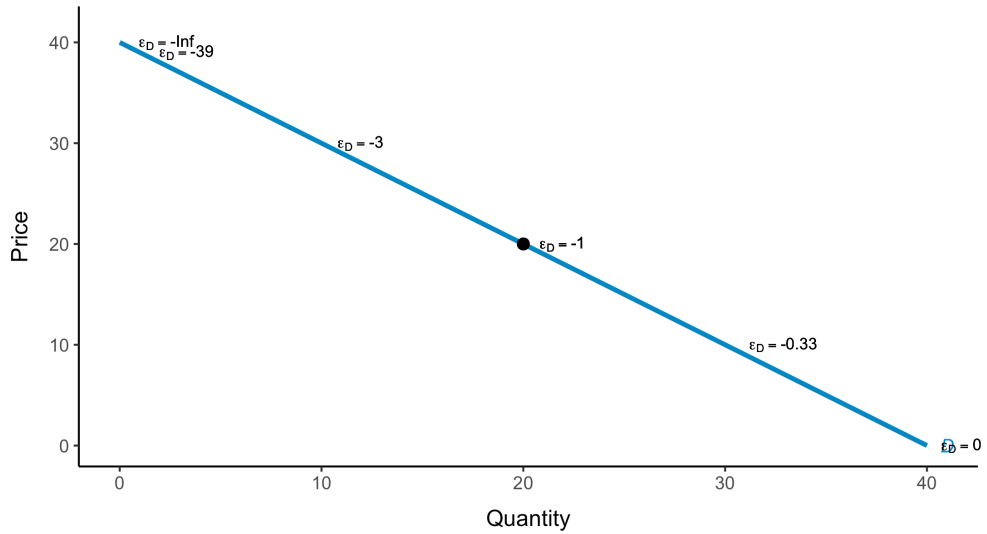


In the example, $\bar{P} = 20$ and $\bar{Q}$ 20. Thus $\varepsilon_{\bar{D}} = -1 \cdot \frac{20}{20} = -1$

Rule of Thumb for Pricing

Recall that the demand curve has different elasticities at each point.

- $|\varepsilon_D| > 1$ **Elastic**: A 1% increase in price reduces quantity demanded by more than 1%.
- $|\varepsilon_D| = 1$ **Unitary**: A 1% change in price leads to a 1% change in quantity demanded.
- $|\varepsilon_D| < 1$ **Inelastic**: A 1% increase in price reduces quantity demanded by less than 1%.



Monopolist will never produce a quantity of output that is on the inelastic portion of the demand curve.

Rule of Thumb for Pricing

$$P = \frac{MC}{1 + (1/\varepsilon_D)}$$

Suposse $MC = 9$

Elastic

$$|\varepsilon_D| > 1$$

For instance, $\varepsilon_D = -4$

$$P = \frac{9}{1 + (-1/4)} = 9/0.75 = 12$$

$$Markup = (12 - 9)/9 = 3/9 = 1/3$$

However, as $\varepsilon_D \to \infty \Rightarrow P = MC$

Inelastic

$$|\varepsilon_D| < 1$$

For instance, $\varepsilon_D = -1/2$

$$P = \frac{9}{1 + (-2)} = \frac{9}{-1} = -1$$

$$Markup = (-1 - 9)/9 = -10/9$$

Not possible.

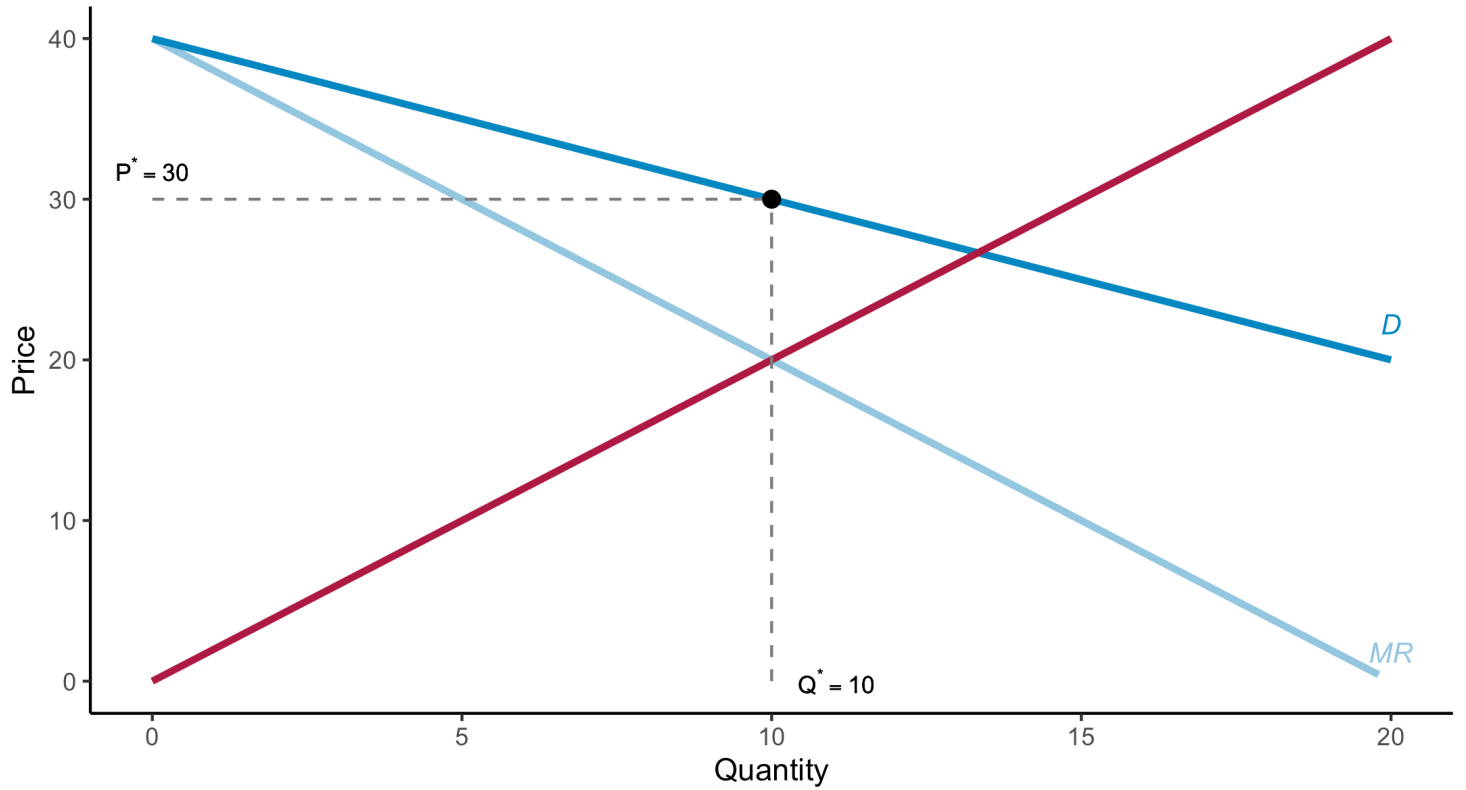
Monopolist's Supply Curve

Does not exist. A monopolistic market has no supply curve. In other words, there is no one-to- one relationship between price and the quantity produced.

Depending on how demand shifts, a monopolist might supply several different quantities at the same price, or the same quantity at different prices.

Monopolist's Supply

Depending on how demand shifts, a monopolist might supply several different quantities at the same price, or the same quantity at different prices.



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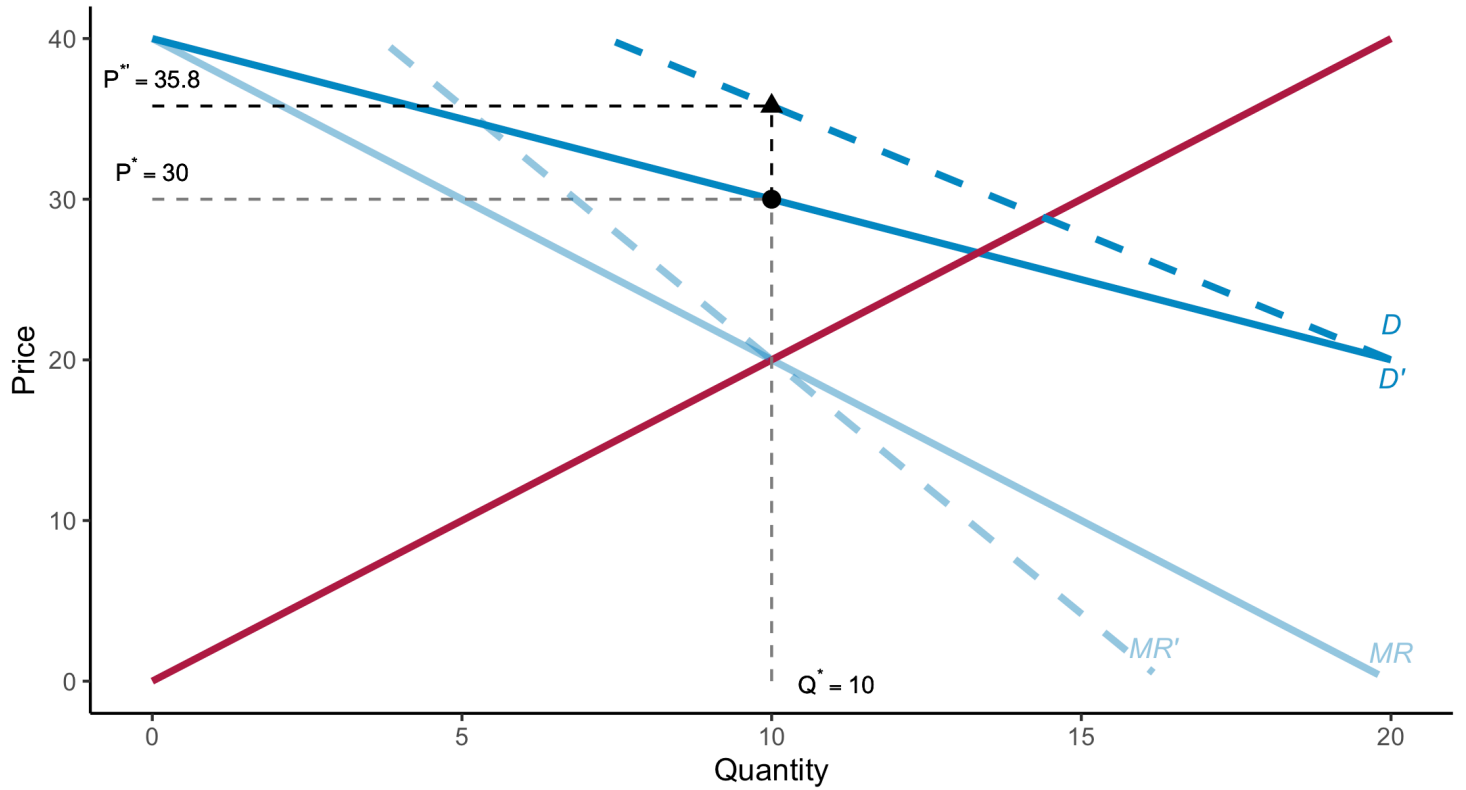

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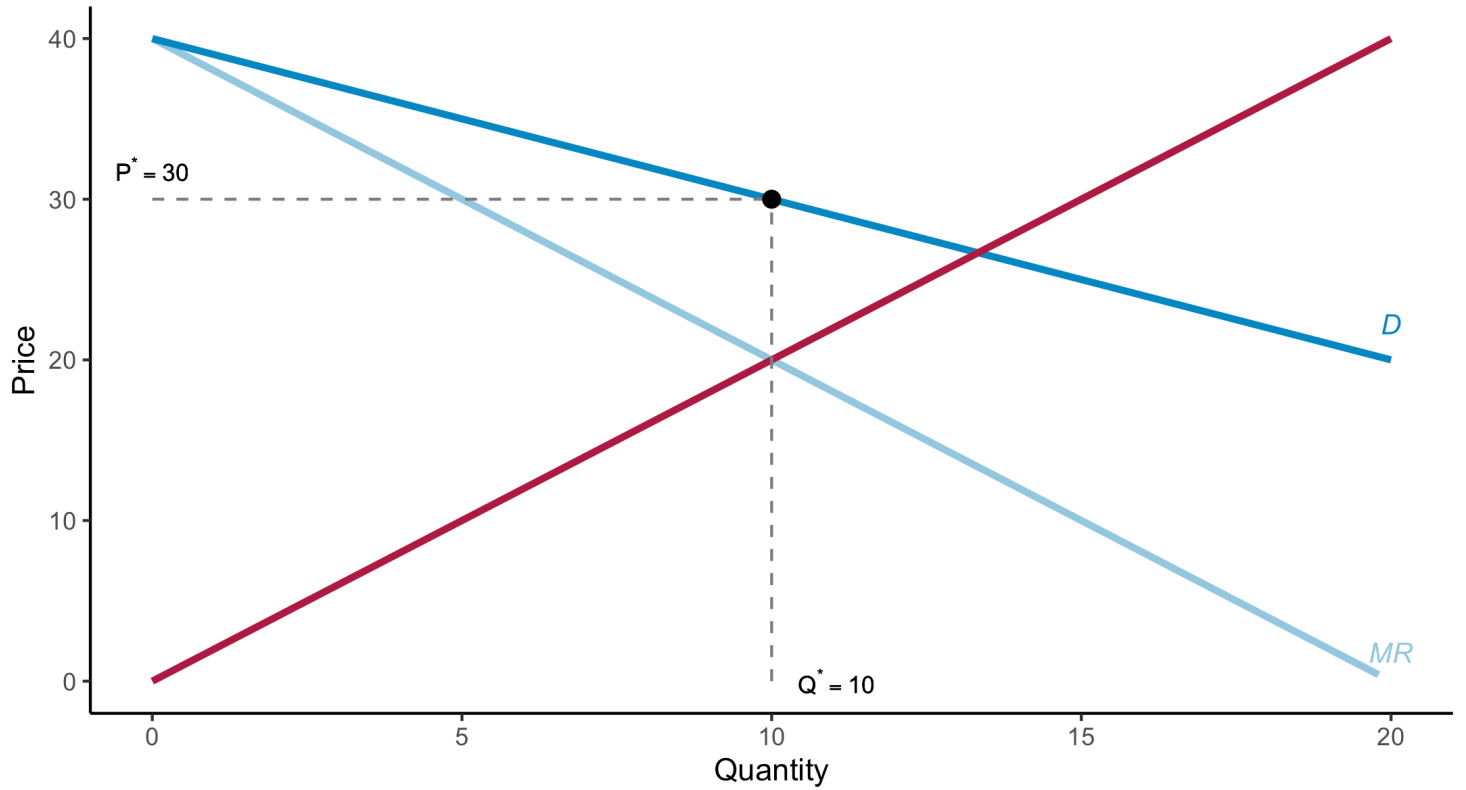
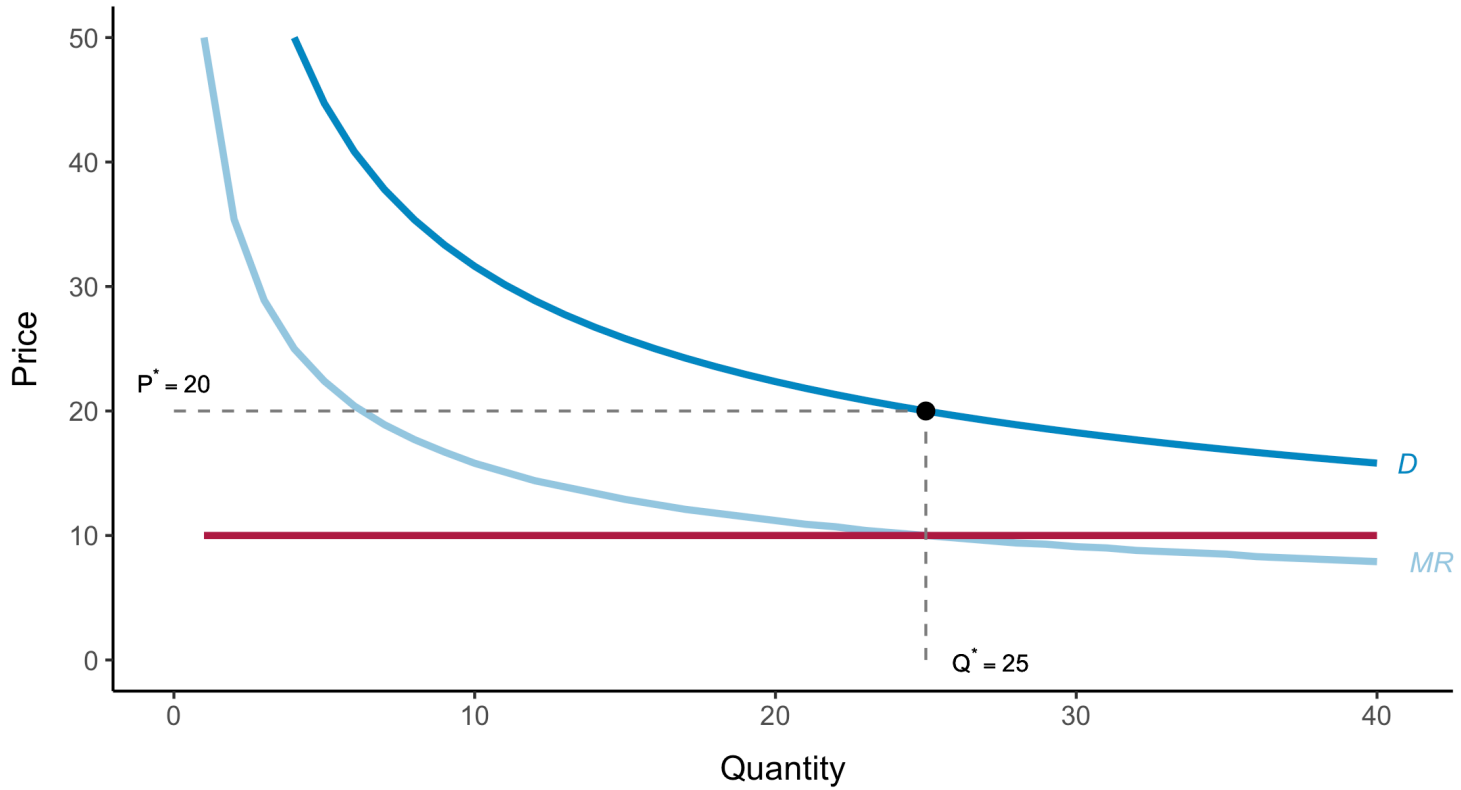


The effect of taxes

Under monopoly, price can sometimes rise by more than the amount of the tax.



$$P = a \cdot Q^{-b} \quad \Rightarrow R = P \cdot Q = a \cdot Q^{1-b} \quad \Rightarrow MR = a \cdot (1-b) \cdot Q^{-b}$$

The effect of taxes

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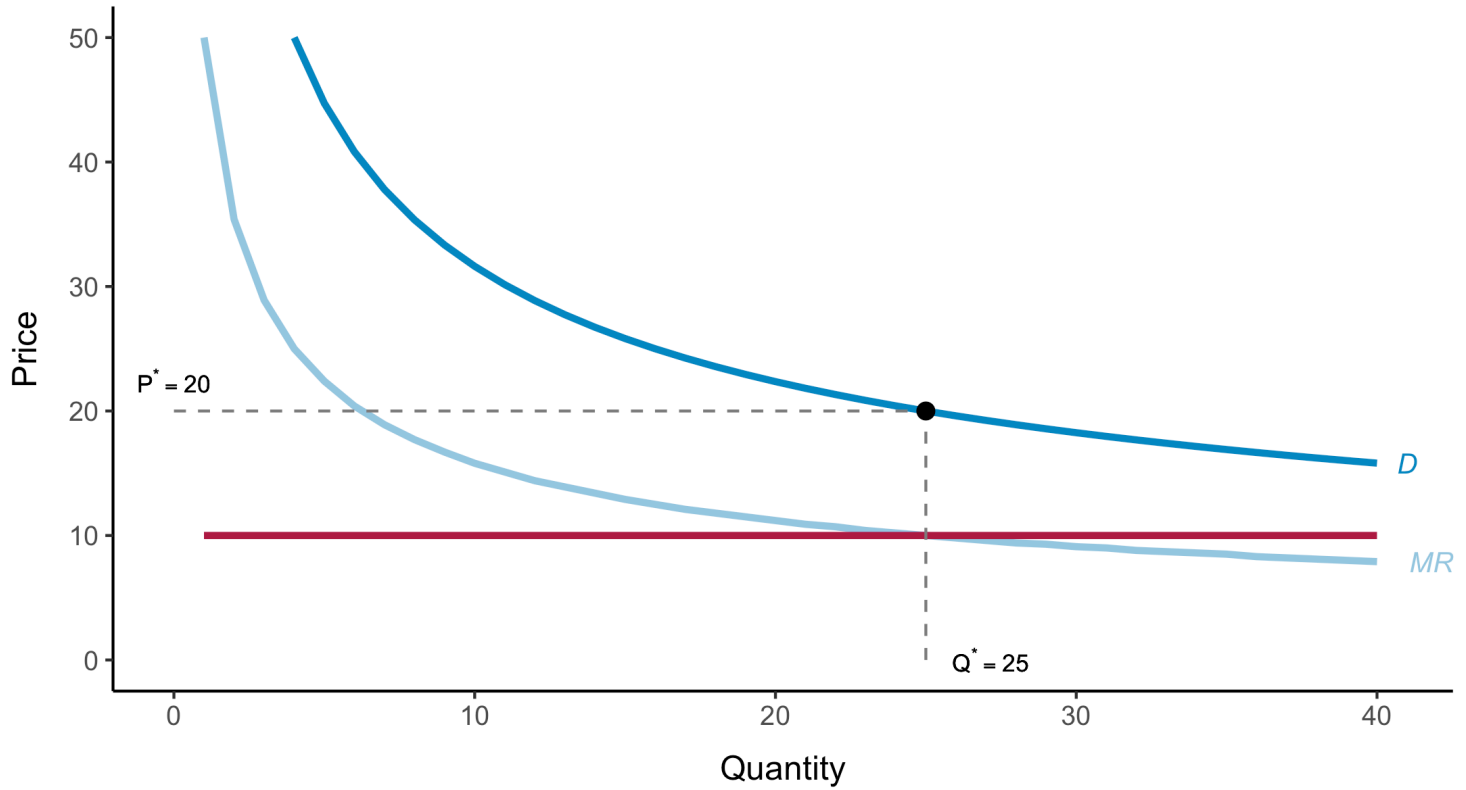
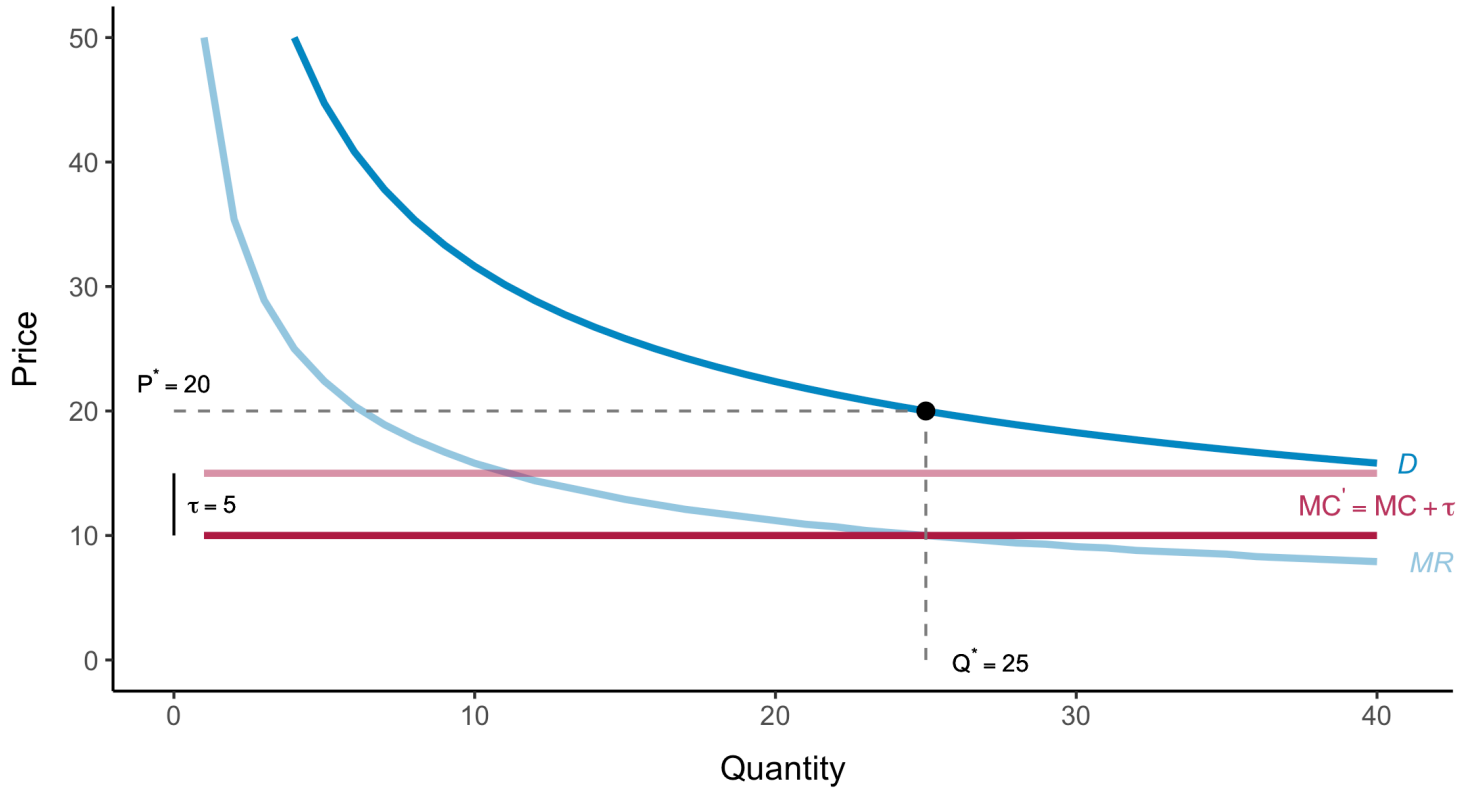


Suposse $a = 100$, $b = 0.5$, and $MC = 10$. Then, Q^* such that $MR = MC$, then $P^* = P(Q^*)$.

The effect of taxes

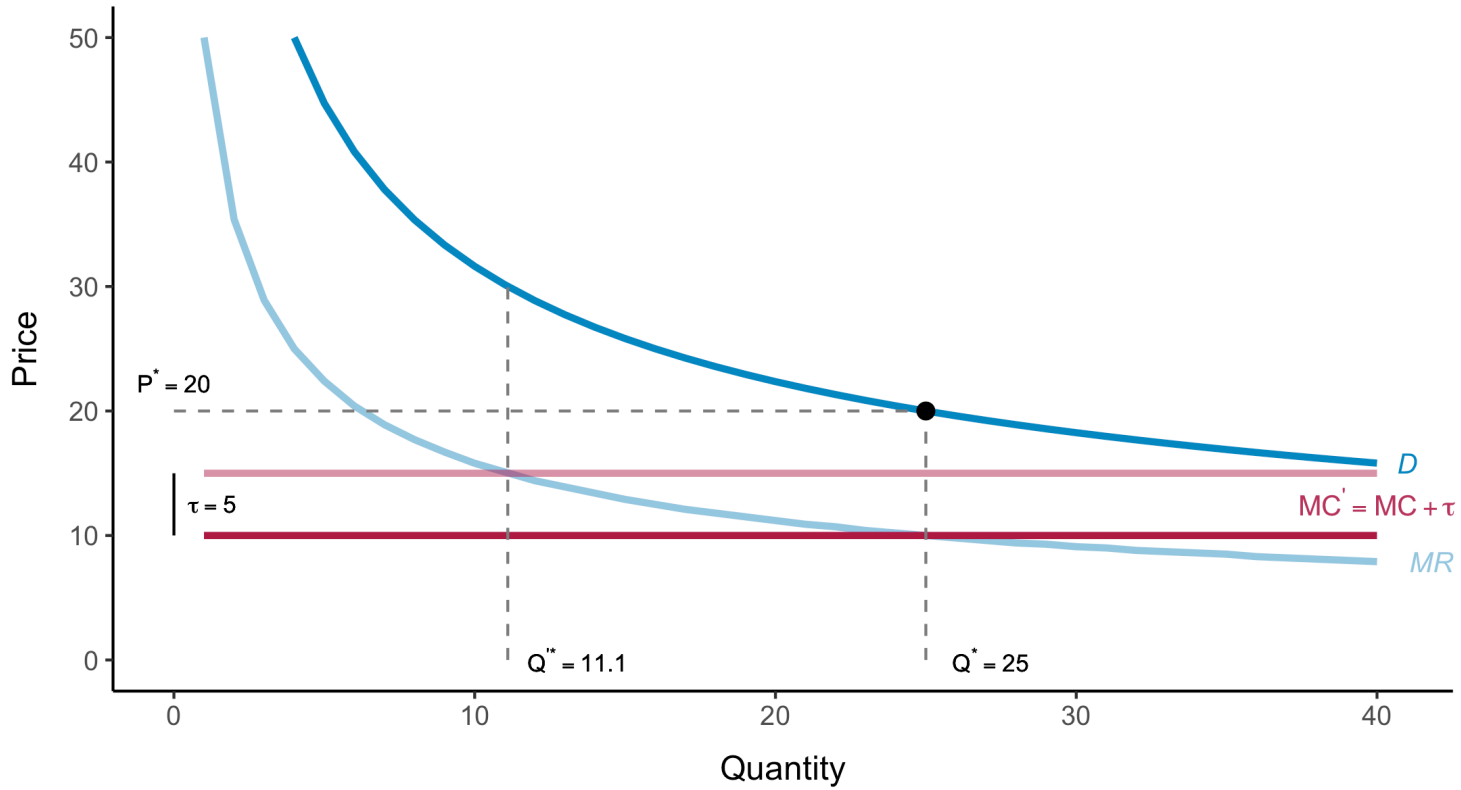
Under monopoly, price can sometimes rise by more than the amount of the tax.



Suppose a $5 tax per unit to the monopolist.

The effect of taxes

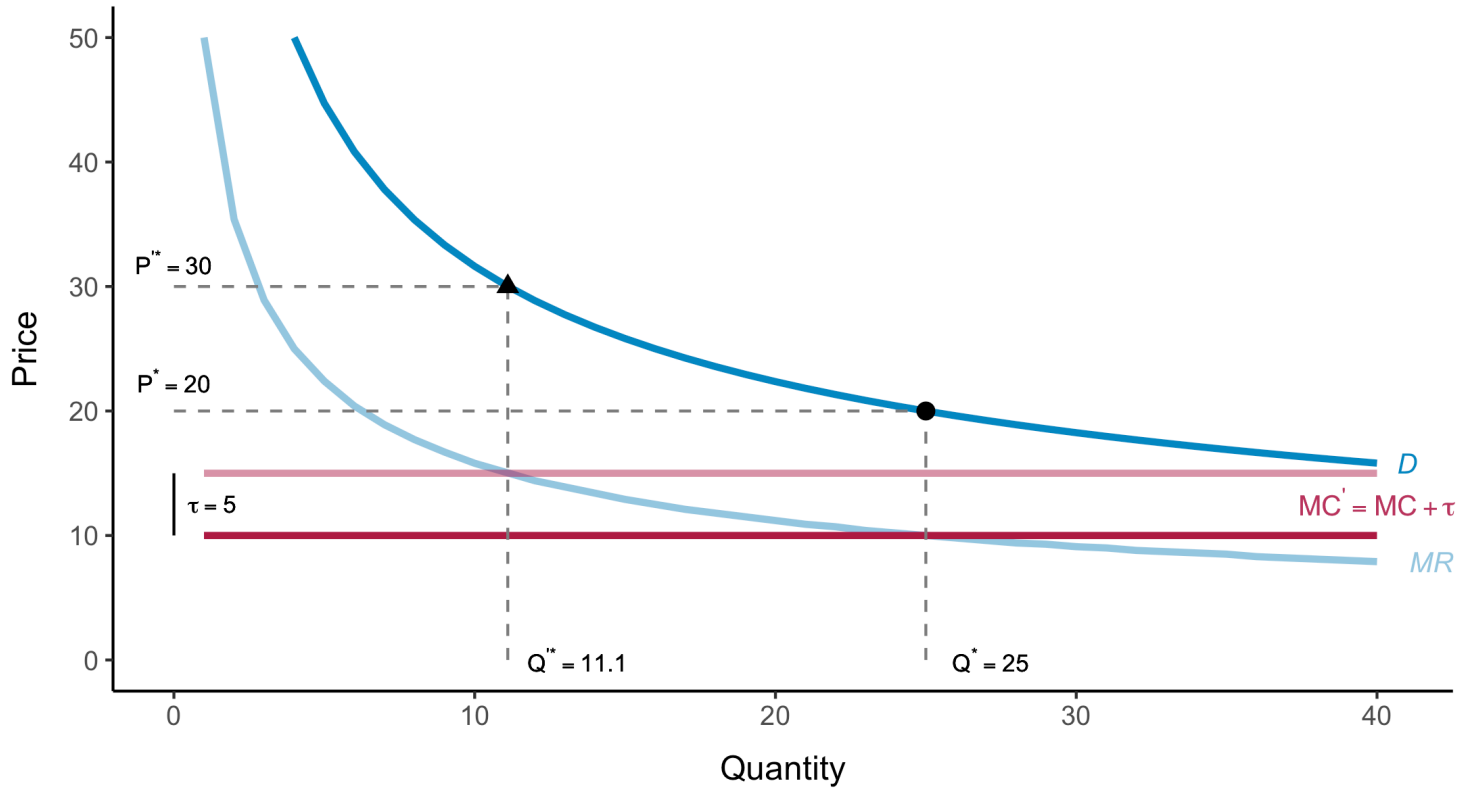
Under monopoly, price can sometimes rise by more than the amount of the tax.



At $MC' = MC + \tau \Rightarrow MC' = 10 + 5 = 15$, we have $MR(Q'^*) = 15 \quad \Rightarrow Q'^* = 11.11$

The effect of taxes

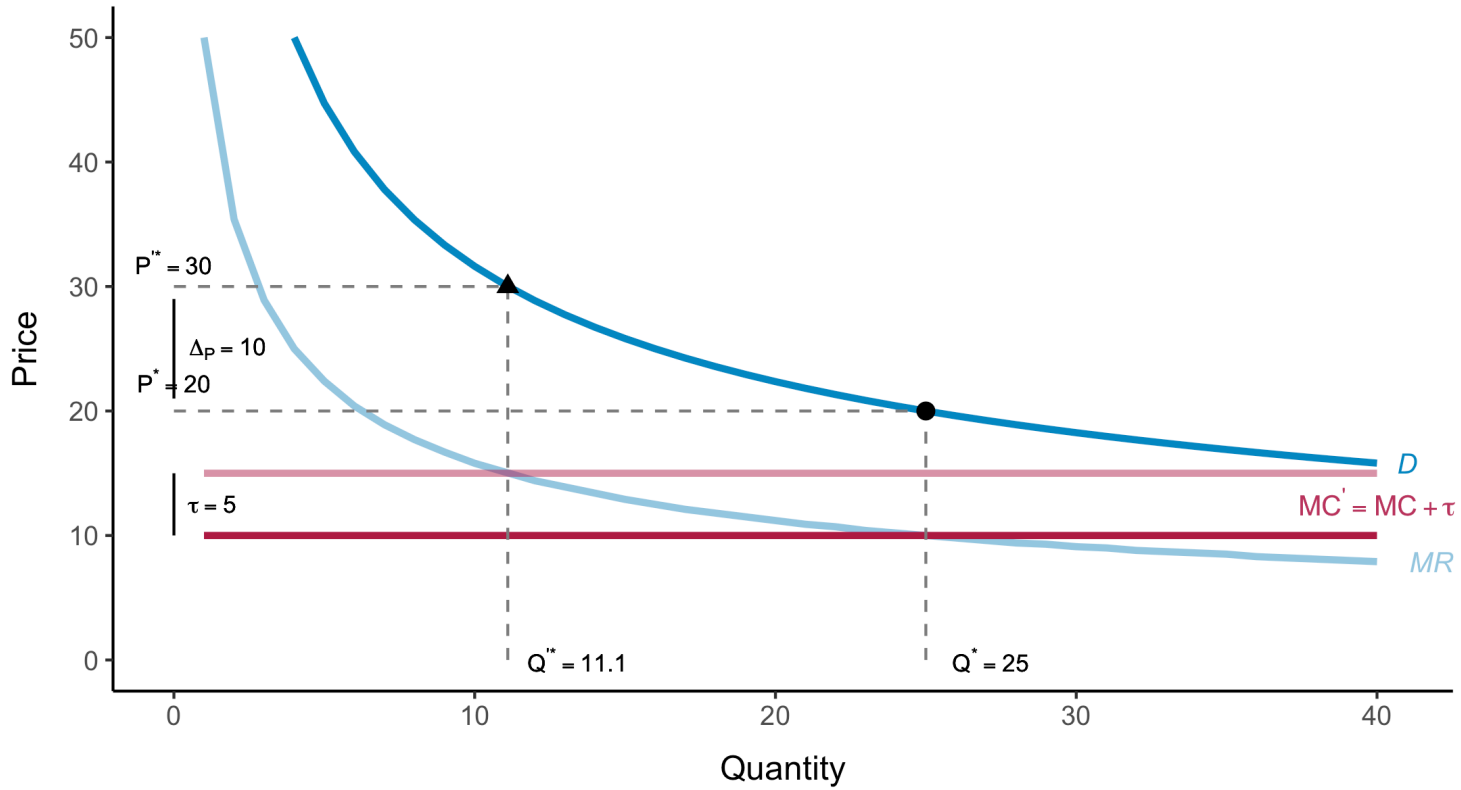
Under monopoly, price can sometimes rise by more than the amount of the tax.



Then $P'^* = P(Q'^*) = P(11.11) = 30$

The effect of taxes

Under monopoly, price can sometimes rise by more than the amount of the tax.



$\Delta MC = \tau = 5$, while $\Delta P = 30 - 20 = 10$.

Monopoly Power

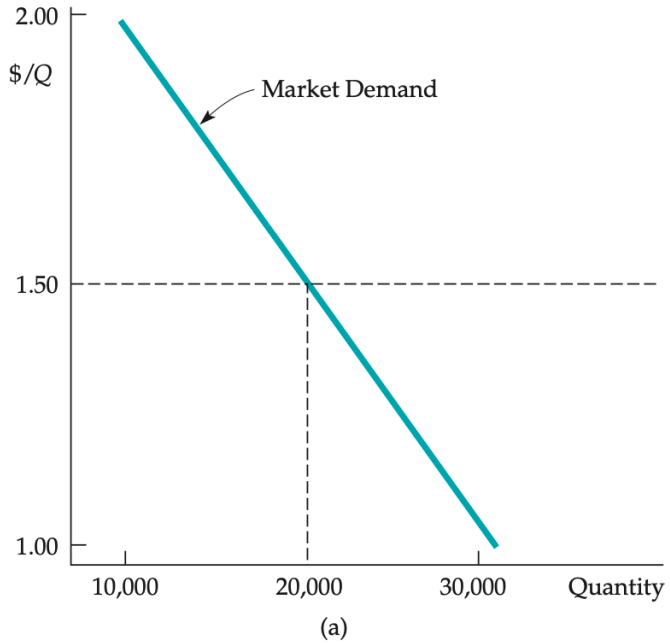
Monopoly Power

Pure monopoly is rare. Markets in which several firms compete with one another are much more common.

- **Market demand curve**
- **Firm demand curve**

Monopoly Power

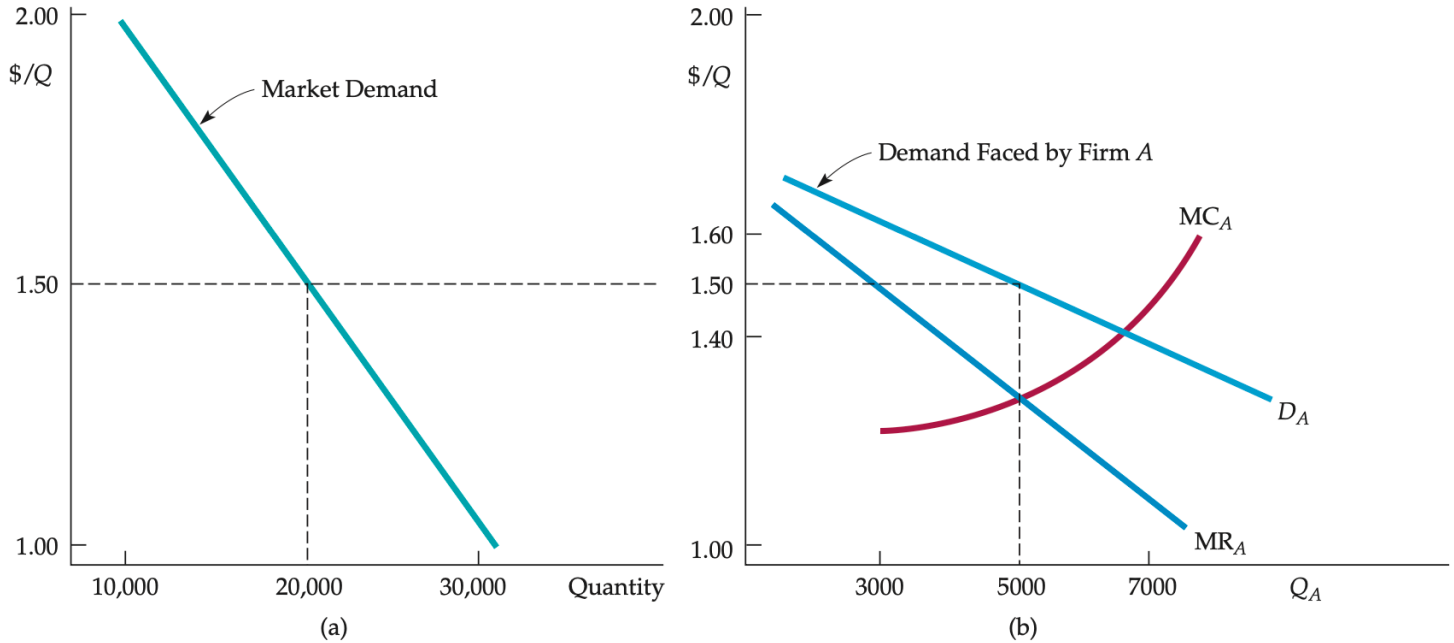
Suppose that four firms produce toothbrushes and have the market demand curve $Q = 50,000 - 20,000P$



These four firms are producing an aggregate of 20,000 toothbrushes per day (5000 each per day) and selling them at $1.50 each. What is the elasticity at this point?

Monopoly Power

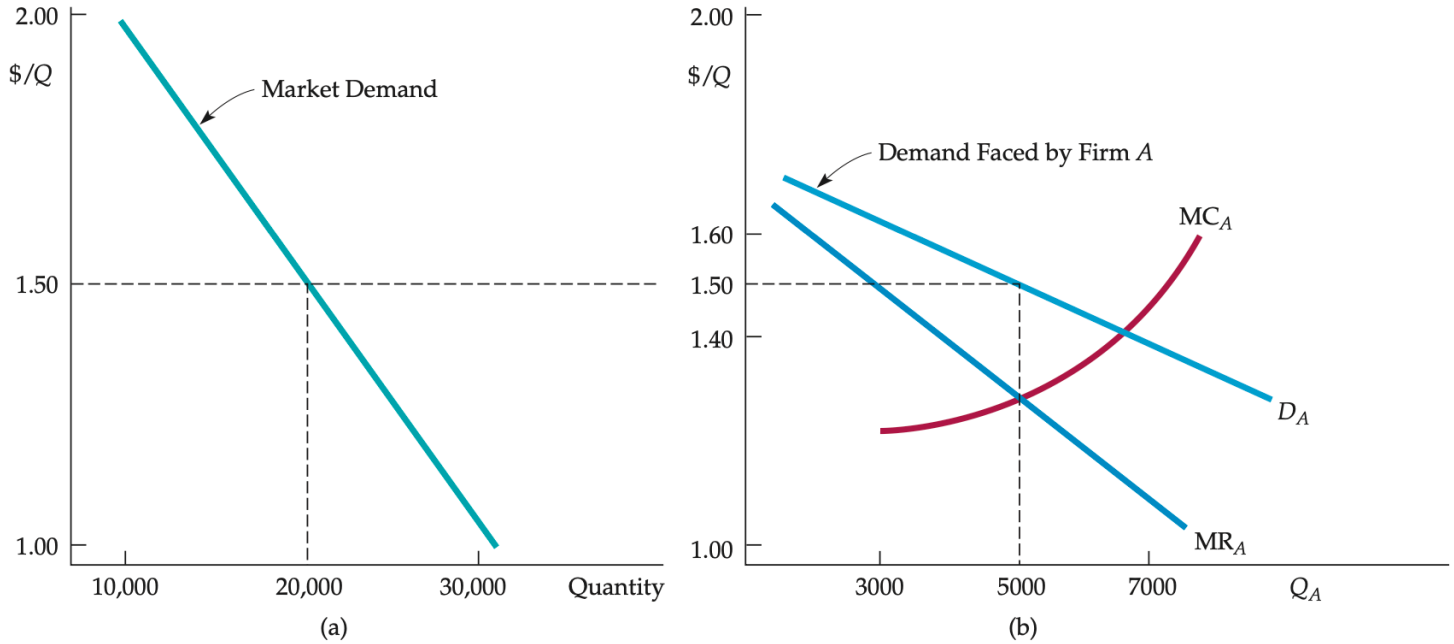
Firm A must assess its own demand curve, not just the market's, before lowering prices to boost sales.



The firm's demand curve D_A is much more elastic than the market demand curve. What is the D_A elasticity here?

Monopoly Power

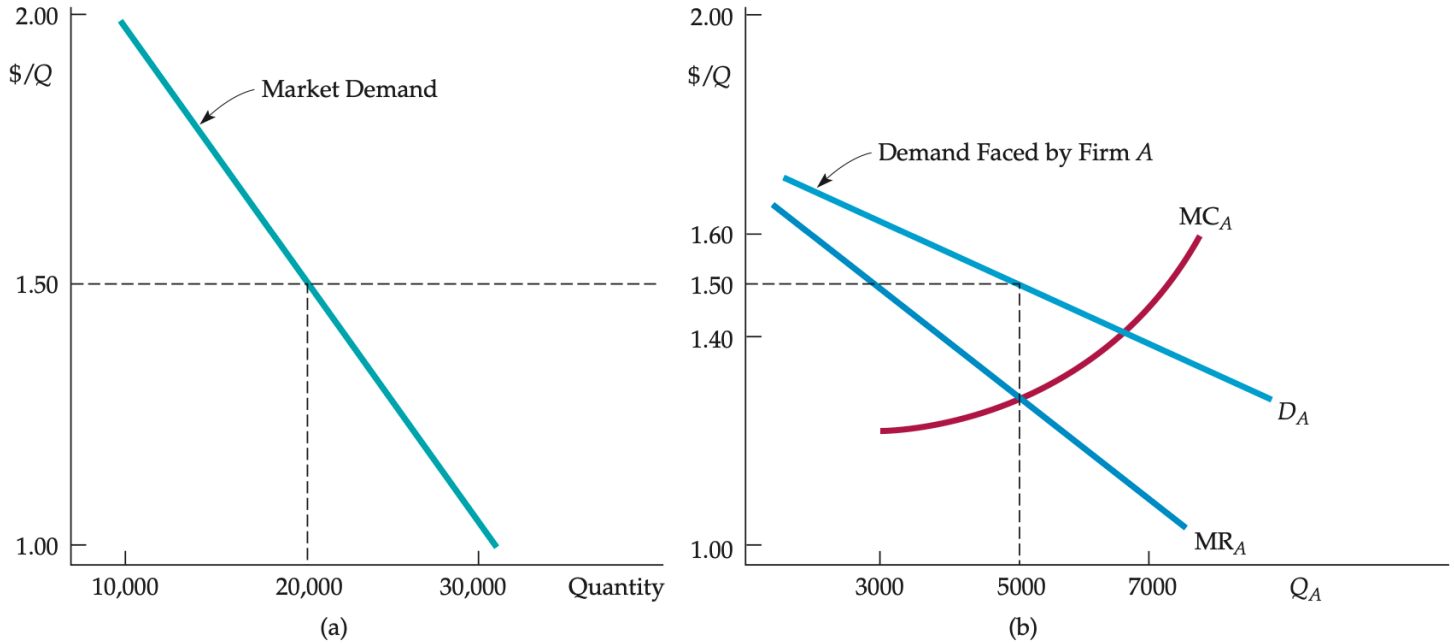
Firm A must assess its own demand curve, not just the market's, before lowering prices to boost sales.



Raising the price from 1.50 to 1.60, the firm expects sales to drop from 5000 to 3000 as consumers switch to competitors. If all firms raise prices, sales would fall only to 4500.

Monopoly Power

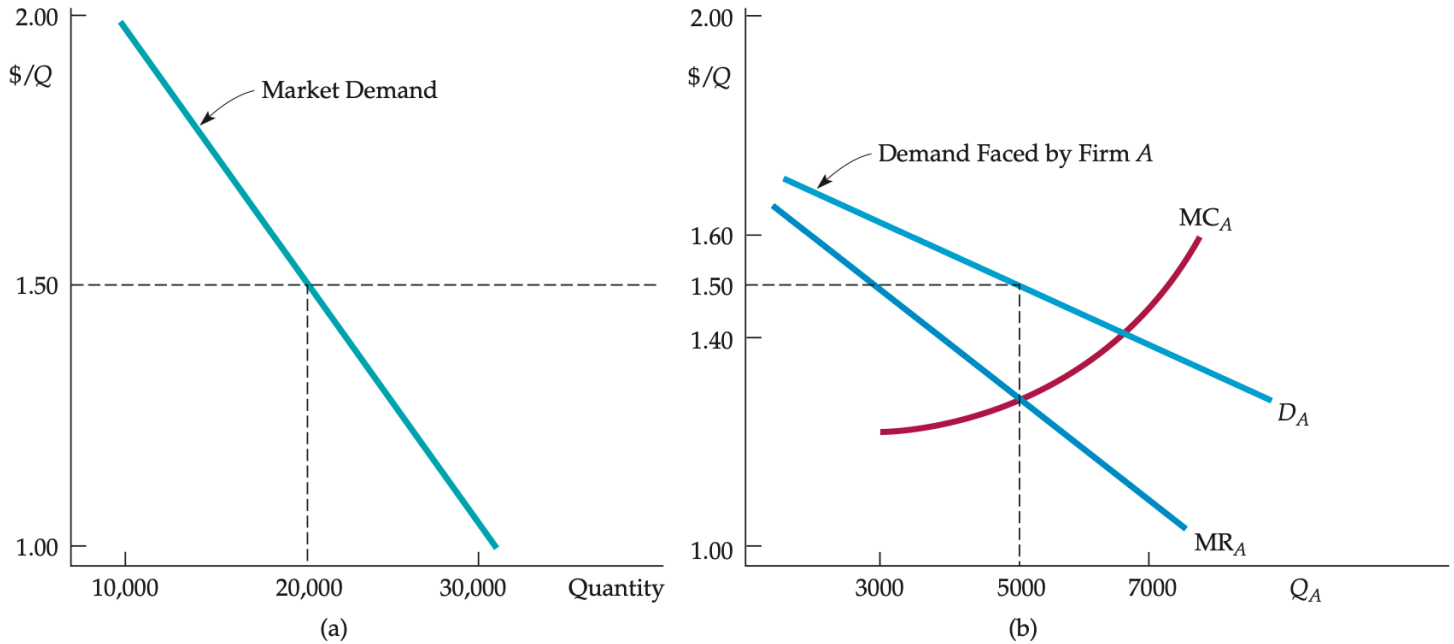
Firm A must assess its own demand curve, not just the market's, before lowering prices to boost sales.



Lowering its price from 1.50 to 1.40, Firm A expects sales to rise to 7000 but won't capture the entire market as some consumers prefer competitors, who may also cut prices.

Monopoly Power

Firm A is likely to face a demand curve which is more elastic than the market demand curve, but which is not infinitely elastic like the demand curve facing a perfectly competitive firm



Measuring Monopoly Power

- Competitive firm: price equals marginal cost
- Firm with monopoly power: price exceeds marginal cost

Lerner Index of Monopoly Power: Measure of monopoly power calculated as excess of price over marginal cost as a fraction of price

$$L = (P - MC)/P \in [0, 1]$$

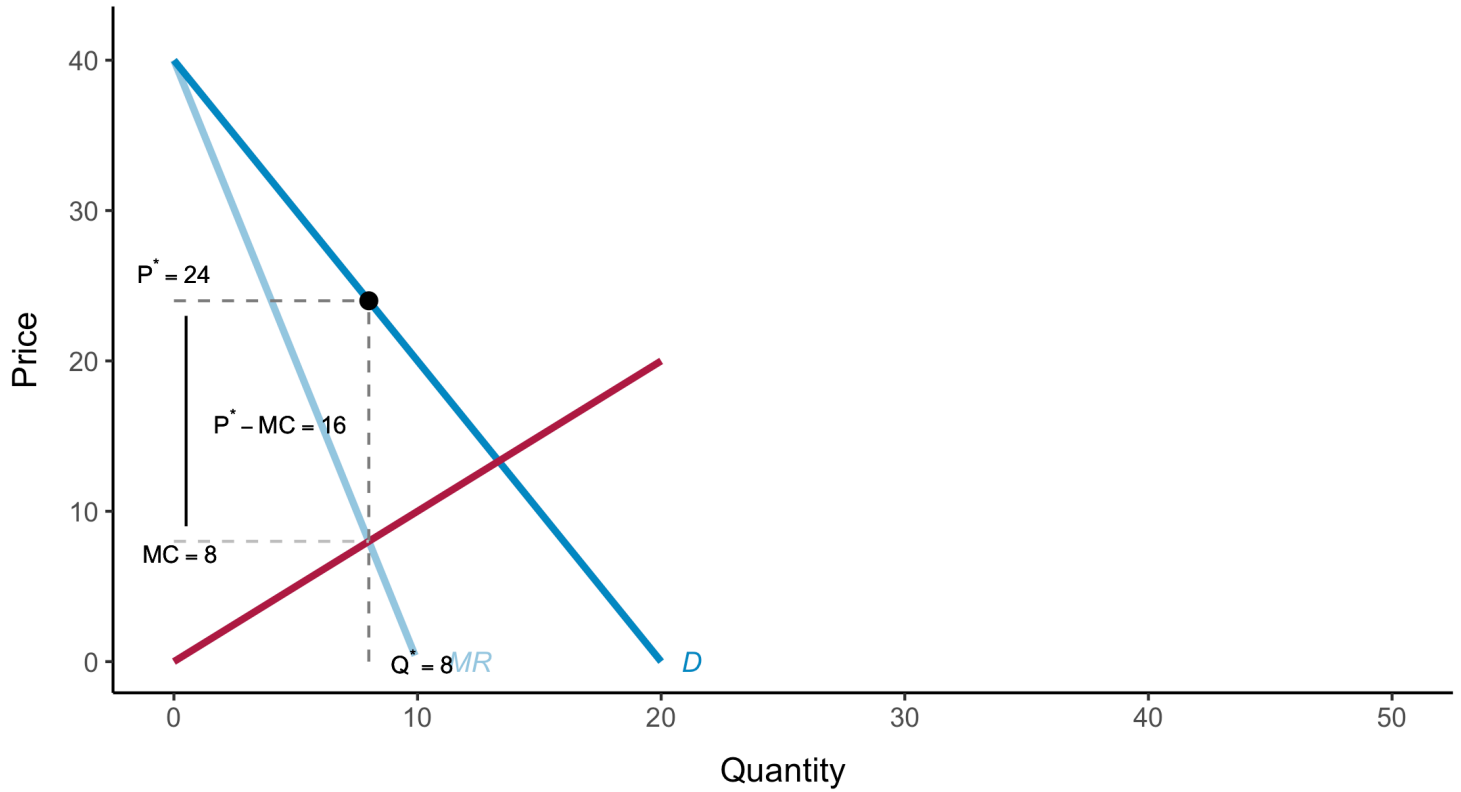
- when $L \to 1$ greater degree of monopoly power
- when $L \to 0$ closer to a competitive market

$$L = (P - MC)/P = -1/\varepsilon_d$$

where ε_d represents the elasticity of the firm's demand curve.

Pricing with Monopoly Power

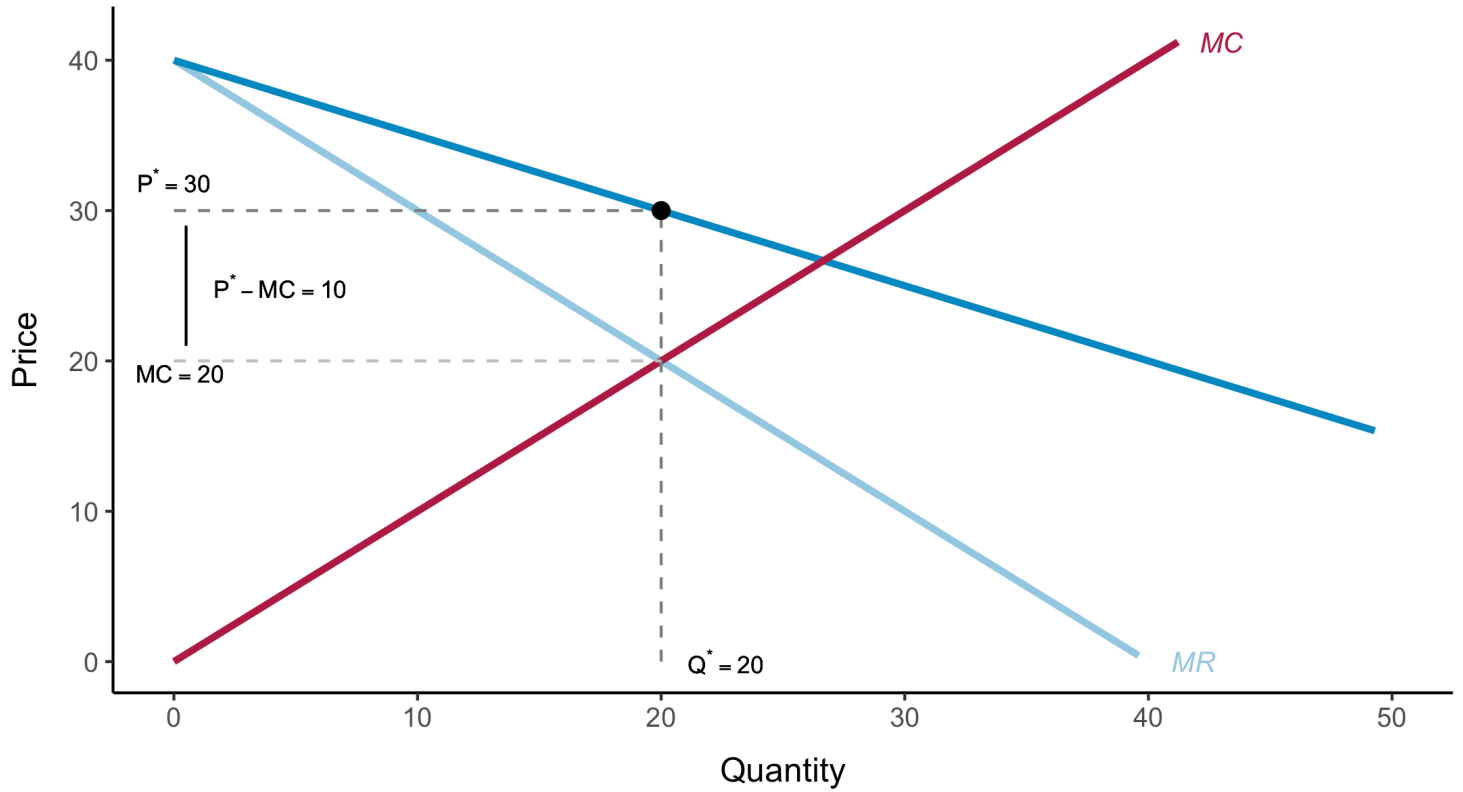
Rule of thumb: $P = MC/[1 + (1/\varepsilon_d)]$. But, $\varepsilon_d =$ elasticity of demand for the firm, not the elasticity of market demand, $\varepsilon_{\bar{d}}$.



Markup: $(P - MC)/P = 16/24 = 0.66 = -(1/\varepsilon_d)$. Then, $\varepsilon_d = -1/0.66 \approx -1.5$.

Pricing with Monopoly Power

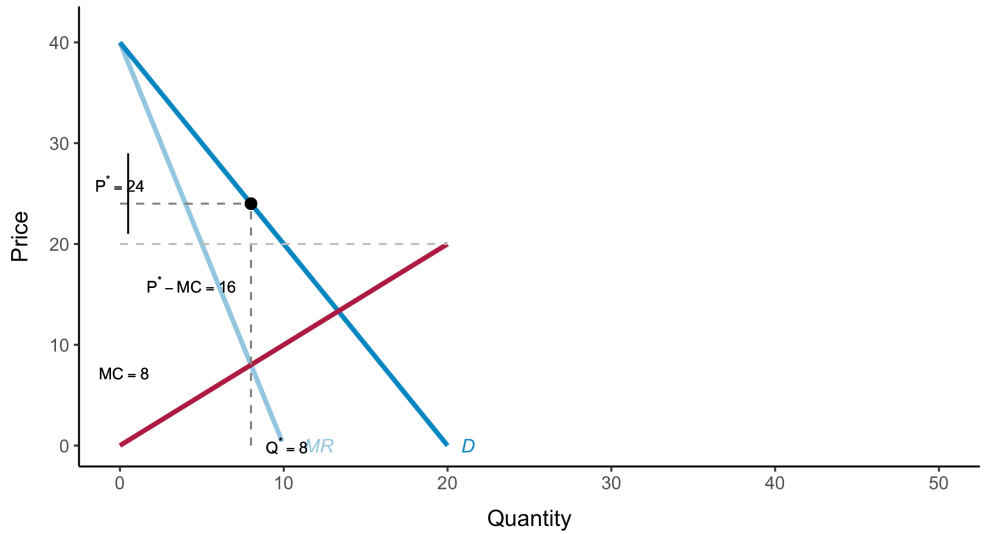
Rule of thumb: $P = MC/[1 + (1/\varepsilon_d)]$. But, $\varepsilon_d =$ elasticity of demand for the firm, not the elasticity of market demand, $\varepsilon_{\bar{d}}$.

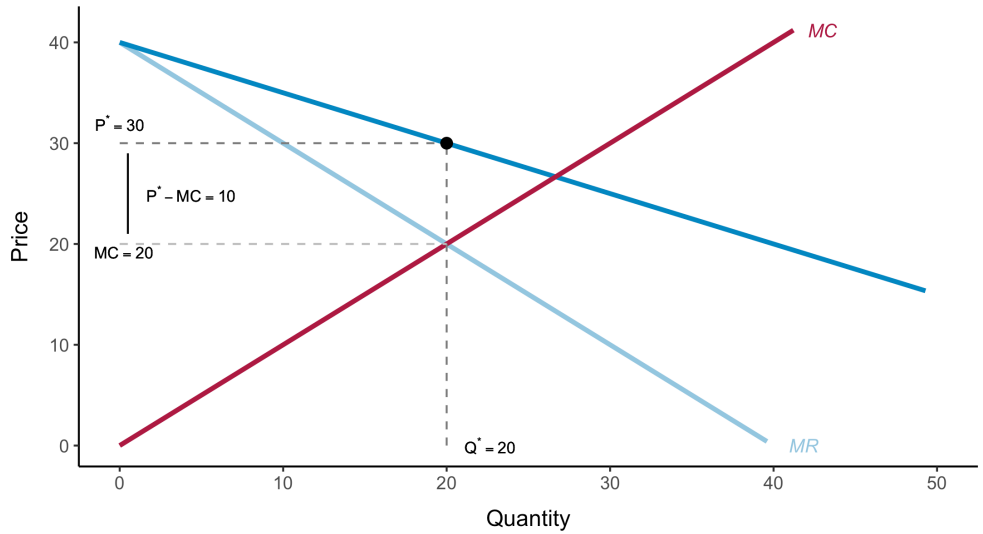


Markup: $(P - MC)/P = 10/30 = 0.33 = -(1/\varepsilon_d)$. Then, $\varepsilon_d = -1/0.33 \approx -3$.

Pricing with Monopoly Power

Monopoly power is the ability to price above marginal cost, with the markup inversely related to demand elasticity.





The less elastic its demand curve, the more monopoly power a firm has.

Sources of Monopoly Power

Sources of Monopoly Power

Monopoly power depends on a firm's demand elasticity. So, why do some firms (e.g., supermarkets) face more elastic demand than others (e.g., designer clothing brands)?

1. Elasticity of Market Demand

2. Number of firms

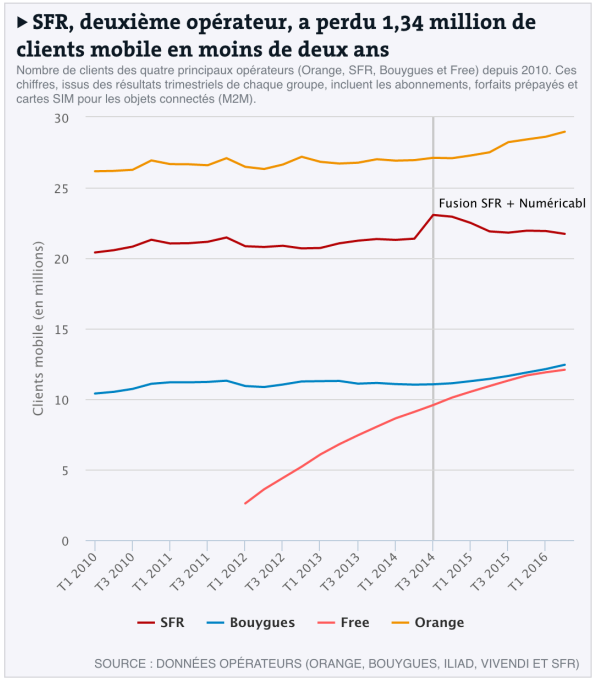
3. Interactions among firms

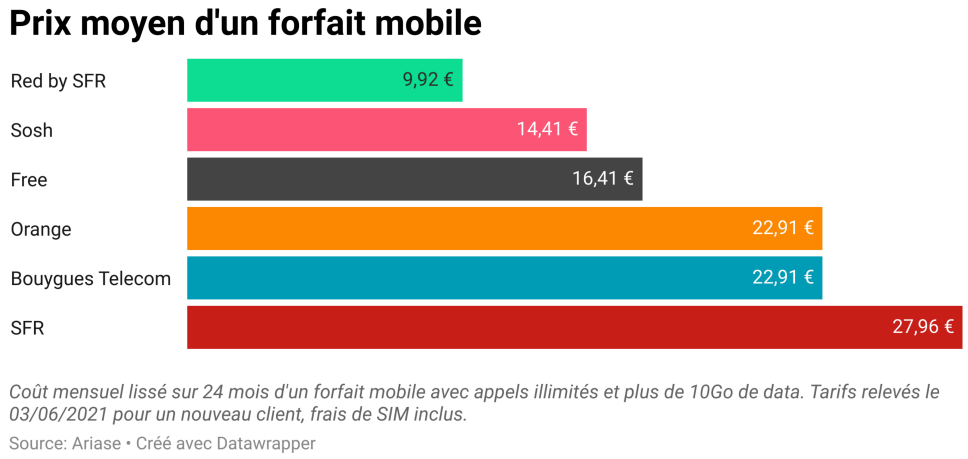
1. Elasticity of Market Demand

- A pure monopolist's demand curve **is** the market demand curve.
- If demand is highly elastic, even a monopolist will have **limited** pricing power.
- Market elasticity sets a **lower bound** on firm-level elasticity.
- Example: OPEC vs. coffee markets—OPEC had strong monopoly power due to inelastic oil demand, whereas coffee producers faced more elastic demand, limiting price control.

2. Number of Firms

- More firms = **less monopoly power** for each firm.
- Key factor: **market concentration**—if a few firms dominate, they may retain power.
- High market share by a few firms allows pricing influence, **but competition and new entrants** reduce this power.
- Firms often **create barriers to entry** (e.g., patents, government licensing, scale economies) to **maintain power**.





3. Interactions Among Firms

- Monopoly power also depends on **competition vs. cooperation**:
  - **Aggressive competition** → Less pricing power.
  - **Collusion (explicit or implicit)** → More pricing power.
- Even with few firms, **intense price wars** can drive prices close to competitive levels.
- **Market power changes over time** as new firms enter, demand shifts, or firms adjust strategies.

PRESS RELEASE | Jul 8, 2021 | Brussels | 7 min read

Antitrust: Commission fines car manufacturers €875 million for restricting competition in emission cleaning for new diesel passenger cars

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The European Commission has found that Daimler, BMW and Volkswagen group (Volkswagen, Audi and Porsche) breached EU antitrust rules by colluding on technical development in the area of nitrogen oxide cleaning. The Commission has imposed a fine of € 875 189 000. Daimler was not fined, as it revealed the existence of the cartel to the Commission. All parties acknowledged their involvement in the cartel and agreed to settle the case.

Executive Vice-President of the Commission Margrethe **Vestager**, in charge of competition policy said: *"The five car manufacturers Daimler, BMW, Volkswagen, Audi and*

The Social Costs of Monopoly Power

The Social Costs of Monopoly Power

Competitive Market

$$P_C^* = MC$$

$$Q_C^*(P_C^*)$$

Monopoly (Power)

$$P_M^* > MC$$

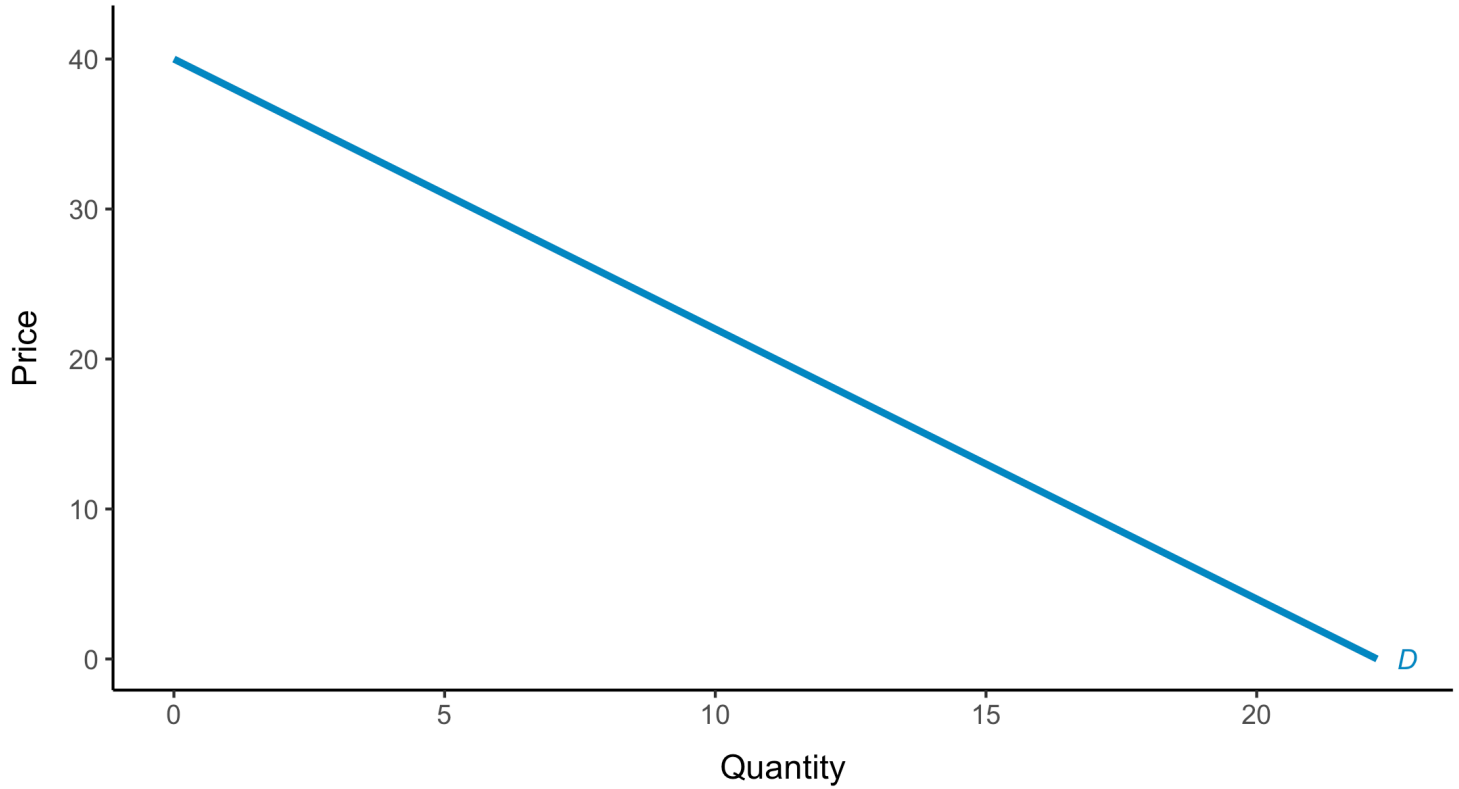
$$Q_M^*(P_M^*) < Q_C^*(P_C^*)$$

Key Questions:

- Is consumer welfare higher or lower under monopoly?
- Do producers benefit more, and at whose expense?
- How significant is the deadweight loss to society?

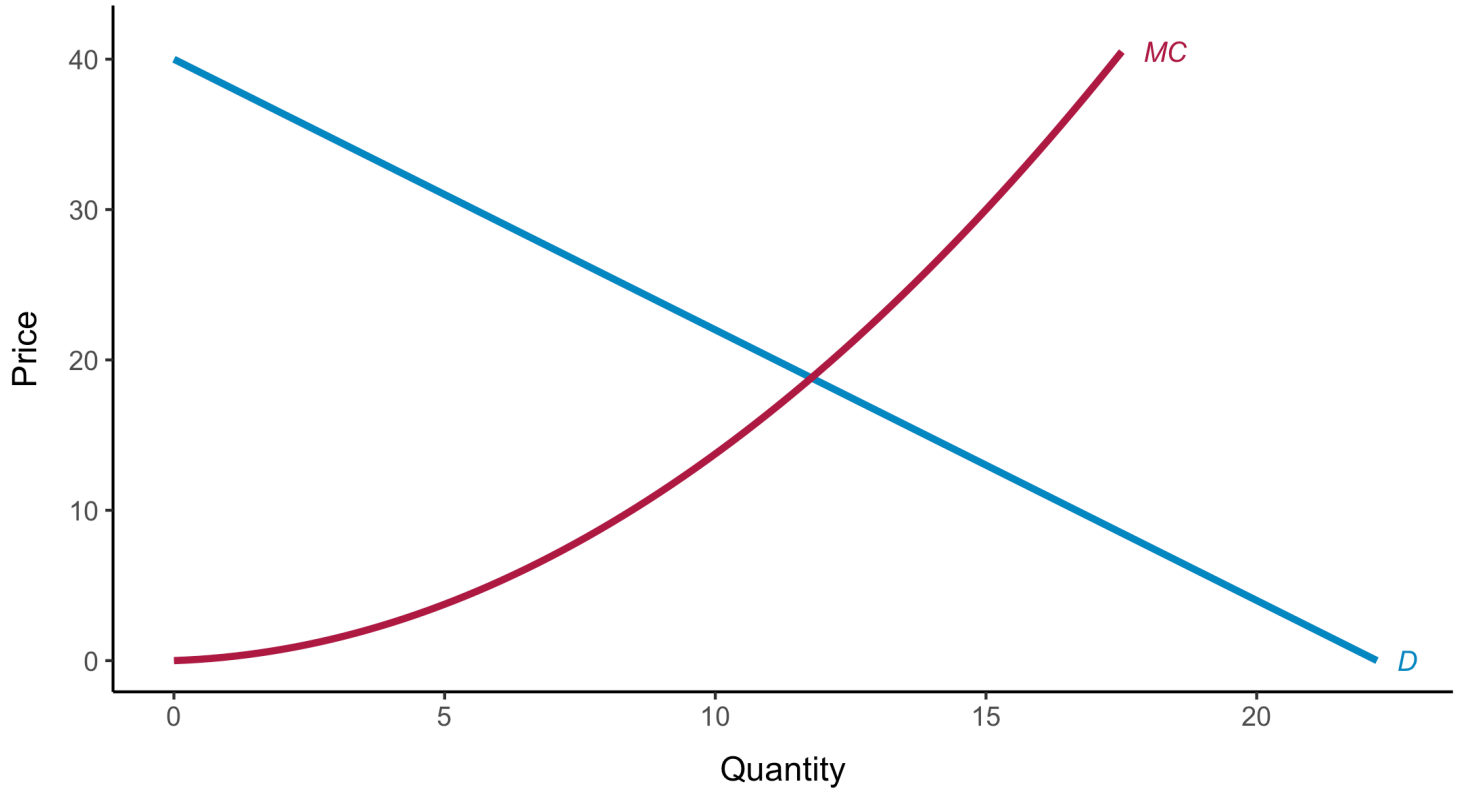
The Social Costs of Monopoly Power

Suppose $Q = 40 - 1.8 \cdot P$



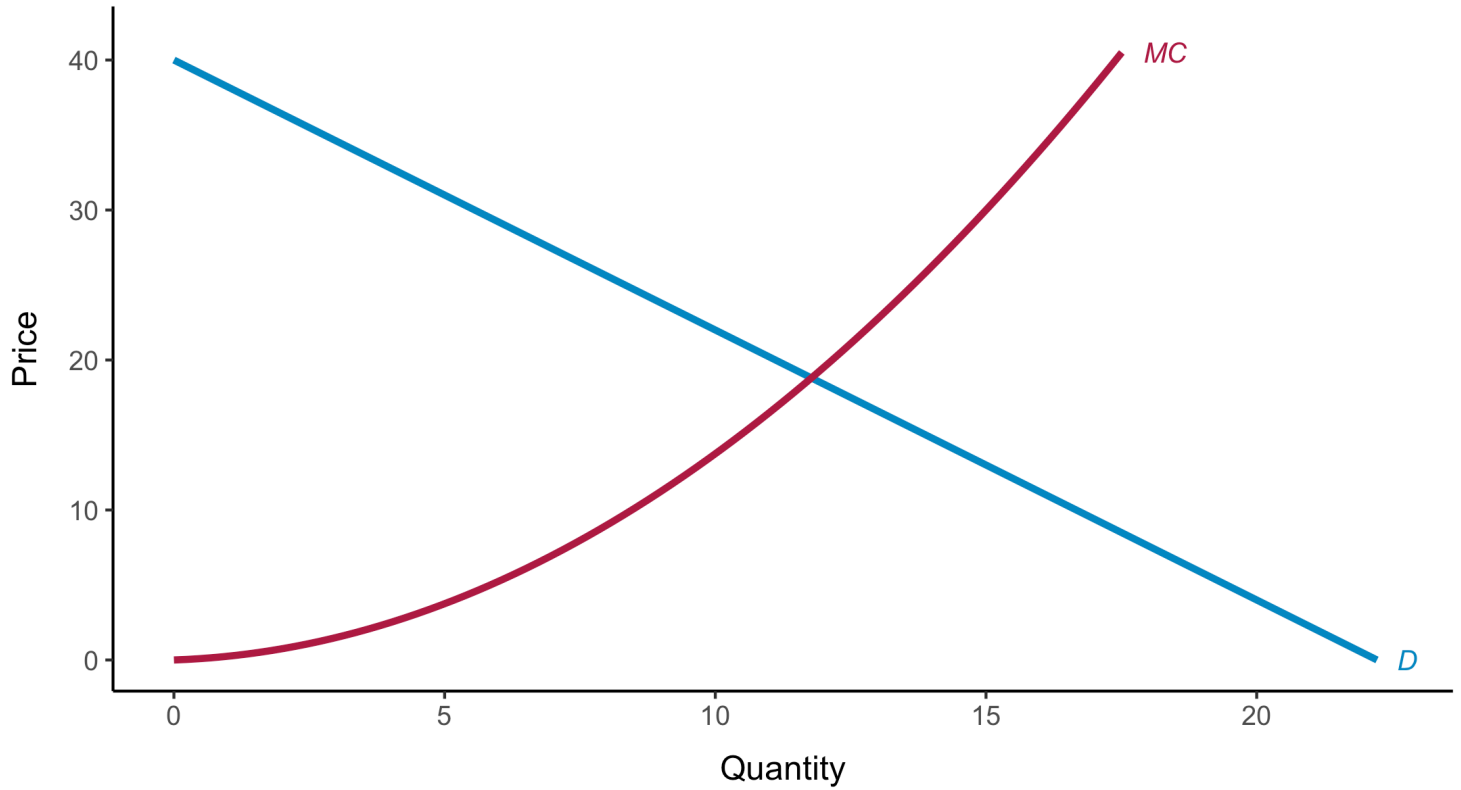
The Social Costs of Monopoly Power

Suppose $C(Q) = \frac{1}{16}Q^2 + \frac{1}{24}Q^3$. Thus, $MC = \frac{1}{8}Q + \frac{1}{8}Q^2$.



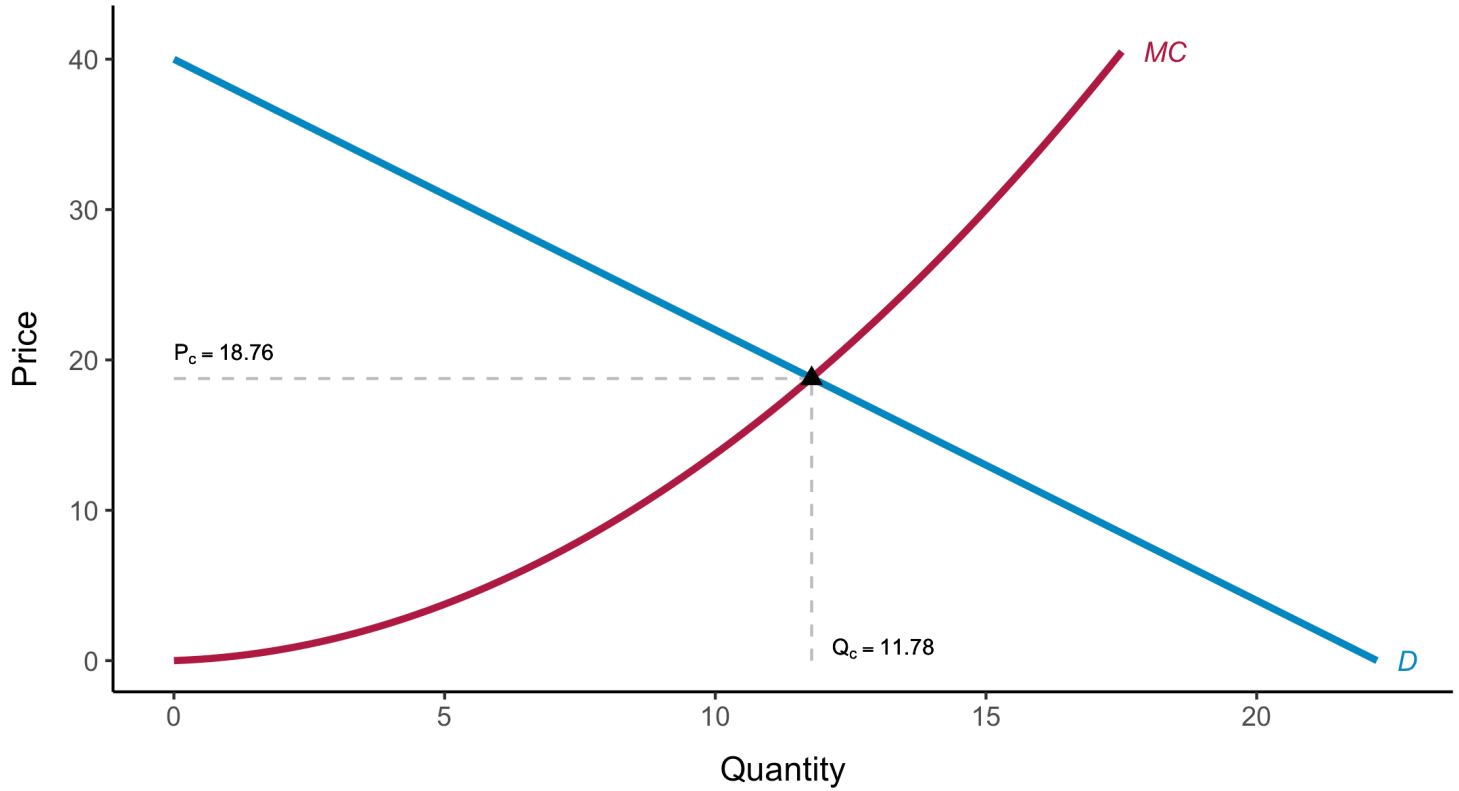
The Social Costs of Monopoly Power

We assume that the competitive market and the monopolist have the same cost curves.



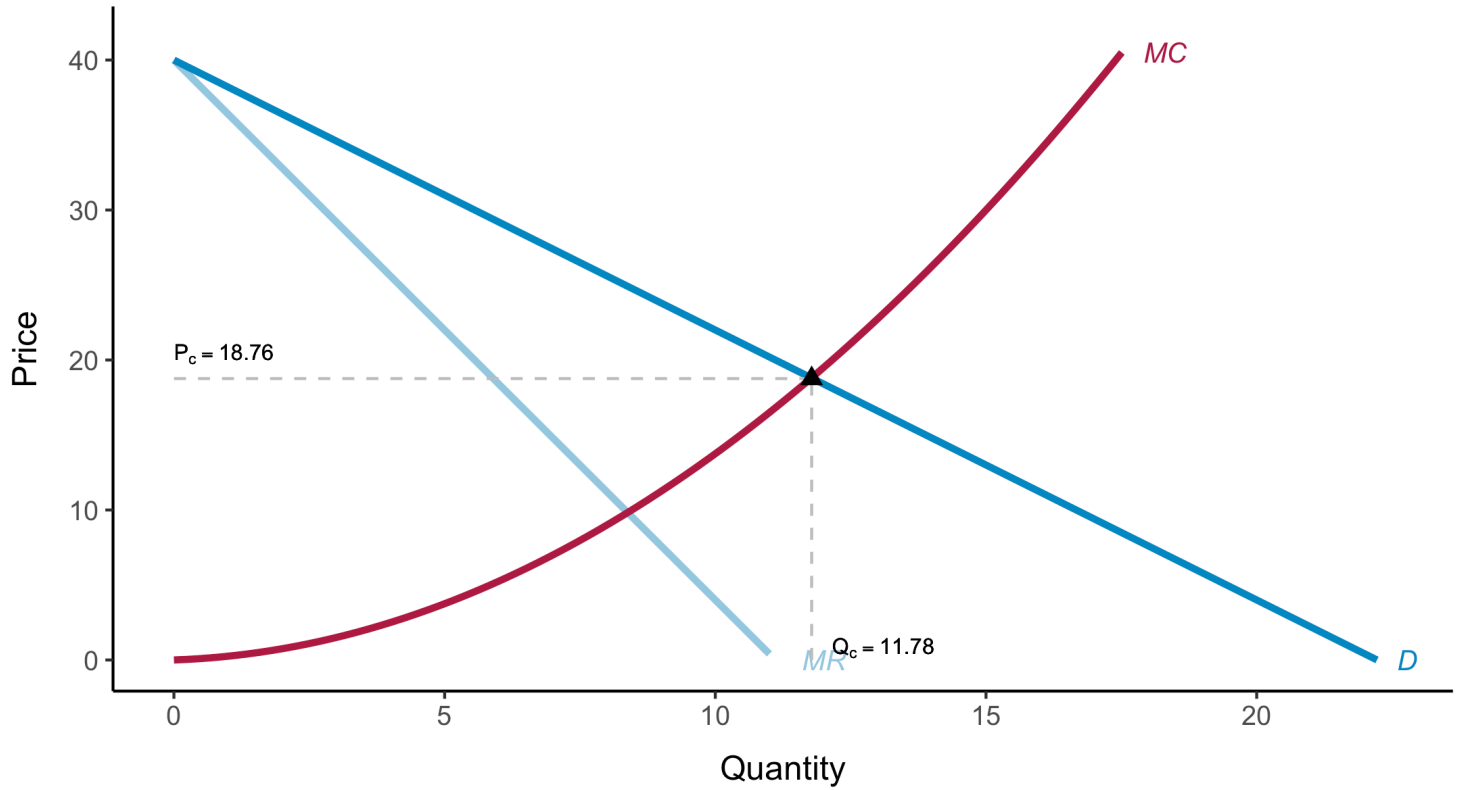
The Social Costs of Monopoly Power

Competitive market equilibrium: $Q_C^* \approx 11.8$ and $P_C^* \approx 18.8$



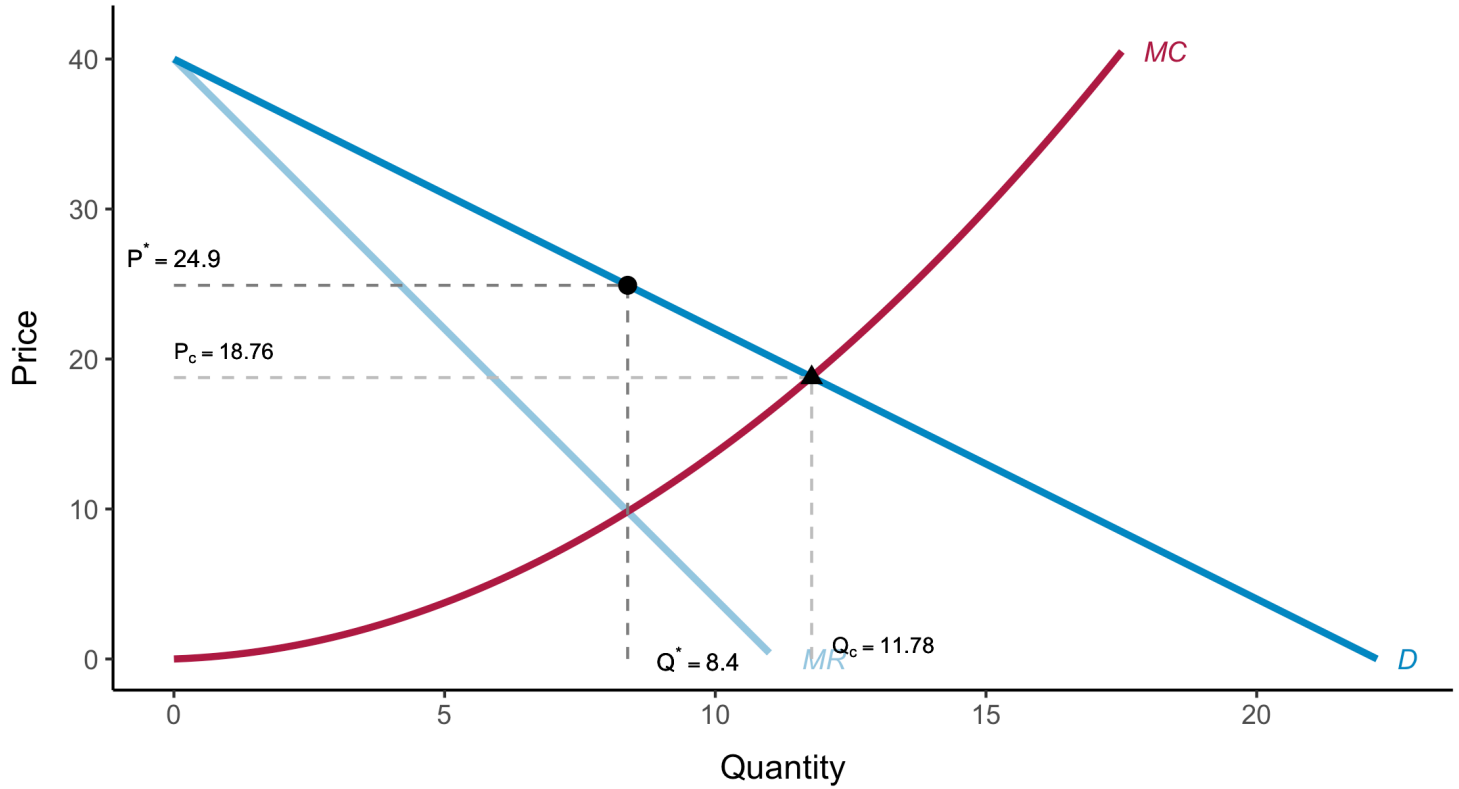
The Social Costs of Monopoly Power

With monopoly power, firms maximize profits such that $MR = MC$.



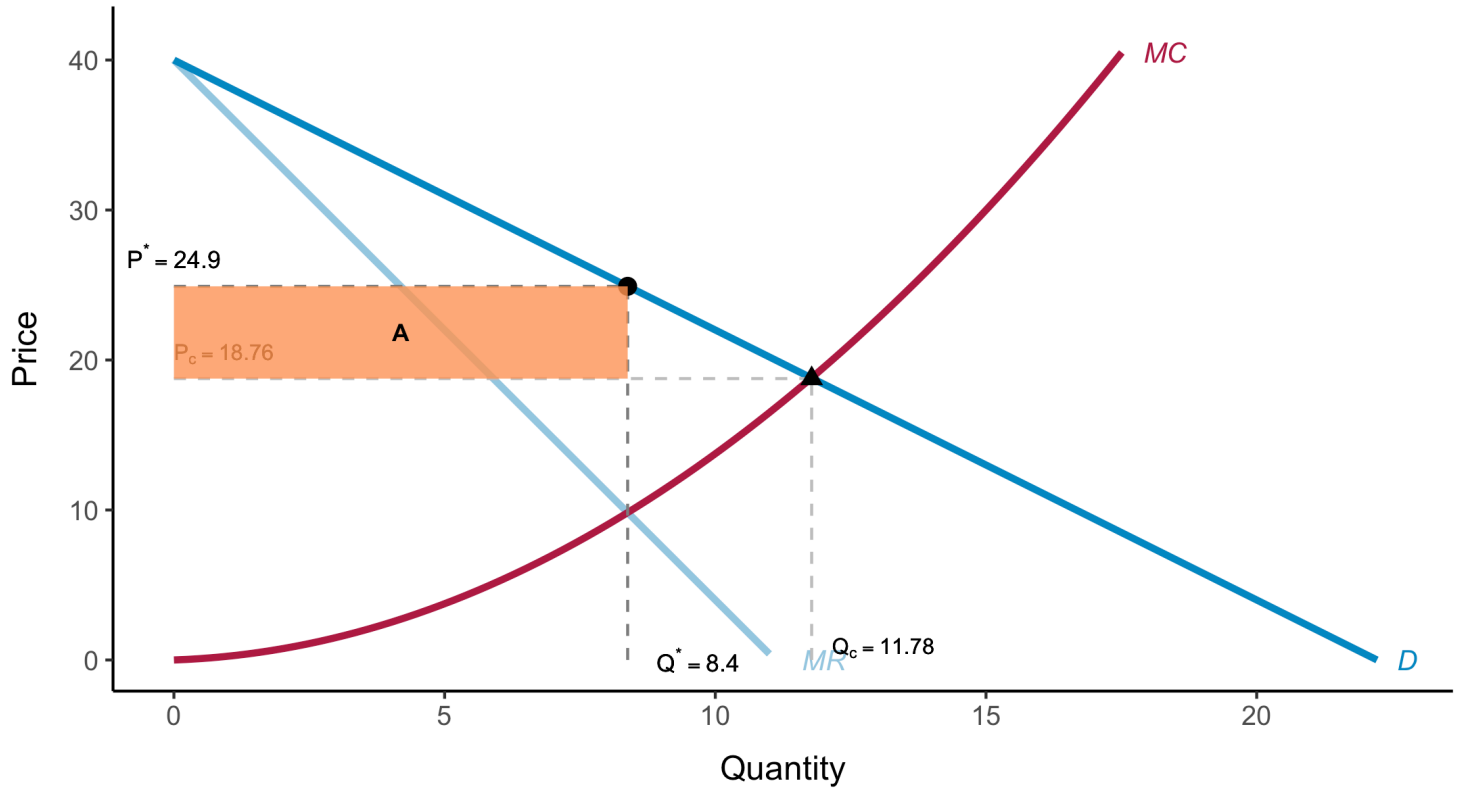
The Social Costs of Monopoly Power

With monopoly power, firms set $P_M^* \approx 24.9$ and $Q_M^* \approx 8.4$



The Social Costs of Monopoly Power

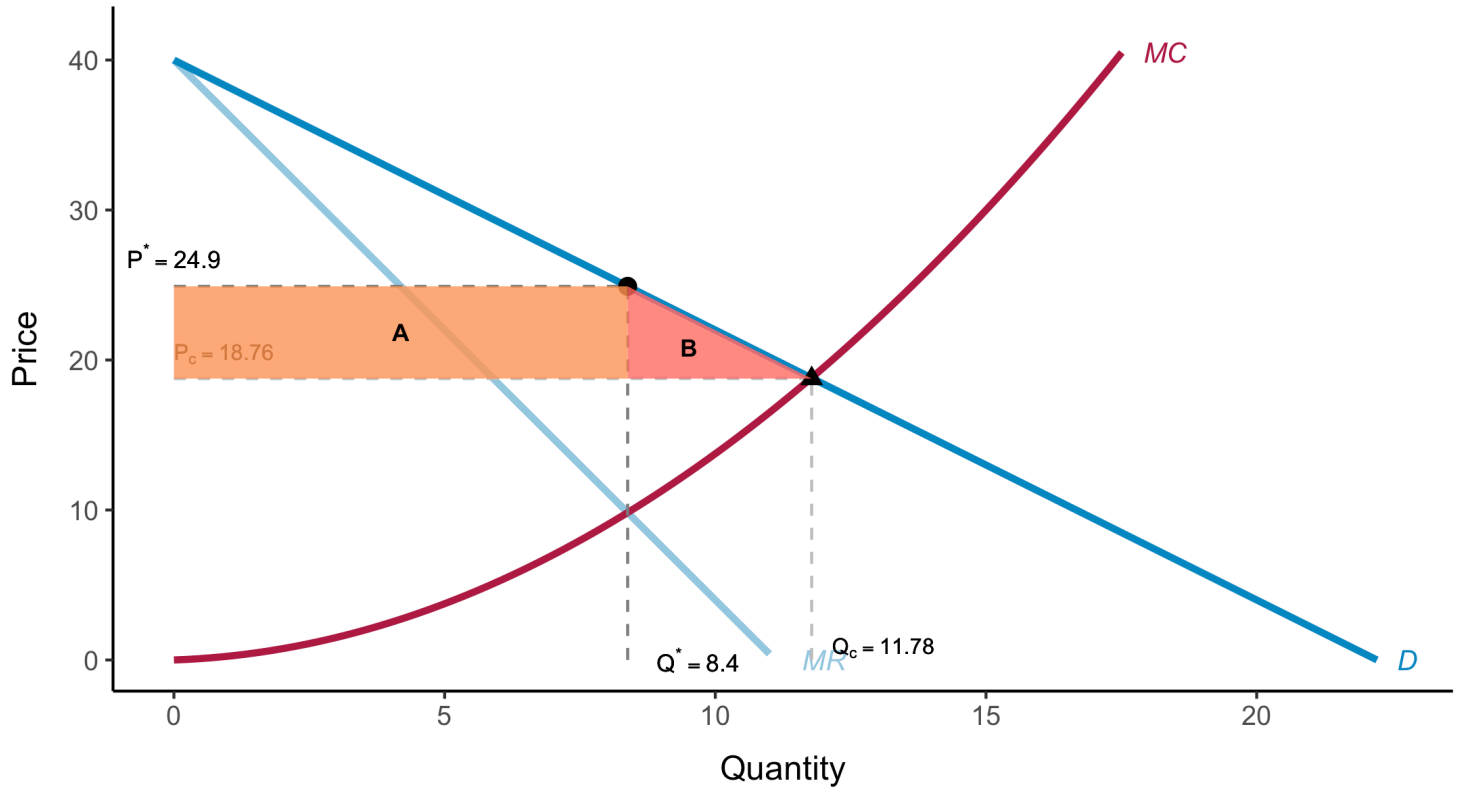
Welfare analysis.



Rectangle A is? Loss in consumer surplus and increase in producer surplus. The transfer.

The Social Costs of Monopoly Power

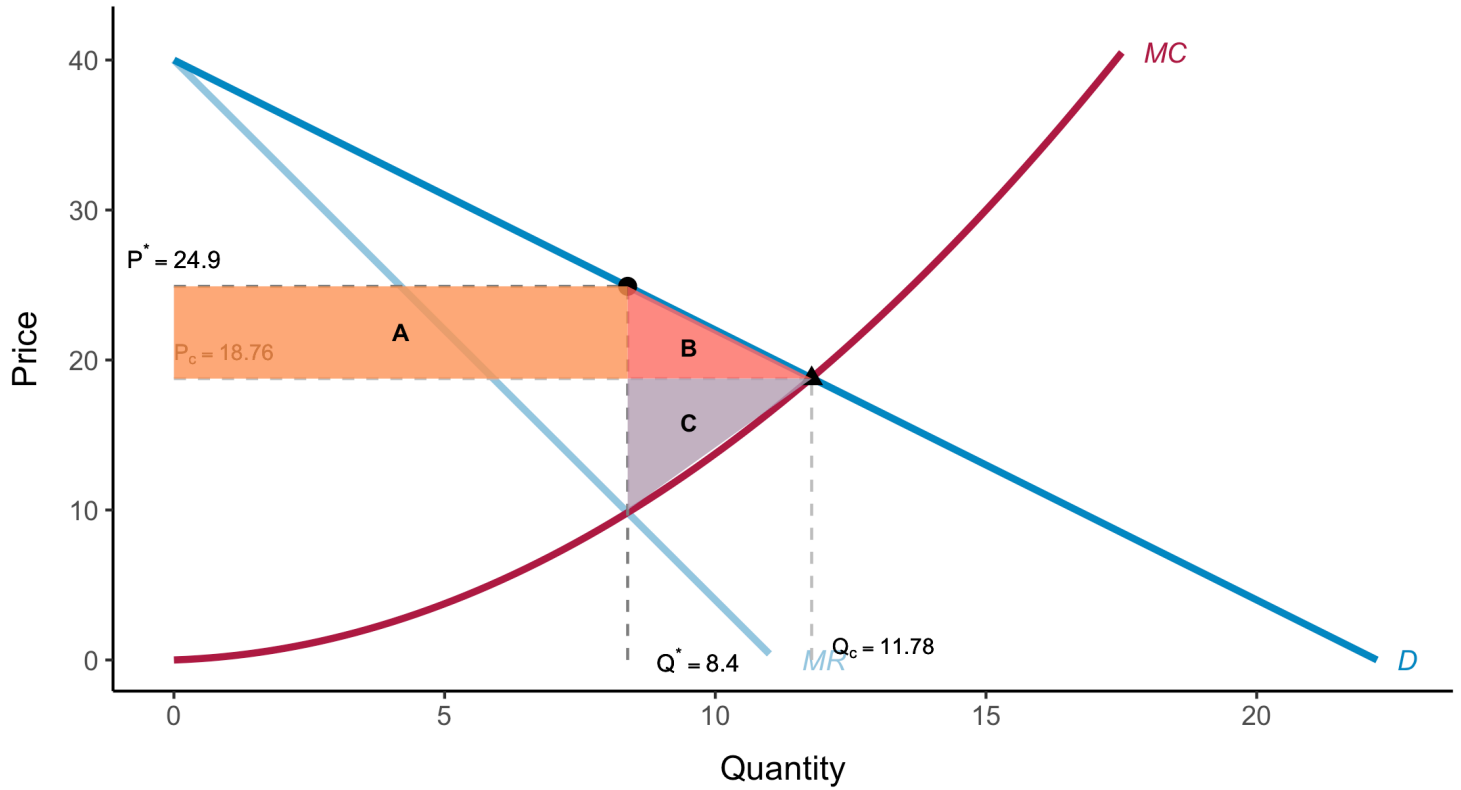
Welfare analysis.



Triangle B is? Loss in consumer surplus. The consumers that are not anymore in the market.

The Social Costs of Monopoly Power

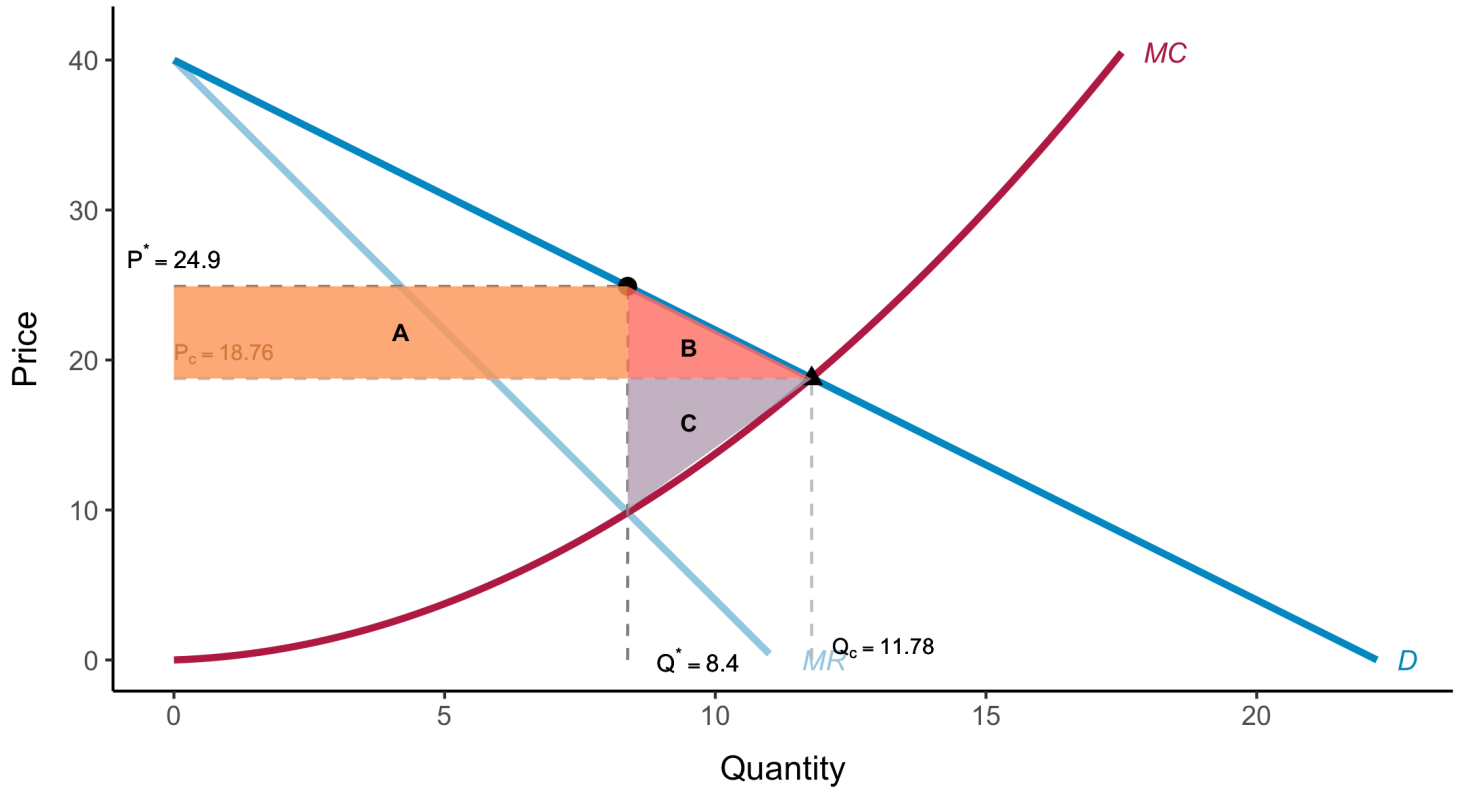
Welfare analysis.



Triangle C is? Loss in producer surplus. The (potential) producer that could not enter the market (if it was competitive).

The Social Costs of Monopoly Power

Welfare analysis: **Monopoly power creates deadweight loss**



$$\Delta W = \Delta CS + \Delta PS = -A - B + A - C = -B - C$$

The Social Costs of Monopoly Power

The social costs of monopoly power extend beyond deadweight loss.

Rent Seeking: Spending money in socially unproductive efforts to acquire, maintain, or exercise monopoly.

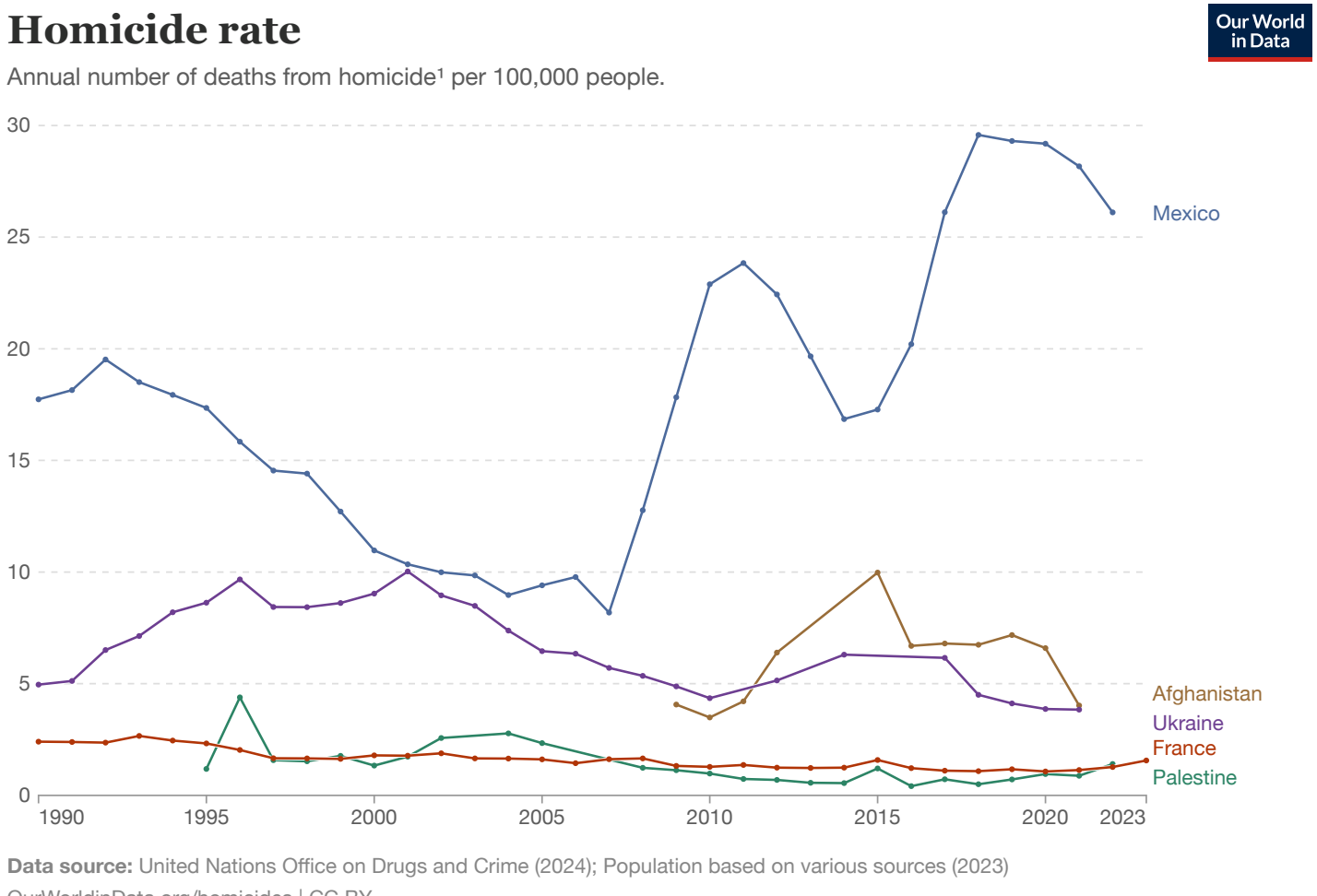
Possible implications for political systems and regimes.

The Social Costs of Monopoly Power

Beyond democracy, monopoly power could even affect the very lives of individuals.

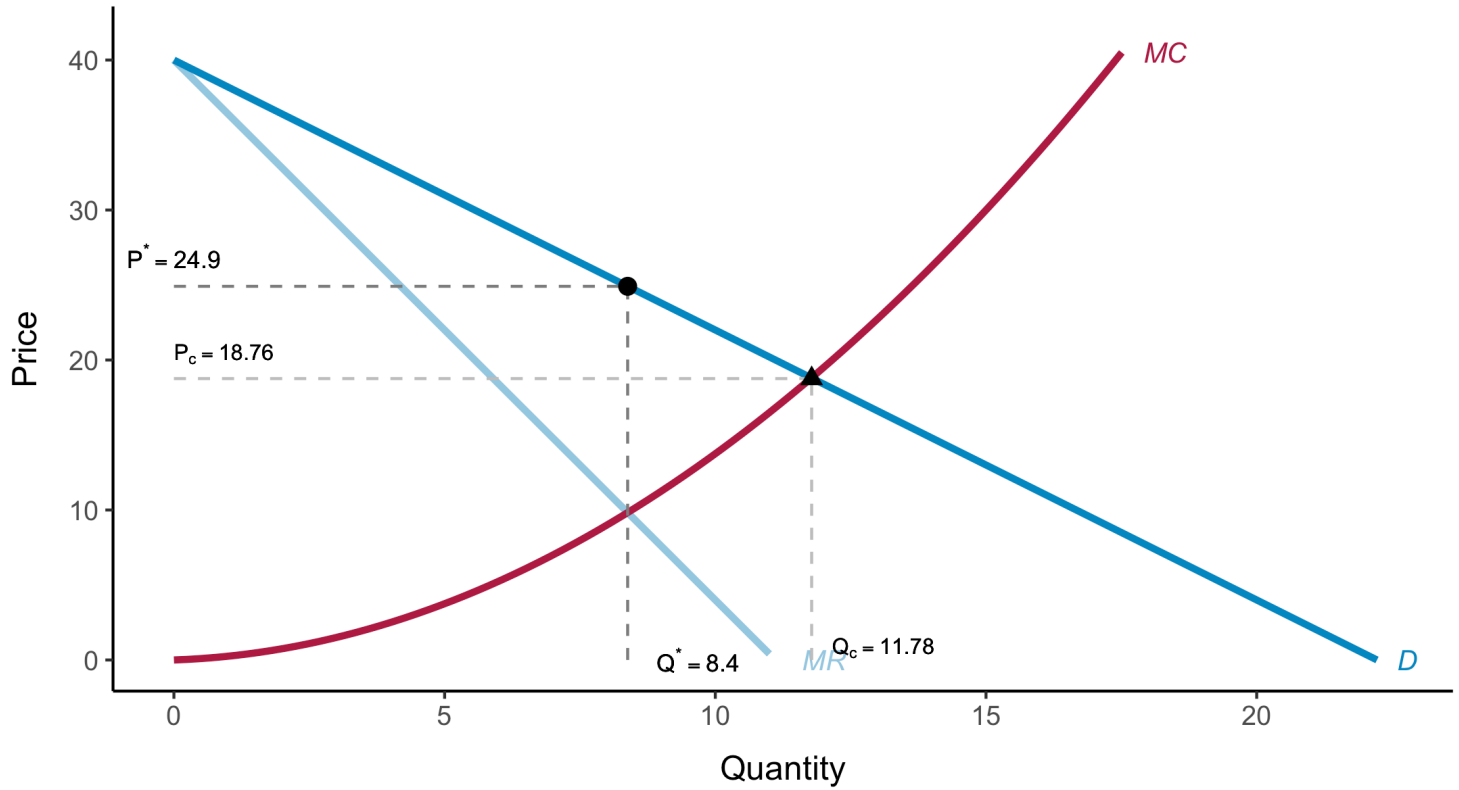
The Social Costs of Monopoly Power

Beyond democracy, monopoly power could even affect the very lives of individuals.



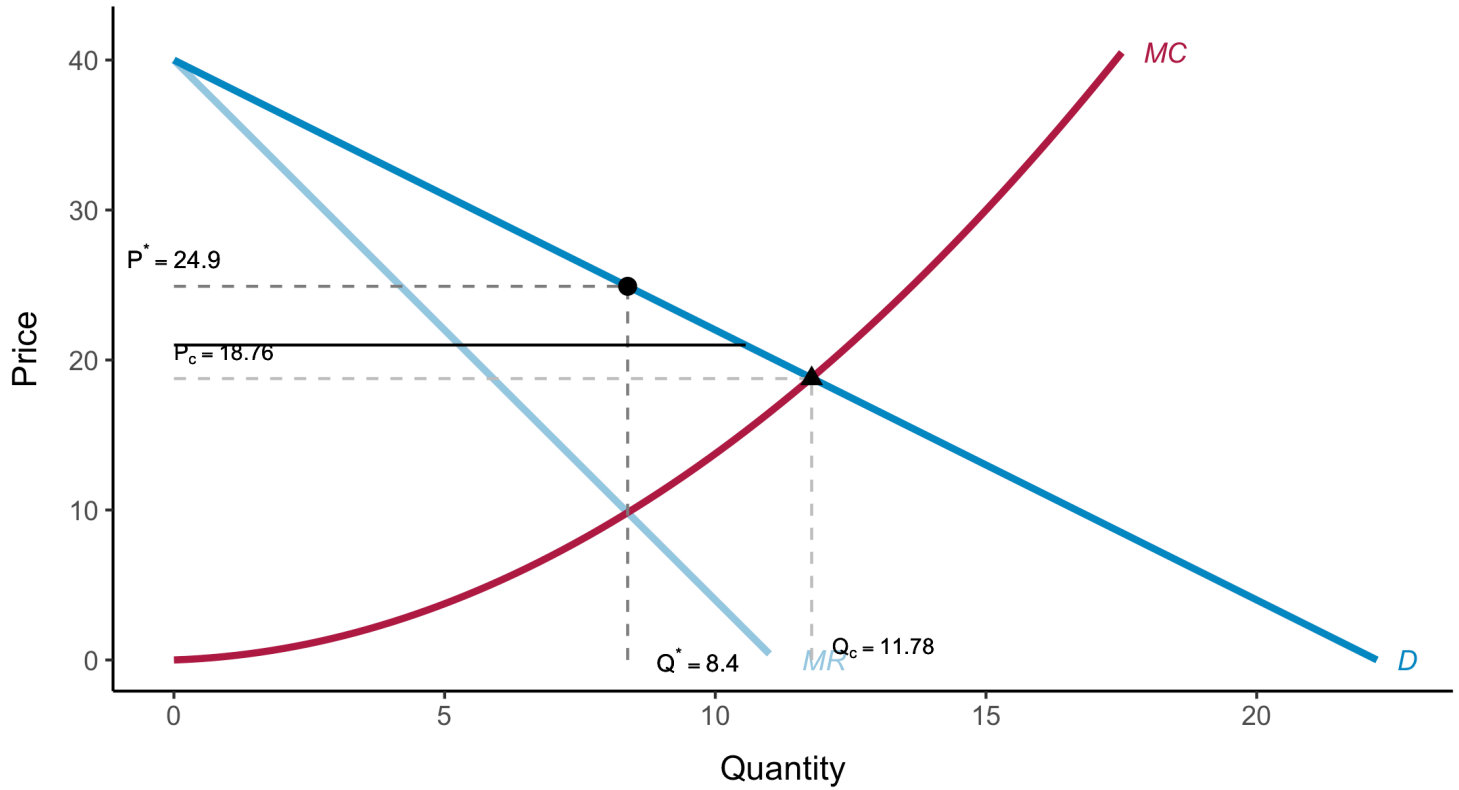
Price Regulation

Price regulation under competitive markets generated deadweight loss. What about under markets where there is monopoly power?



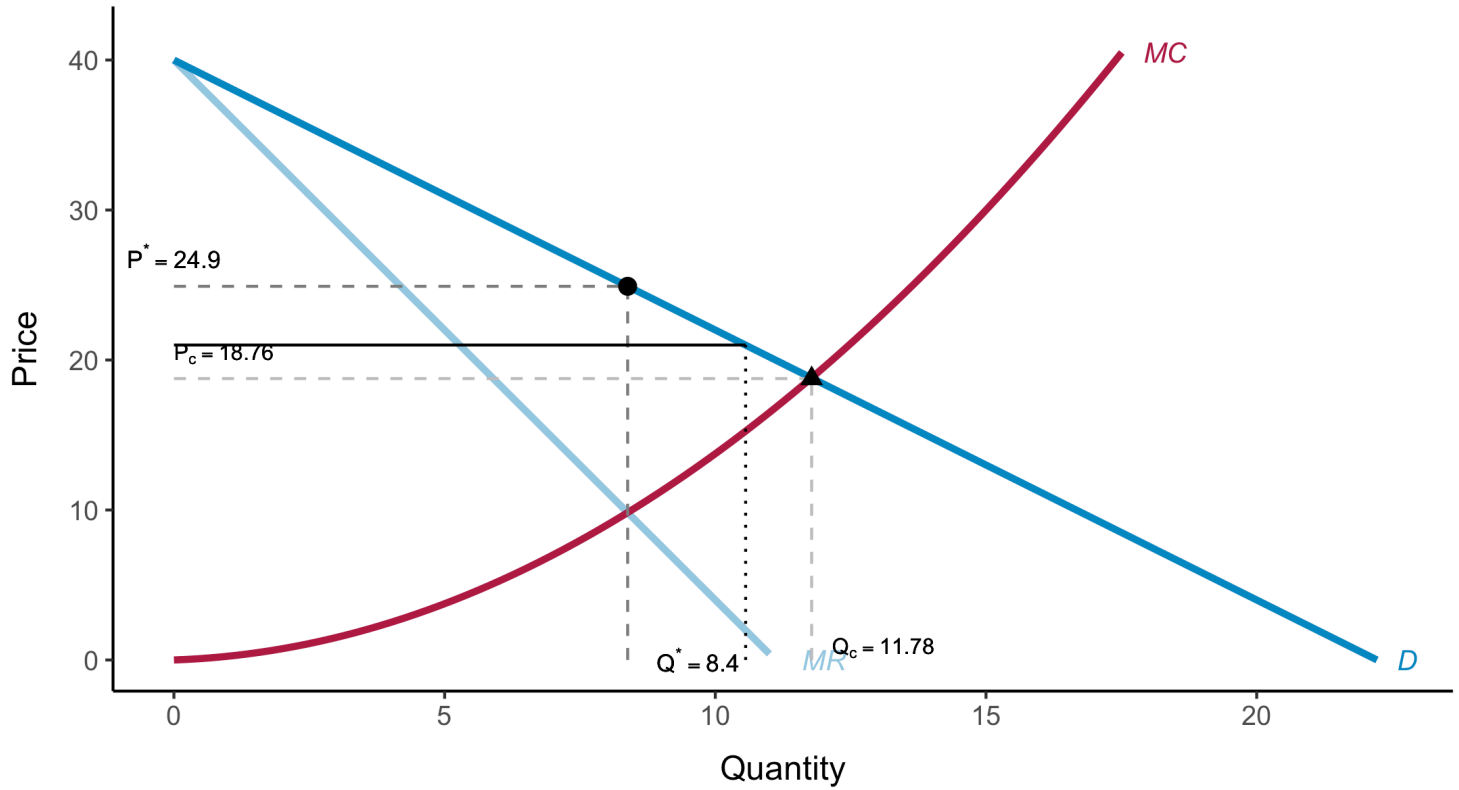
Price Regulation

Suppose price is regulated to be no higher than $P_{reg} = 21$.



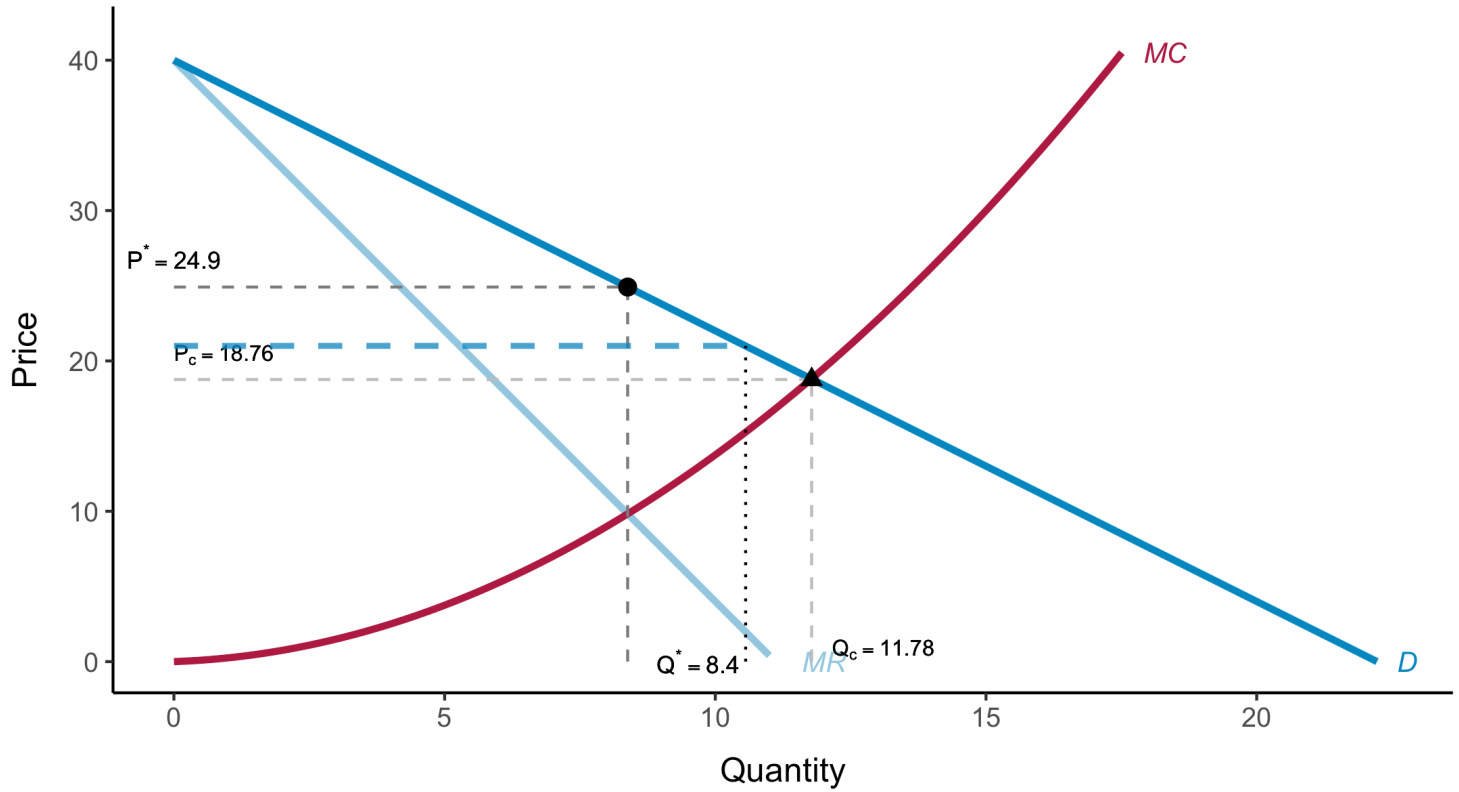
Price Regulation

At $P_{reg} = 21, Q_D(P_{reg}) \approx 10.5$.



Price Regulation

Note that for any quantity less or equal than $Q_D(P_{reg}) \approx 10.5$, the firm's Marginal Revenue is exactly $P_{reg} = 21$.



Price Regulation

Firm's new MR curve has three parts:

1. Flat Segment:

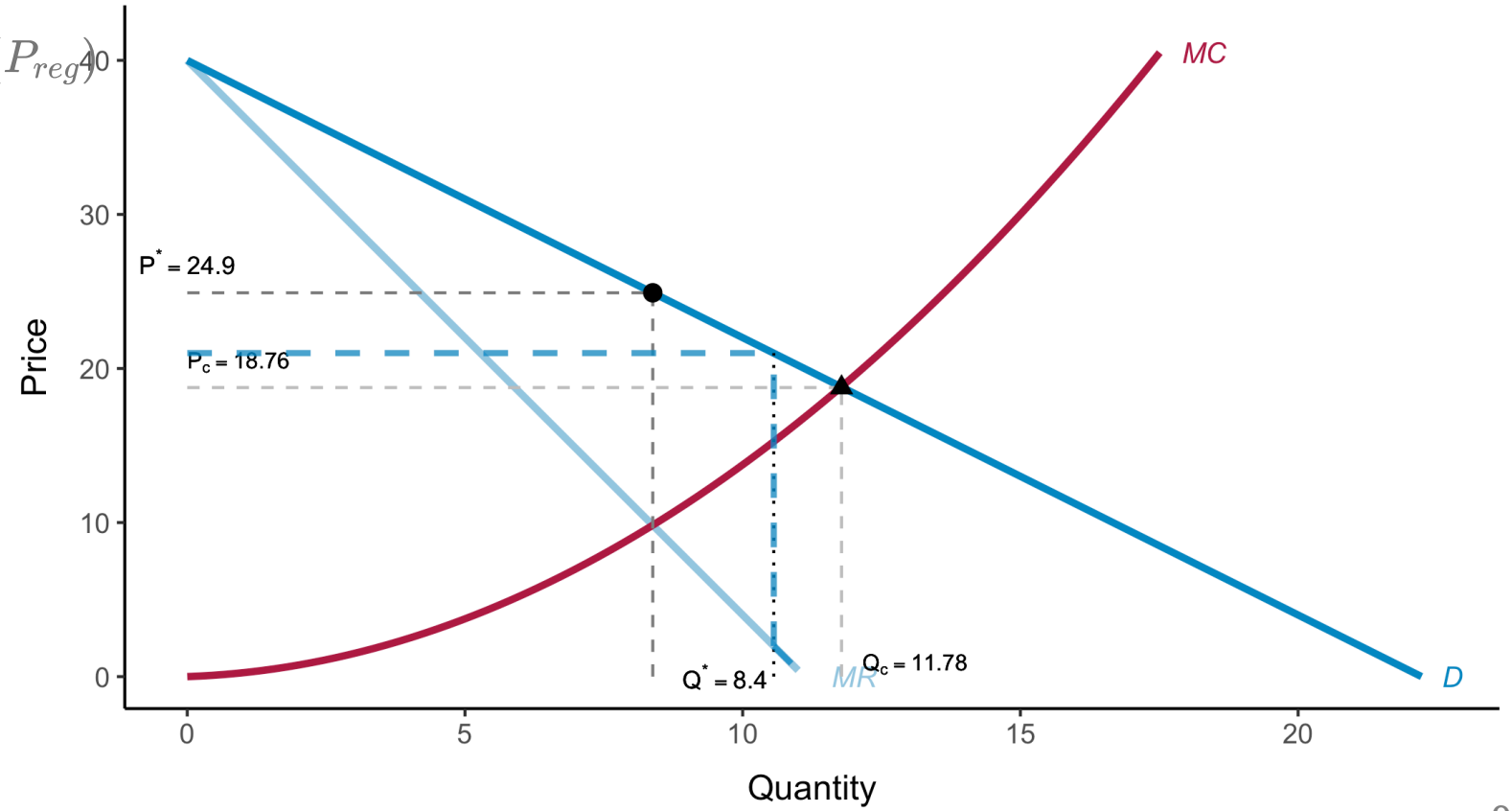
$MR = P_{reg}\ for\ Q \leq Q_D(P_{reg})$

1. Vertical Jump:
   MR shifts at

$Q_D(P_{reg})$

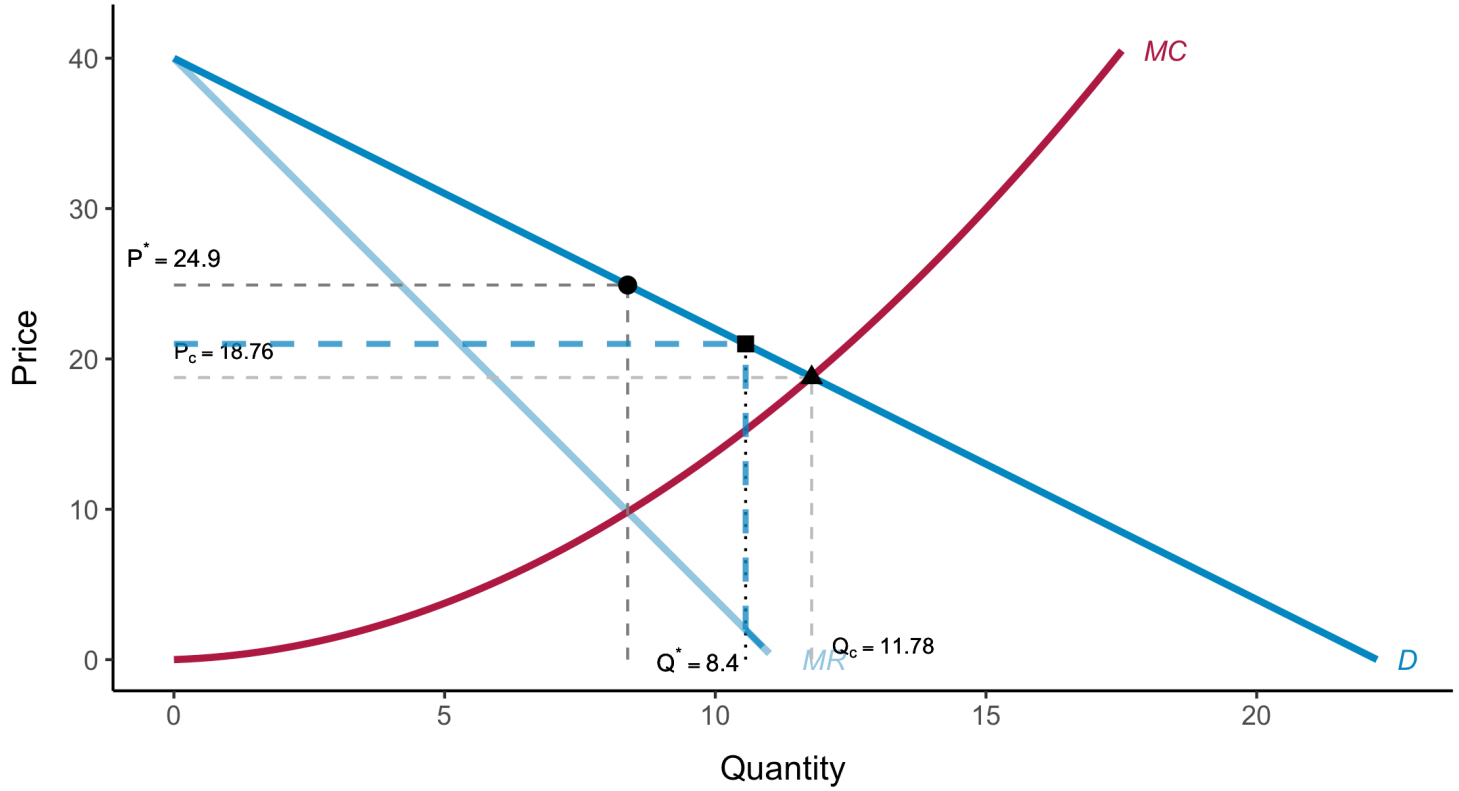
1. Original MR
   Curve:

For $Q > Q_D(P_{reg})$



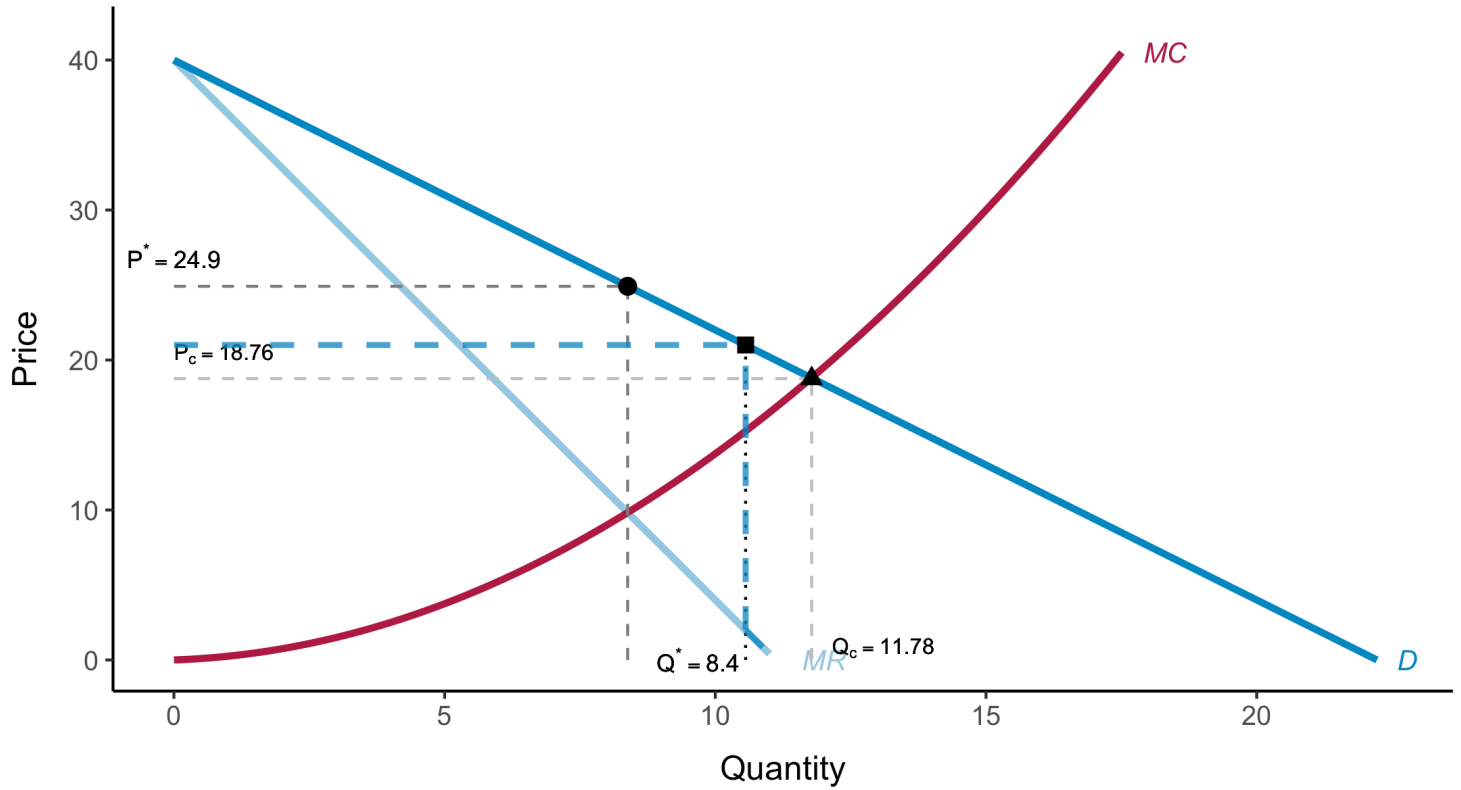
Price Regulation

Firm's new MR curve has three parts. But the optimality condition is the same: profits are maximized at $MR = MC$. Then $P_M'^* = 21$ and $Q_M'^* = 10.5$



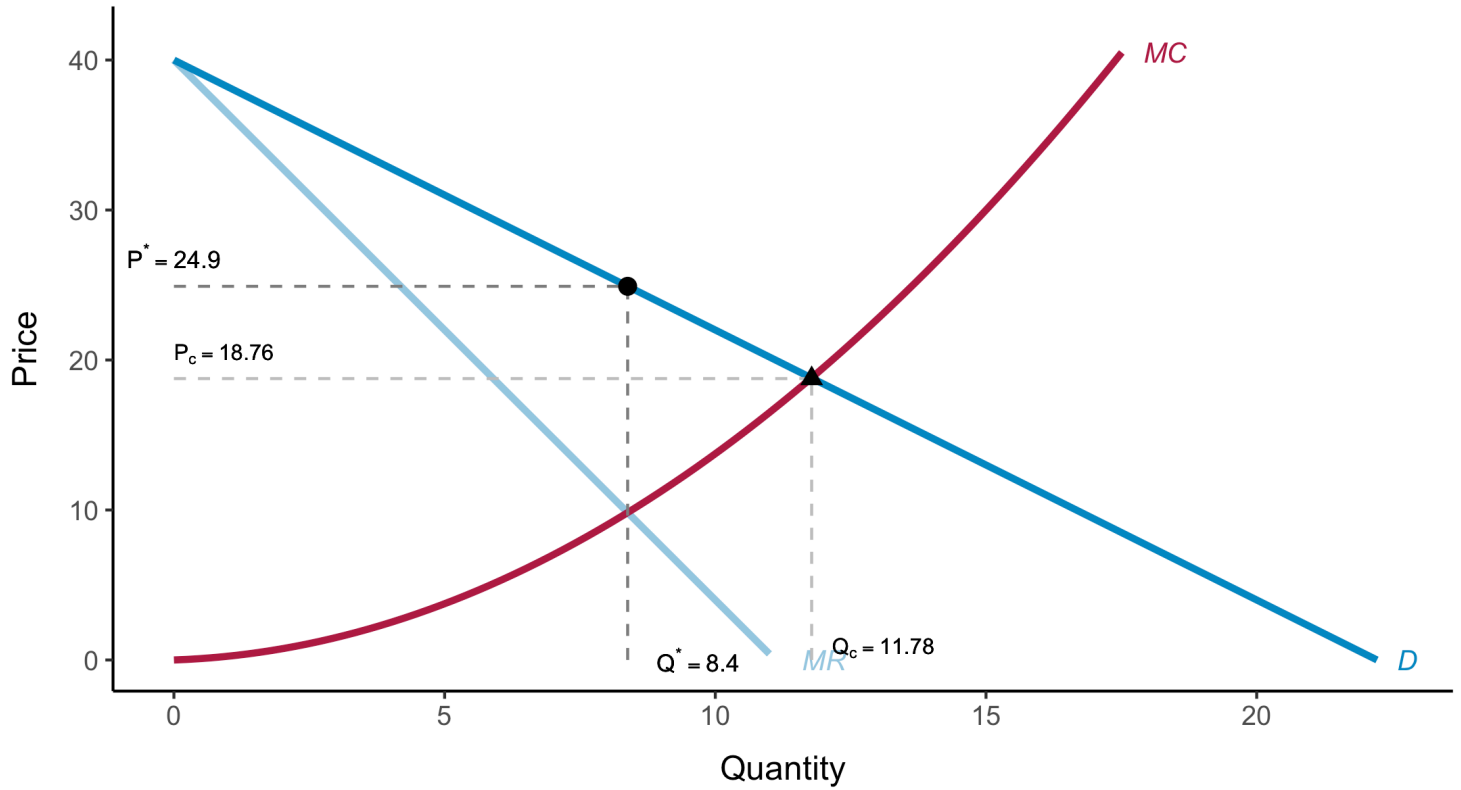
Price Regulation

Does this policy increase welfare compared to a monopoly?



Price Regulation

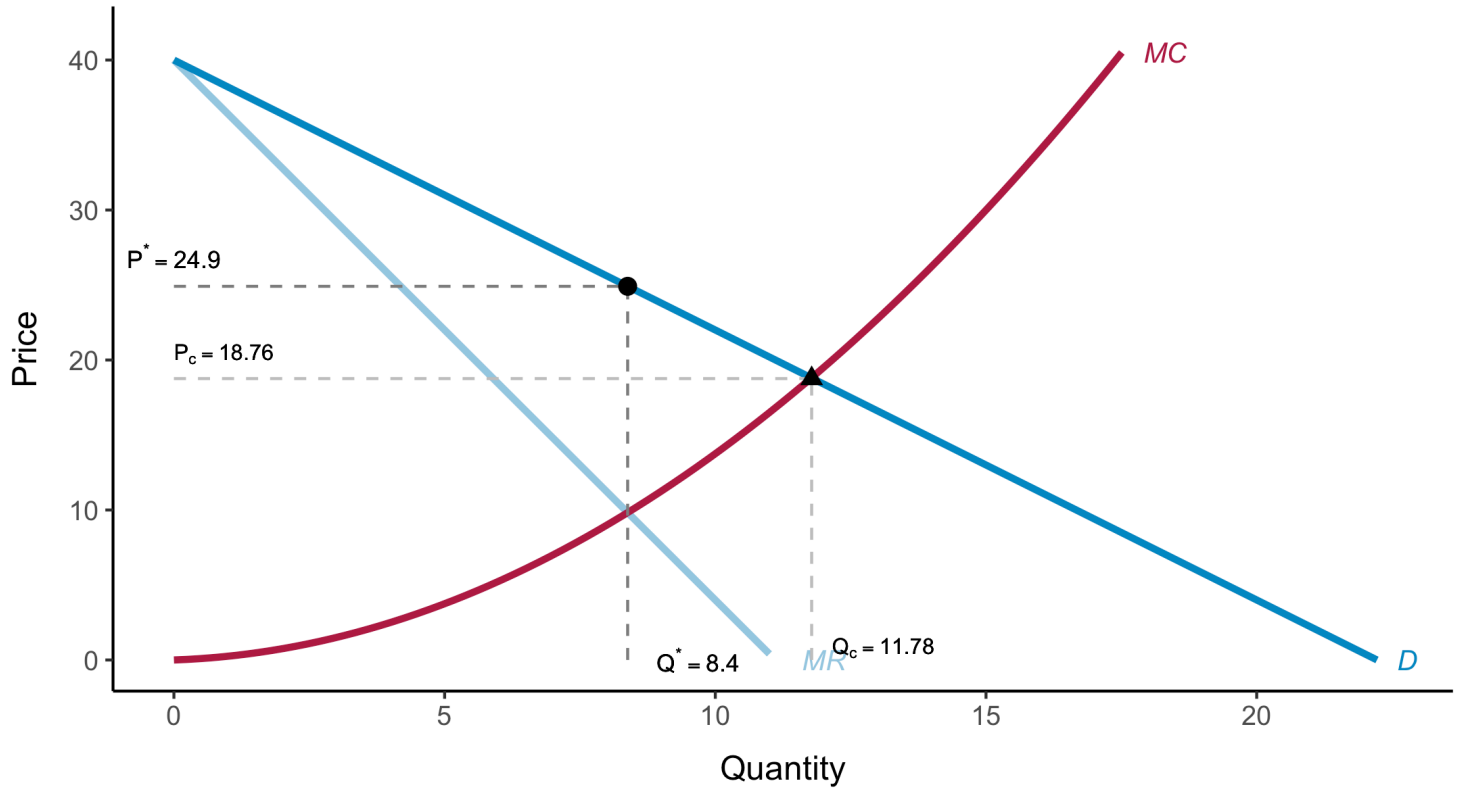
What happens if the regulator further reduces the price?



Reduces output and creates shortage.

Price Regulation

If the regulator reduces the price at or below the lowest point in the AC, the monopoly does not produce at all.



Natural Monopoly

Firm that can produce the entire output of the market at a cost lower than what it would be if there were several firms.

Natural Monopoly

Firm that can produce the entire output of the market at a cost lower than what it would be if there were several firms.

Example: **SNCF**

1. High Fixed Costs & Economies of Scale

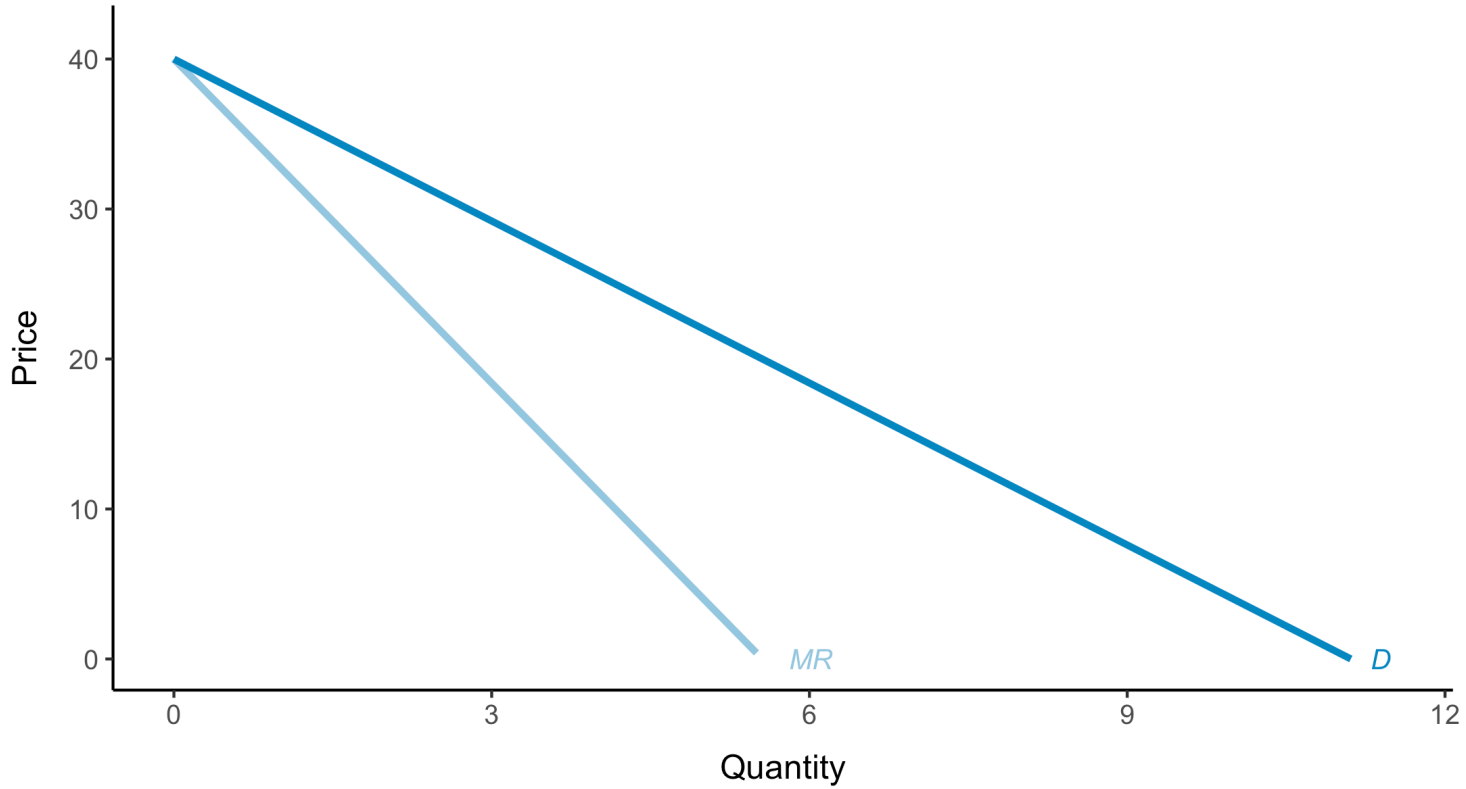
- Building and maintaining railway tracks, stations, and signaling systems requires massive upfront investment.
- Once built, the cost per passenger or freight unit decreases as more people use the service.
- Example: If SNCF doubles the number of passengers, its total costs do not double, making additional trips cheaper per passenger.

1. Declining Average & Marginal Costs

- Since most railway costs are fixed (tracks, maintenance), the average cost per train trip falls as more people use the service.
- Marginal costs (the cost of adding one more train) remain relatively low compared to the infrastructure investment.

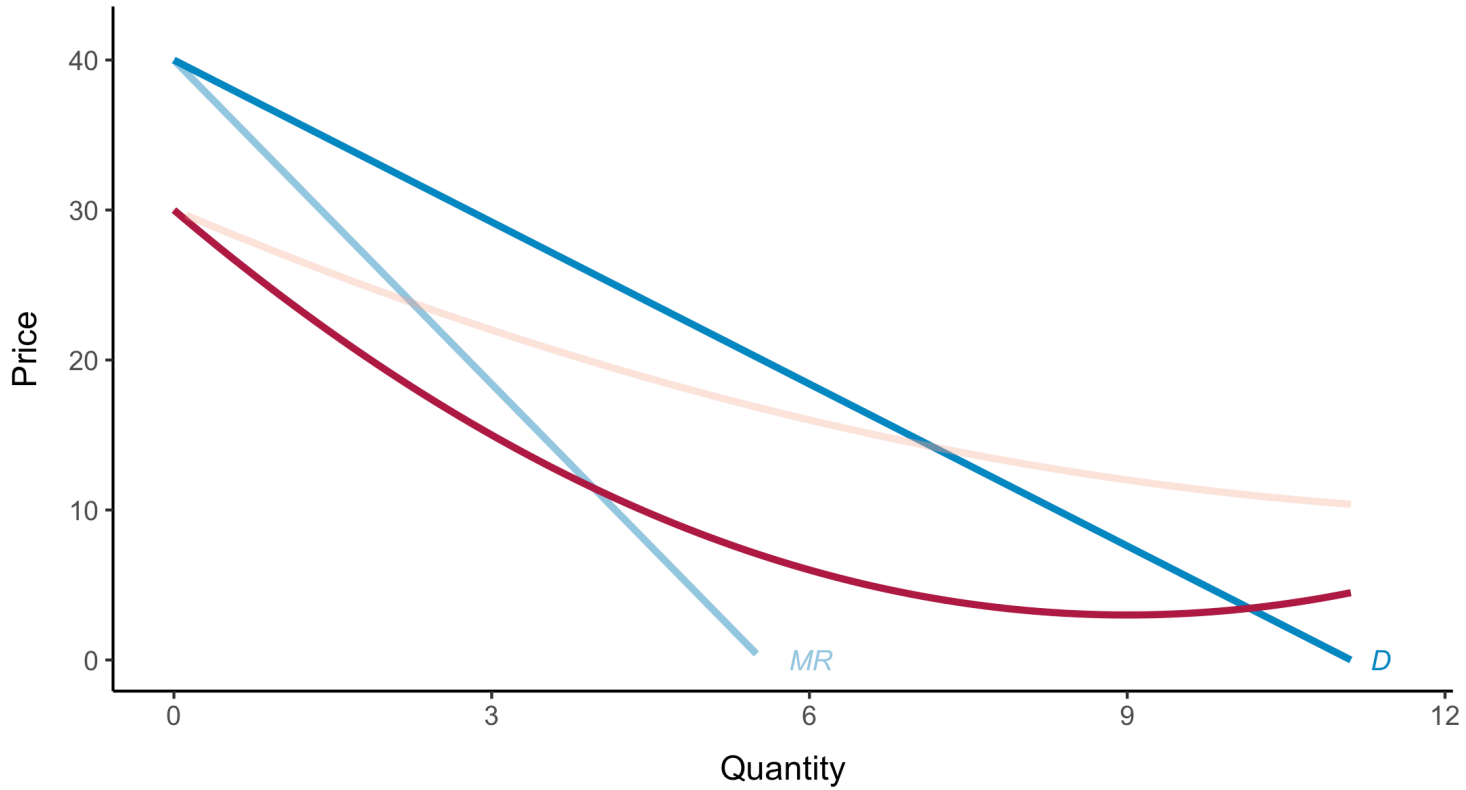
Regulating the Price of a Natural Monopoly

Suppose the following demand for train services (one specific route) $Q = 40 - 3.6 \cdot P$.



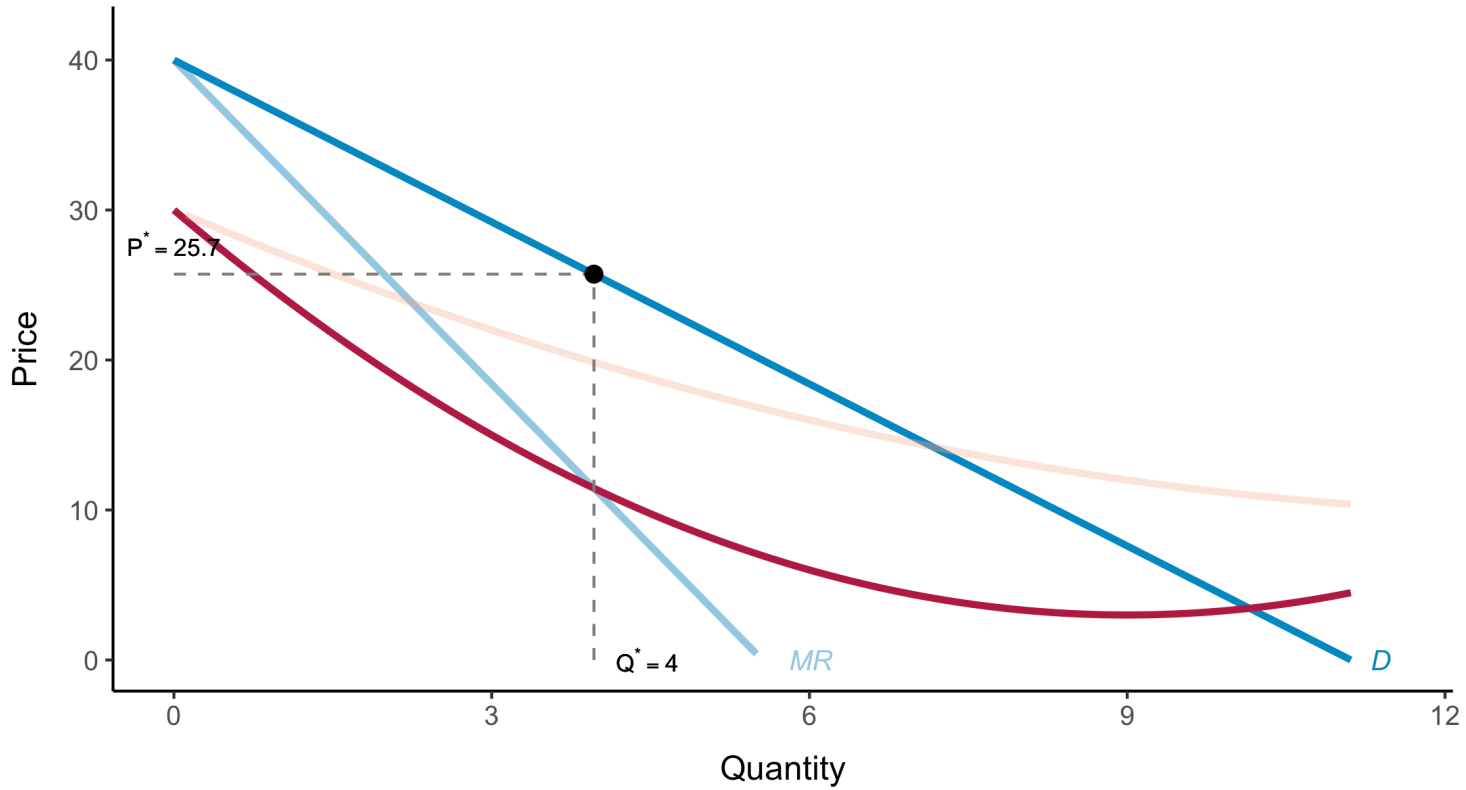
Regulating the Price of a Natural Monopoly

A firm is a natural monopoly because it has economies of scale (declining average and marginal costs) over its entire output range.



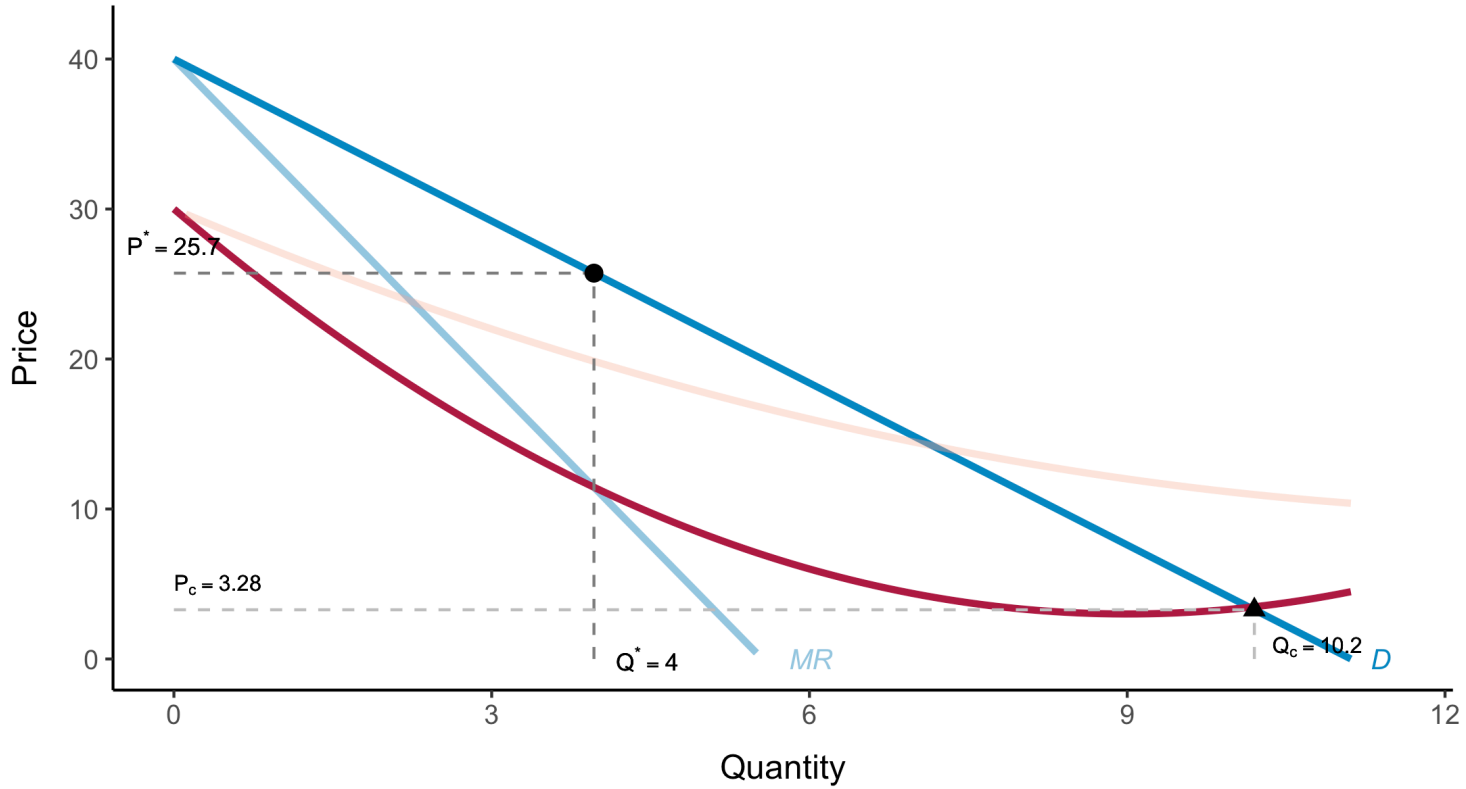
Regulating the Price of a Natural Monopoly

Since the firm has monopoly power, it sets the price choosing a quantity that maximizes its profits (namely, $MR = MC$).



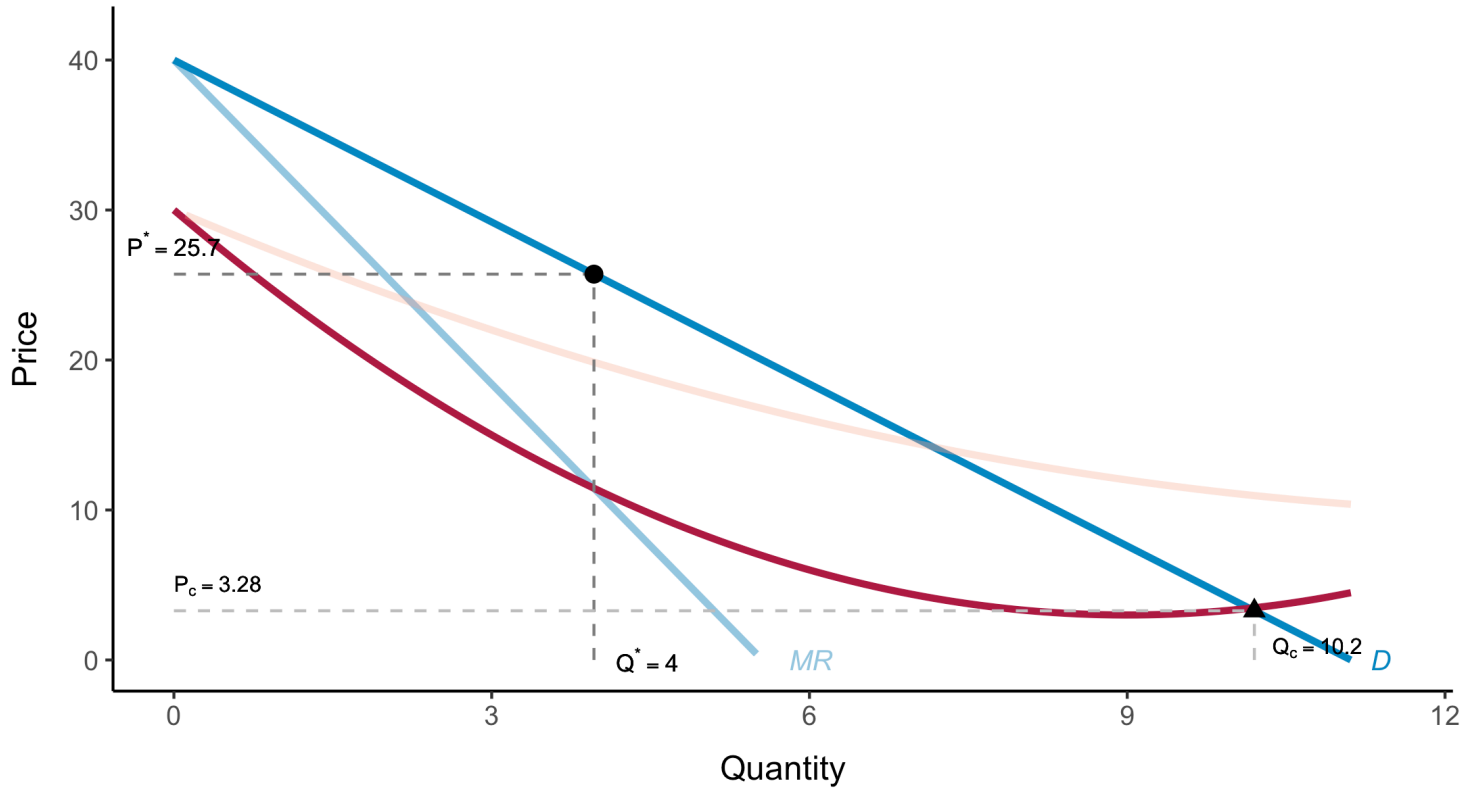
Regulating the Price of a Natural Monopoly

In a competitive market we would have $P_C = MC$. In this example, $P_C \approx 3.3$ and $Q_C \approx 10.2$.



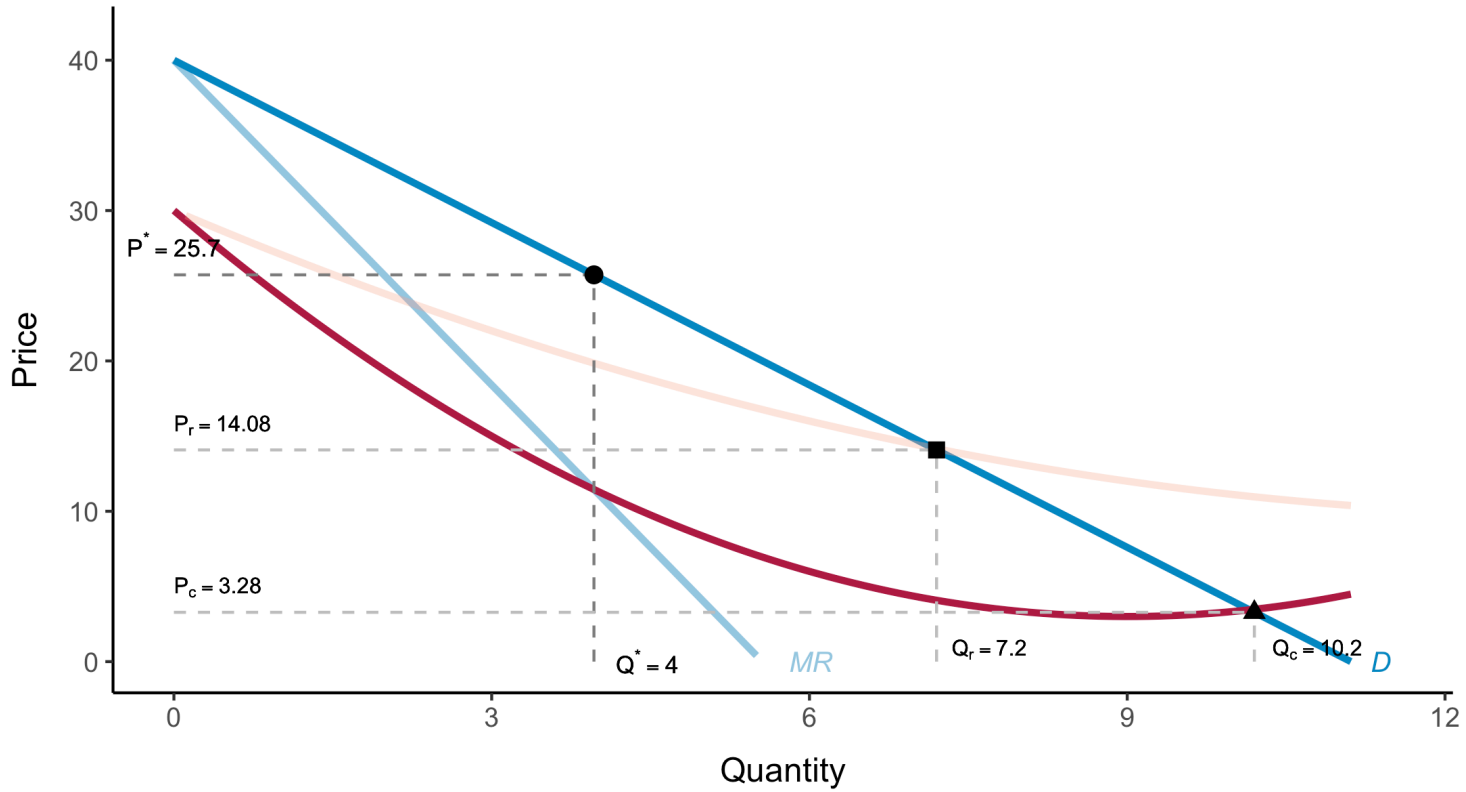
Regulating the Price of a Natural Monopoly

If the regulator sets $P_{reg} = P_C \approx 3.3$. However, the price would not cover average cost and the firm would go out of business.



Regulating the Price of a Natural Monopoly

Setting the price at P_r ensures the highest possible output while keeping the firm operational, with zero excess profit.



Monopsony

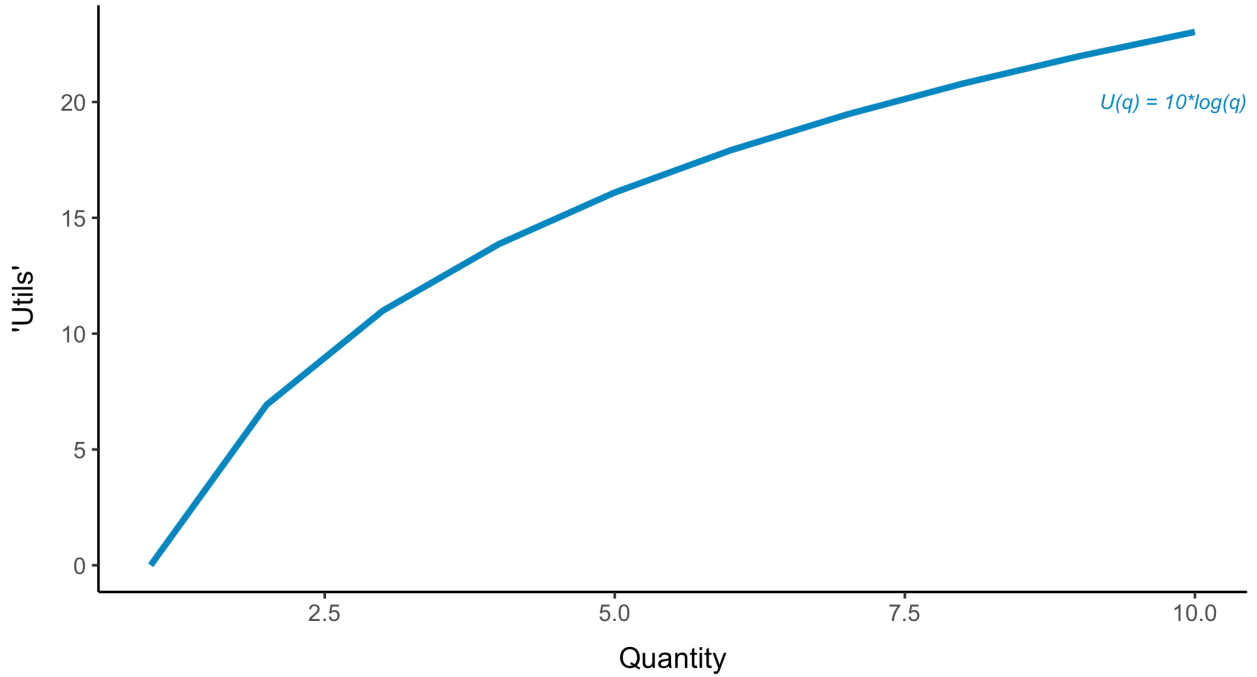
Monopsony

- **Monopsony**: Market with a single buyer.
- **Oligopsony**: Market with a few buyers.
- **Monopsony power**: a buyer's ability to affect the price of a good. It enables the buyer to purchase a good for less than the price that would prevail in a competitive market.

Sounds familiar?

Monopsony: Marginal value

- **Marginal value (MV)**: Additional benefit derived from purchasing one more unit of a good.
  - **Marginal utility**: Additional satisfaction obtained from consuming one additional unit of a good.
  - Recall that an individual demand curve determines marginal value as a function of the quantity purchased



$$U(q) = 10 \cdot log(q)$$

Monopsony: Marginal value

- **Marginal value (MV)**: Additional benefit derived from purchasing one more unit of a good.
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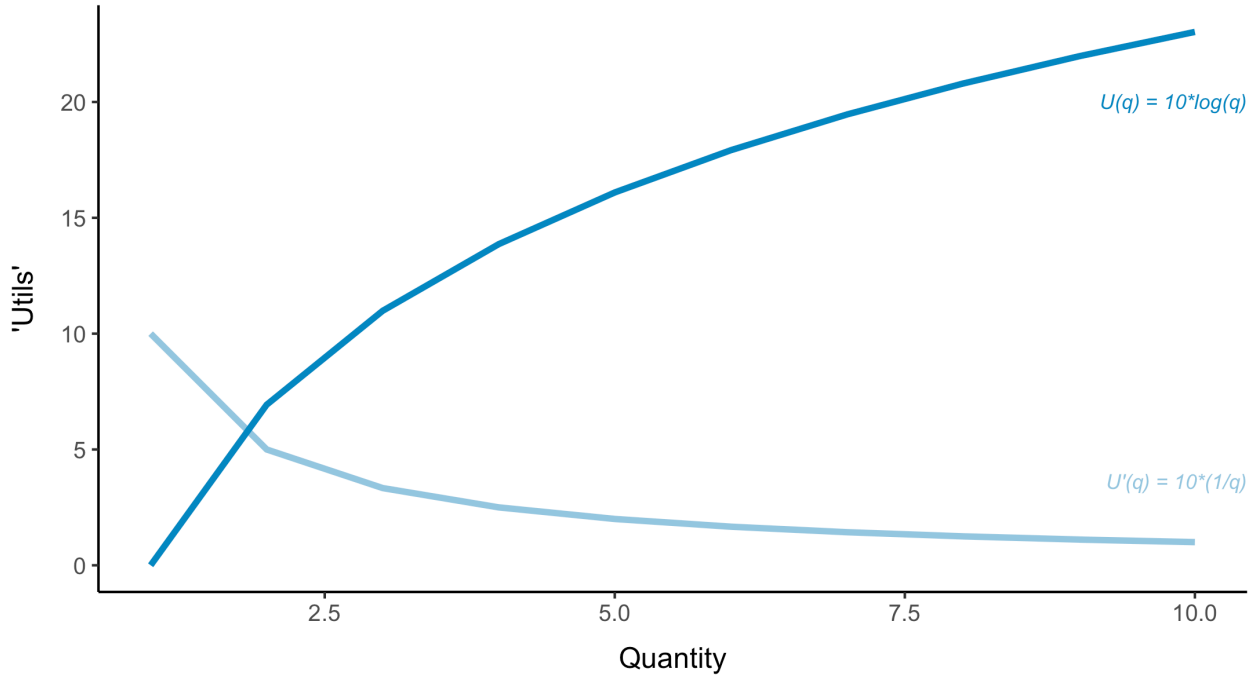
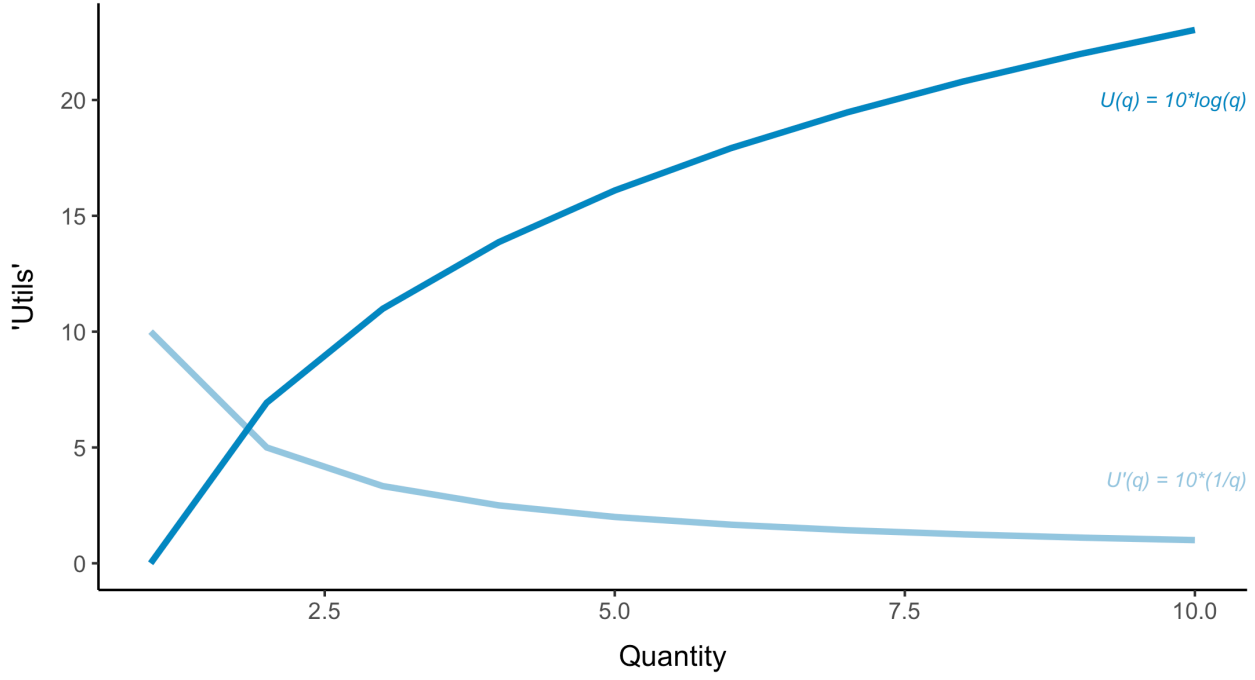
  - Recall that an individual demand curve determines marginal value as a function of the quantity purchased



$$\Rightarrow U'(q) = 10 \cdot (1/q)$$

Monopsony: Marginal value

- **Marginal value (MV)**: Additional benefit derived from purchasing one more unit of a good.
  - **Marginal utility**: Additional satisfaction obtained from consuming one additional unit of a good.
  - Recall that an individual demand curve determines marginal value as a function of the quantity purchased



The MV represents the demand curve for the good. An individual's demand curve slopes downward because the additional benefit from purchasing one more unit decreases as the total quantity bought rises.

Monopsony: Marginal expenditure

If Expenditure is:

$$Expenditure = E = P(Q)Q$$

Average Expenditure (AE)

Price paid per unit of a good

$$AE = \frac{E}{Q} = P(Q)$$

For sure sounds familiar.

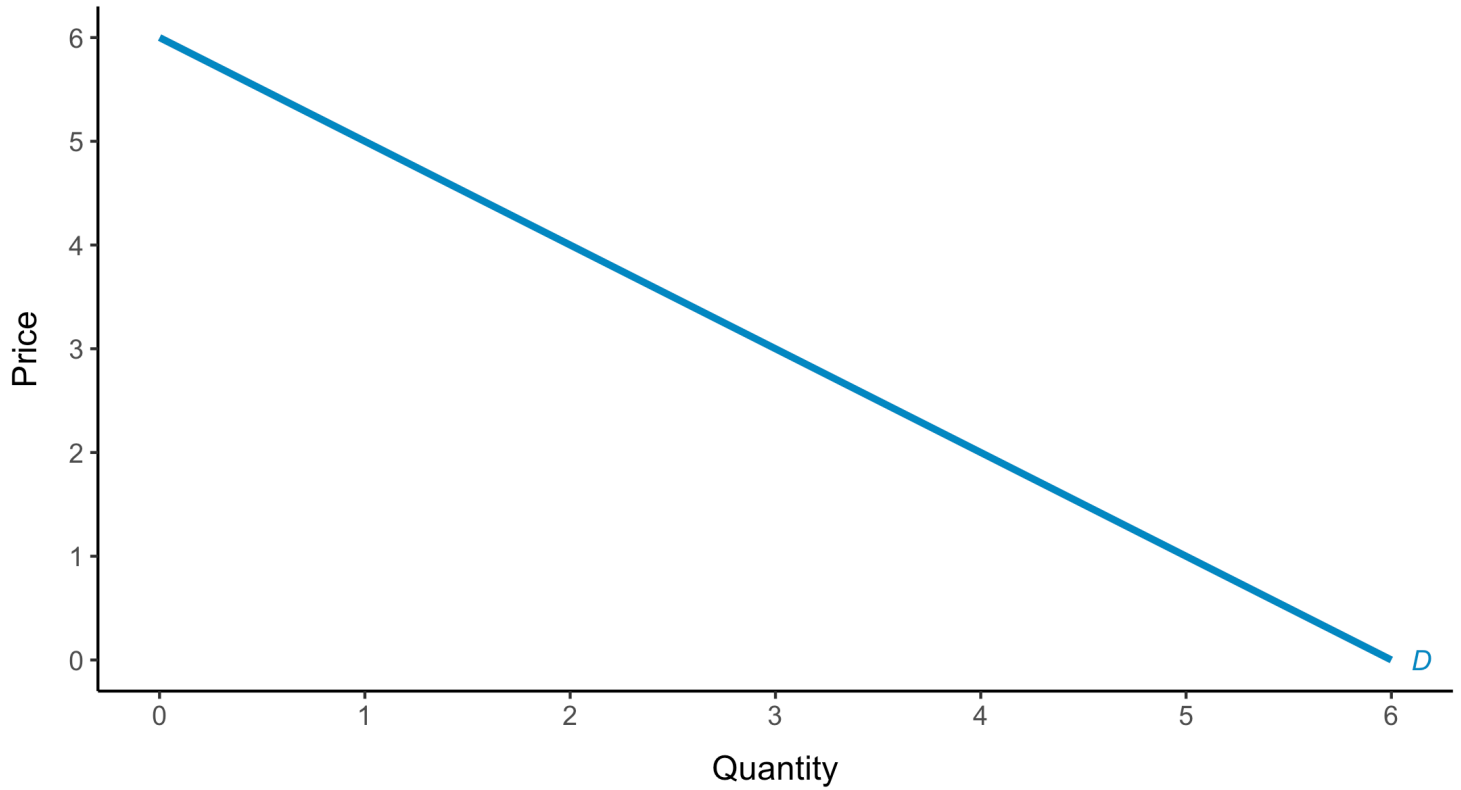
Marginal Revenue

Additional cost of buying one more unit of a good

$$ME = \frac{dE}{dQ} = \frac{dP(Q)Q}{dQ} = P(Q) + Q \cdot \frac{\Delta P}{\Delta Q}$$

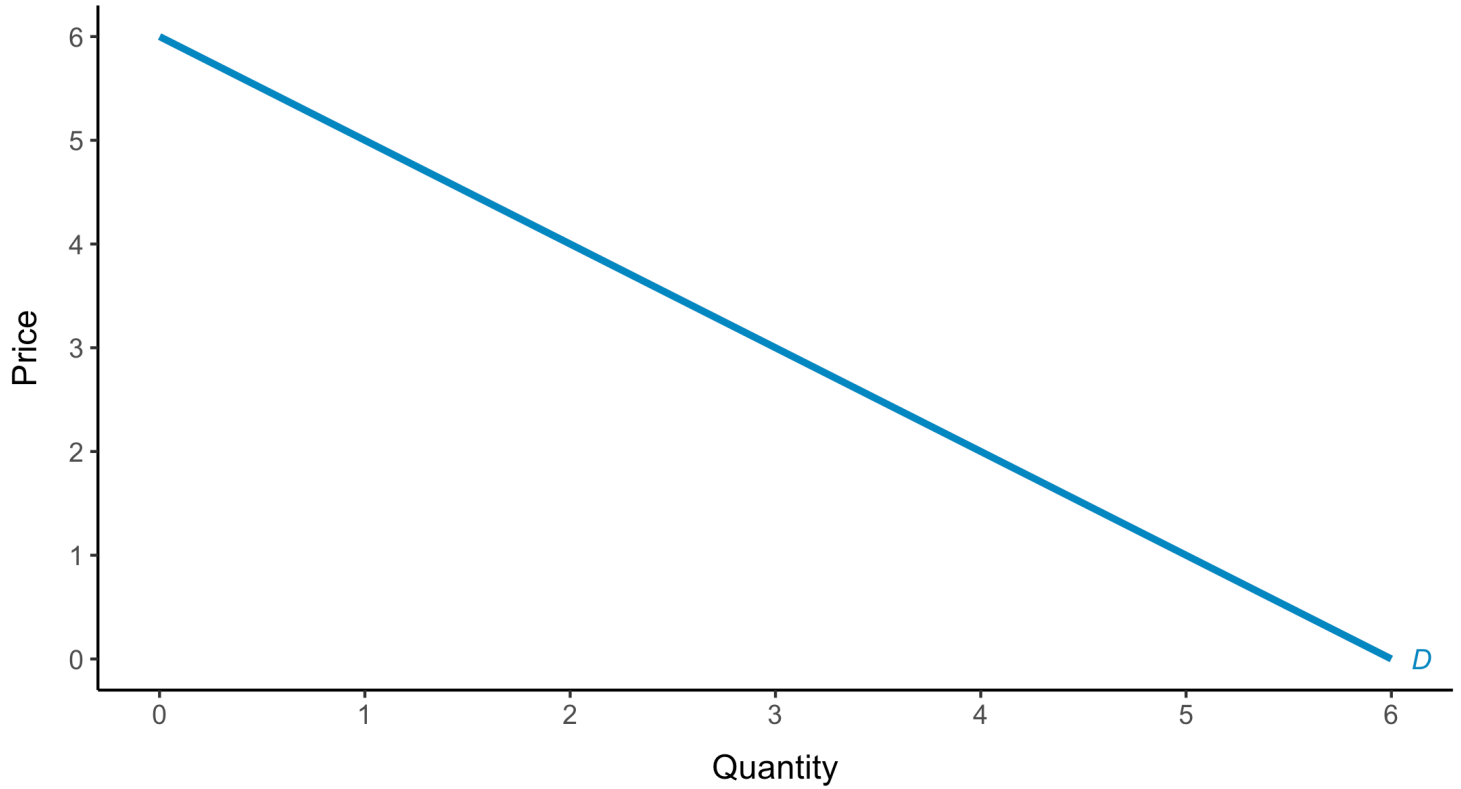
Benchmark: Competitive Buyer

Let's assume we are in a competitive market. If $MV = D$, in this case the $MV = 6 - P$.



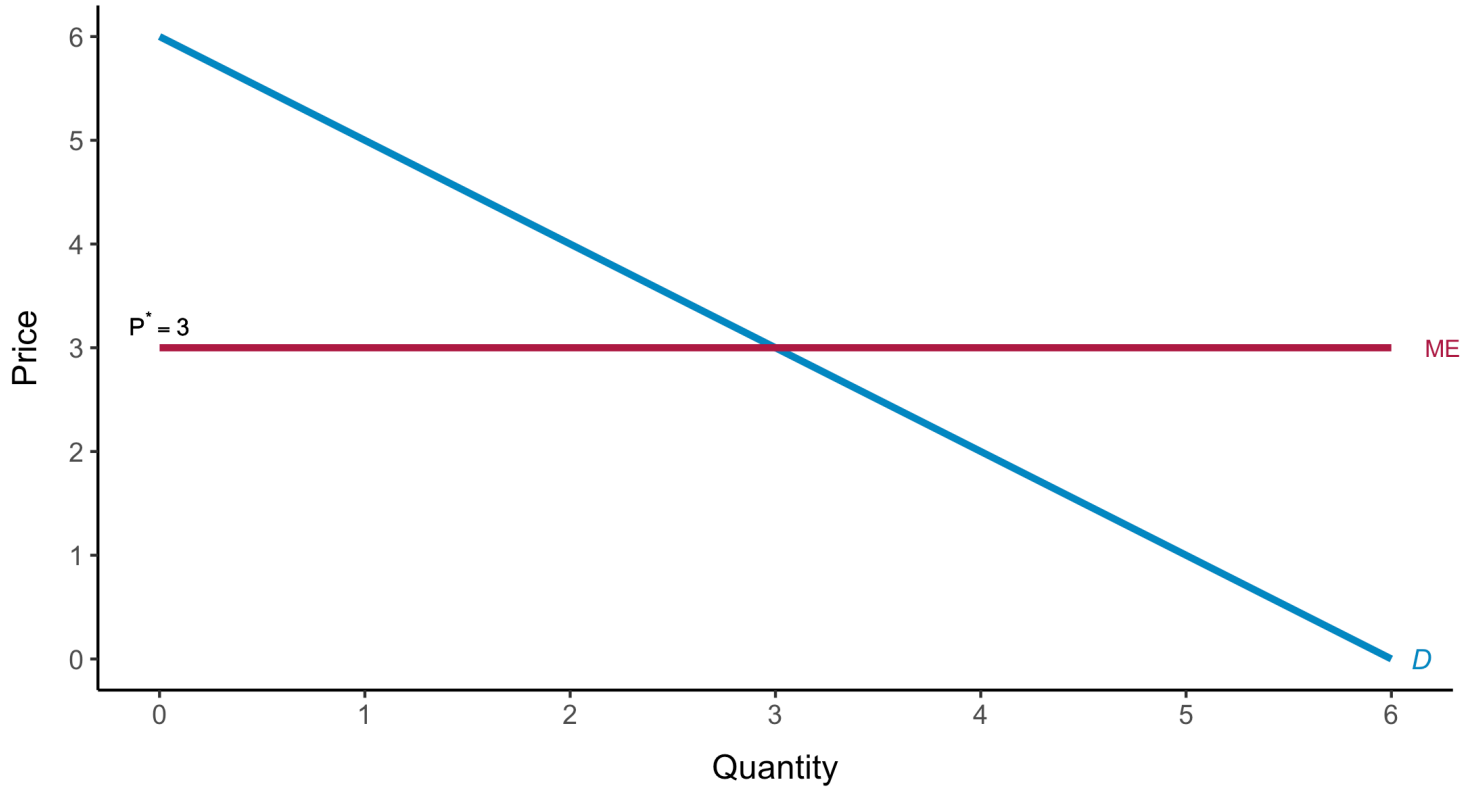
Benchmark: Competitive Buyer

The competitive buyer takes market price $P^* = 3$ as given. Thus, $E = 3 \cdot Q$.



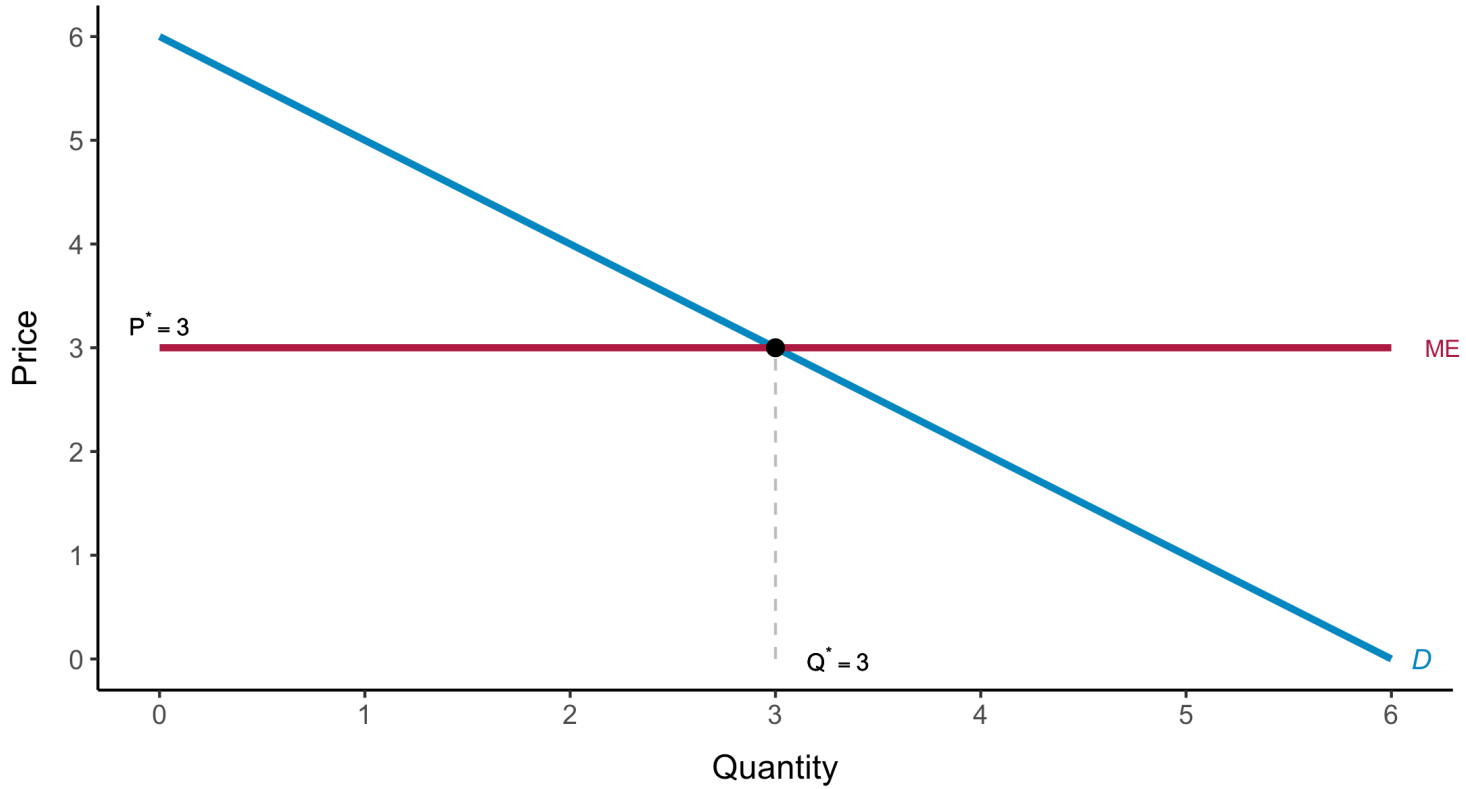
Benchmark: Competitive Buyer

The competitive buyer takes market price $P^* = 3$ as given. Thus, $E = 3 \cdot Q$ and $ME = AE = 3$.



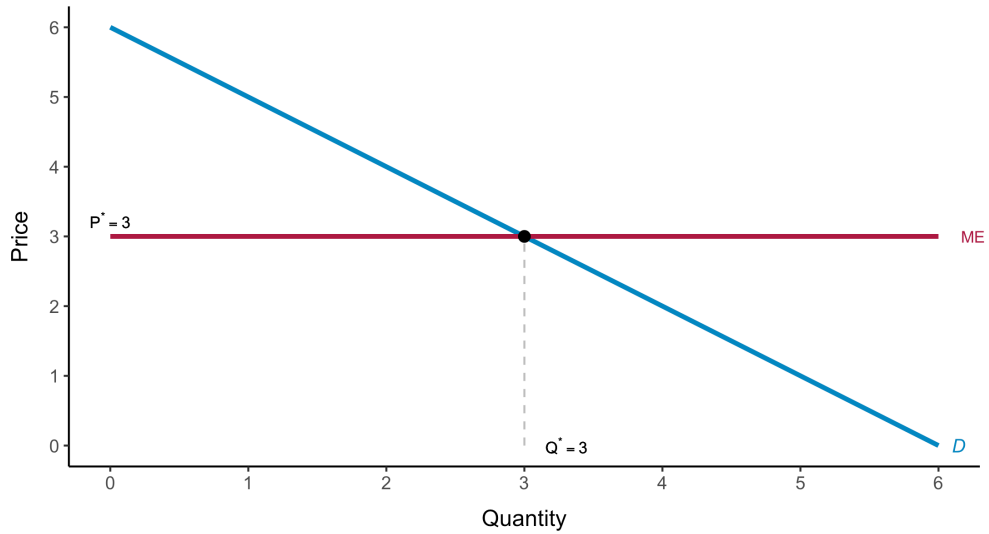
Benchmark: Competitive Buyer

The competitive buyer should buy Q^* such that $MV = ME$. In this case, $Q^* = 3$.

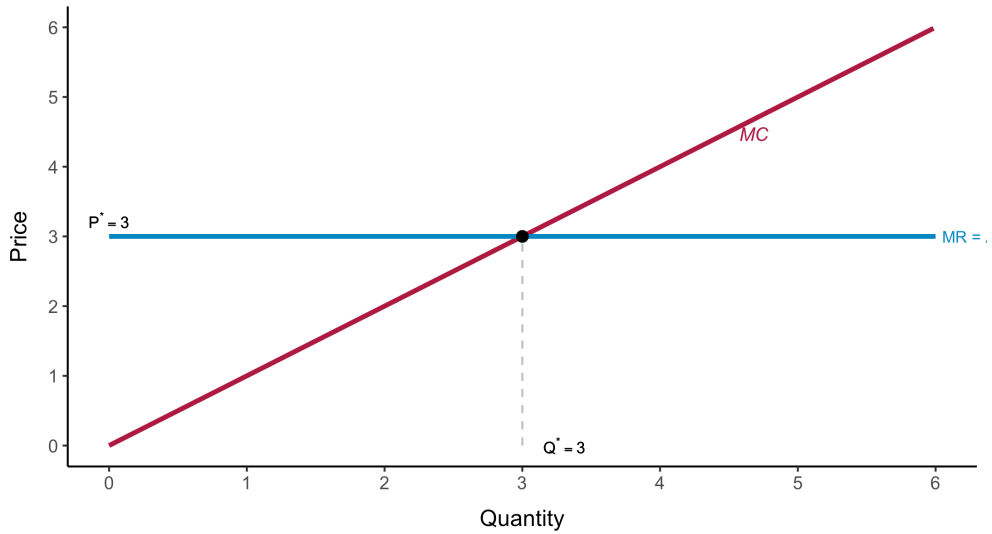


Benchmark: Competitive Buyer vs. Competitive Seller

Competitive Buyer



Competitive Seller



Monopsonist's Purchase Decision

V: Value to the buyer of the purchase

E: Expenditure

Net benefit from a purchase:

$$NB = V - E$$

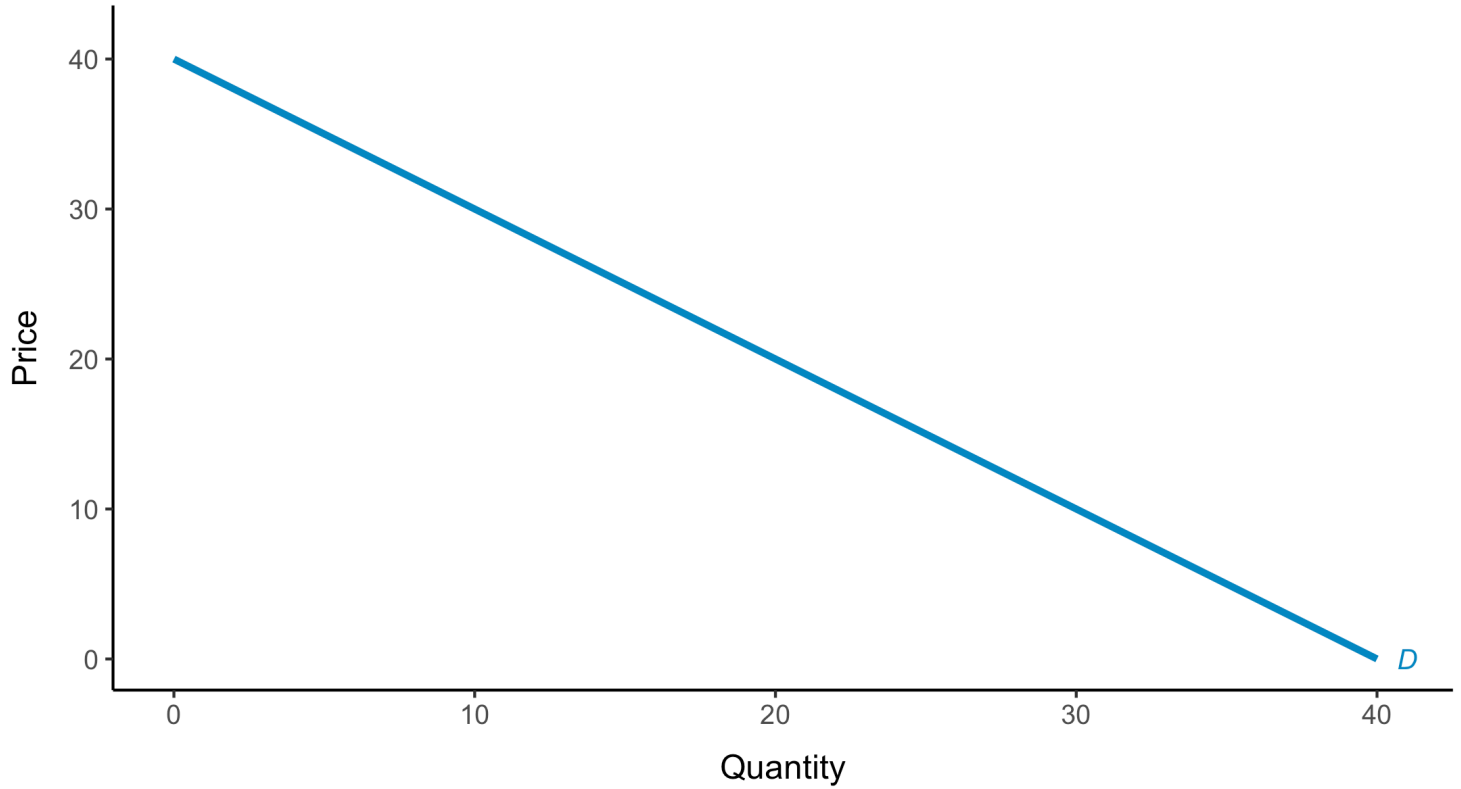
$$max_Q NB$$

$$\Rightarrow \frac{dNB}{dQ} = \frac{dV}{dQ} - \frac{dE}{dQ} = 0$$

$$\Rightarrow MV = ME$$

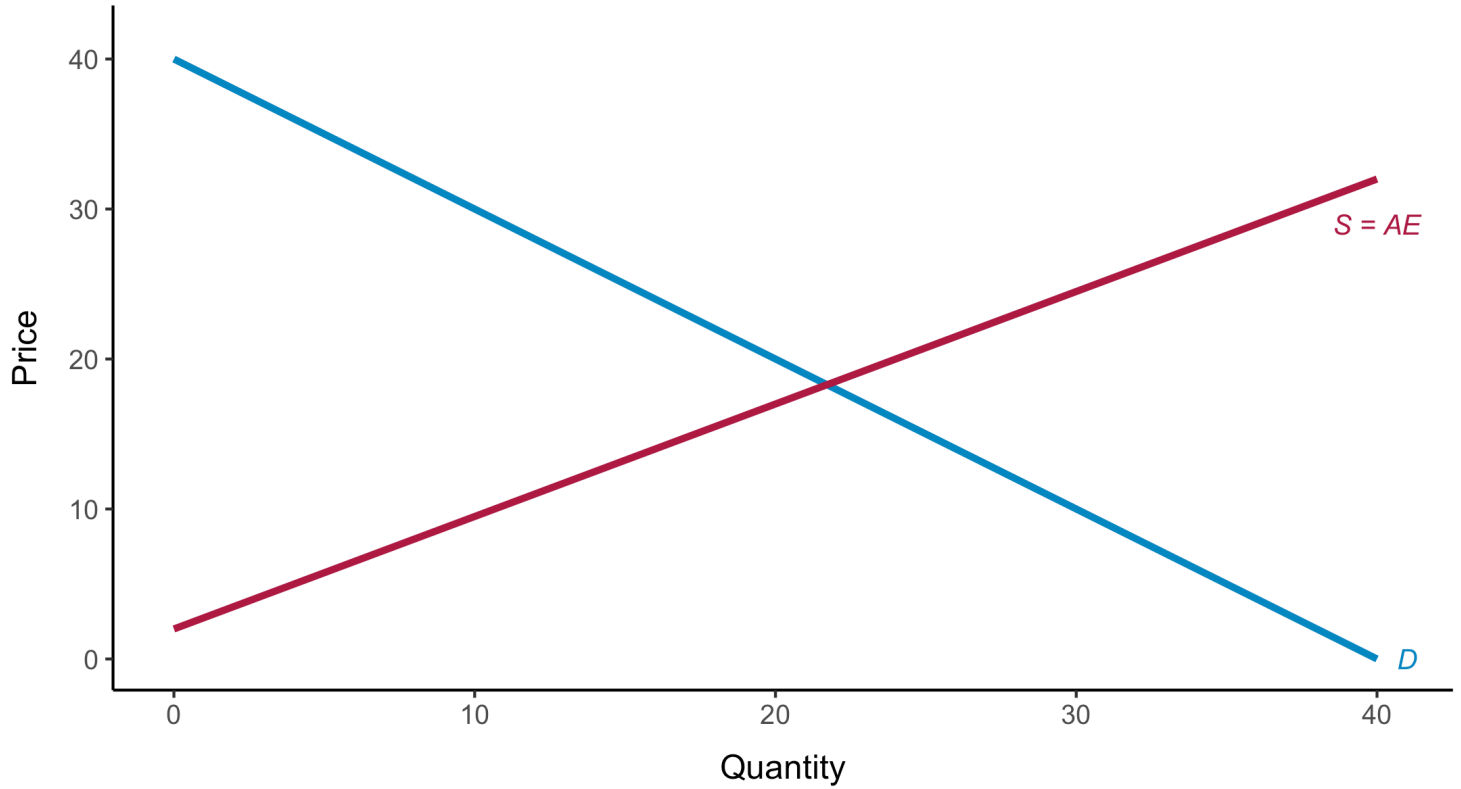
Monopsonist's Purchase Decision

Suppose $D = P_D(Q) = 40 - Q$. If the buyer is the *only buyer*, then $MV = D$.



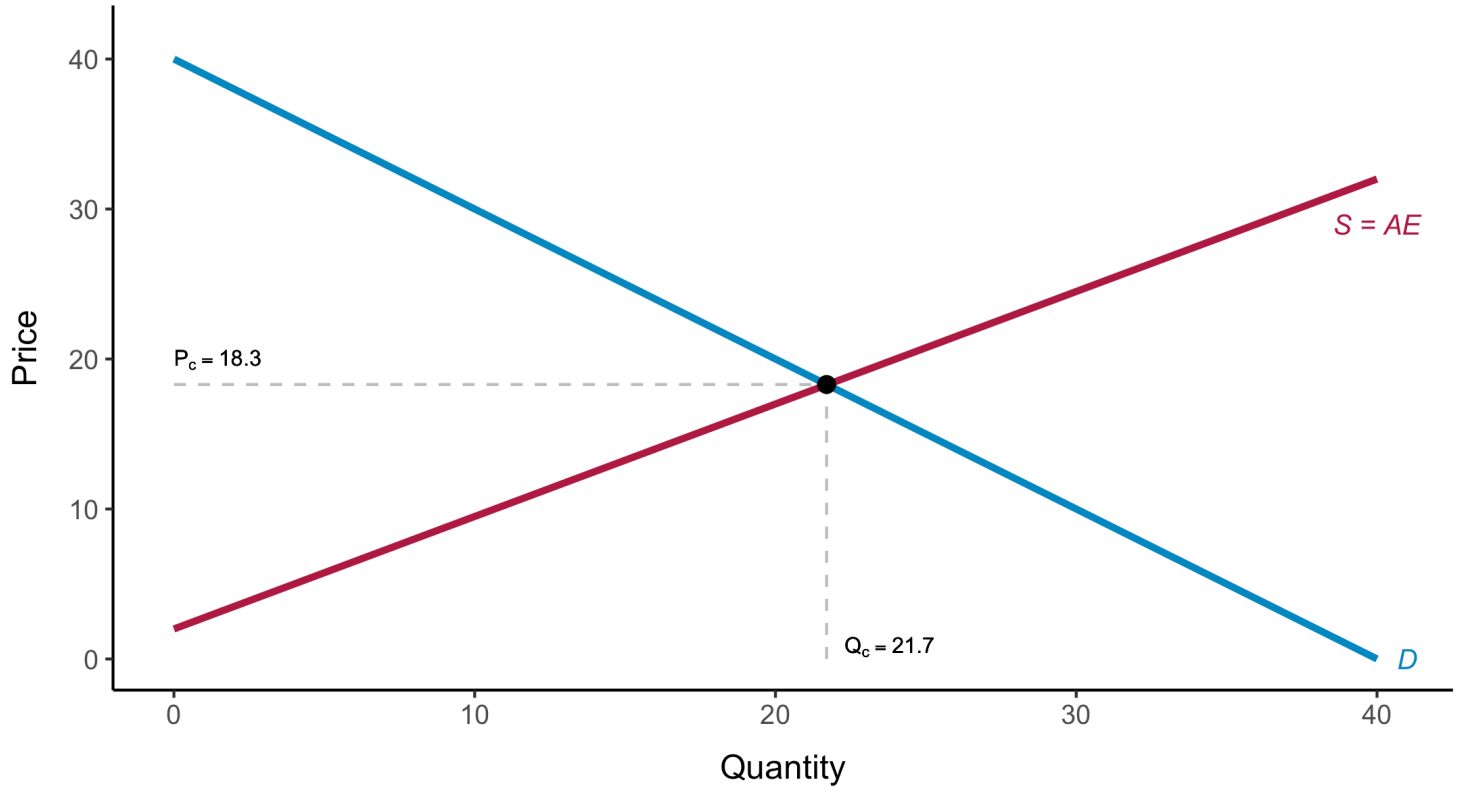
Monopsonist's Purchase Decision

Suppose $S = P_s(Q) = 2 + (3/4) \cdot Q$. Then $E = P_s(Q) \cdot Q = 2 \cdot Q + (3/4) \cdot Q^2$. Note = $AE = E/Q = S$



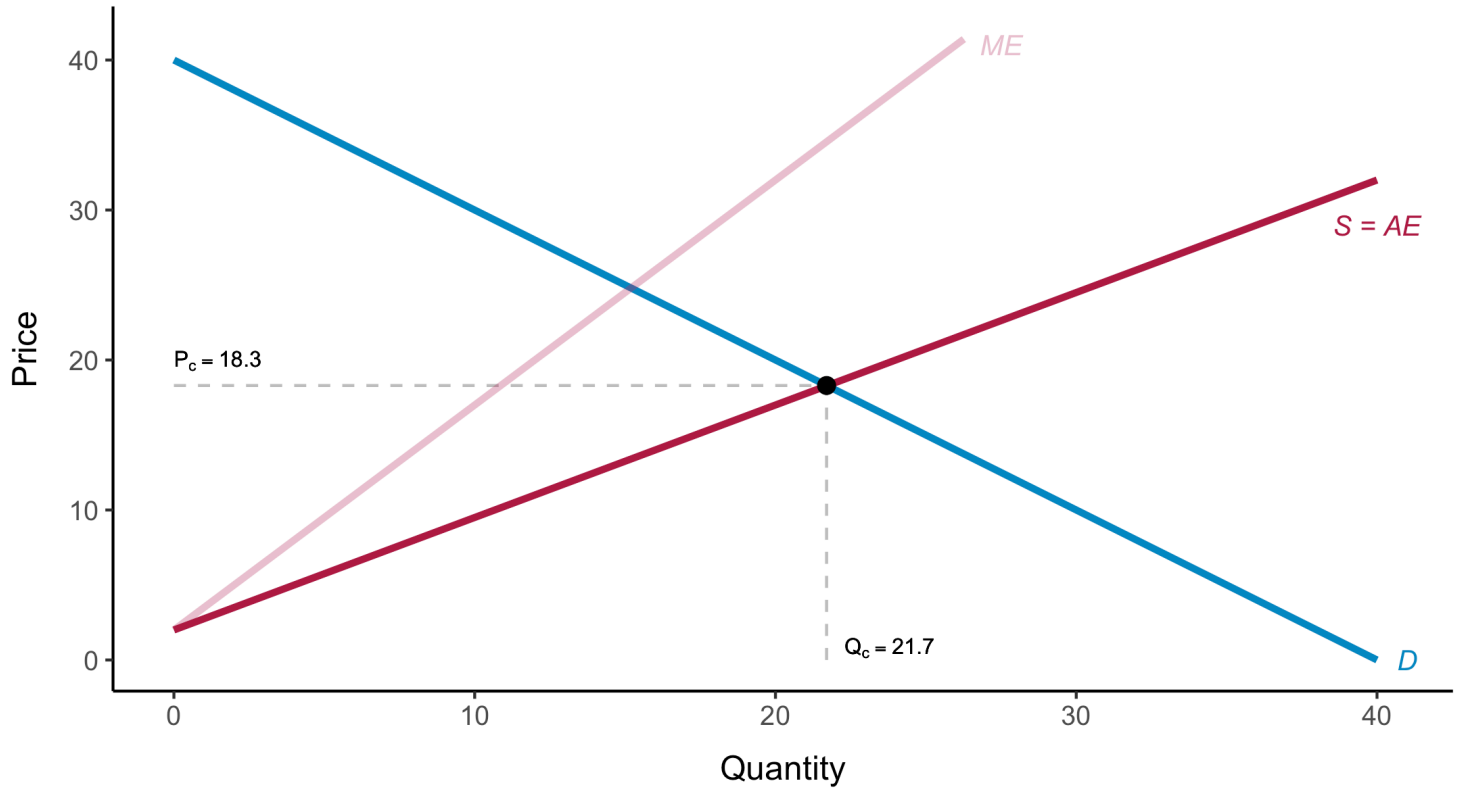
Monopsonist's Purchase Decision

In a competitive market, P_c^* and Q_c^* would be such that $D = S$. In this case, $P_c^* = 18.3$ and $Q_c^* = 21.7$.



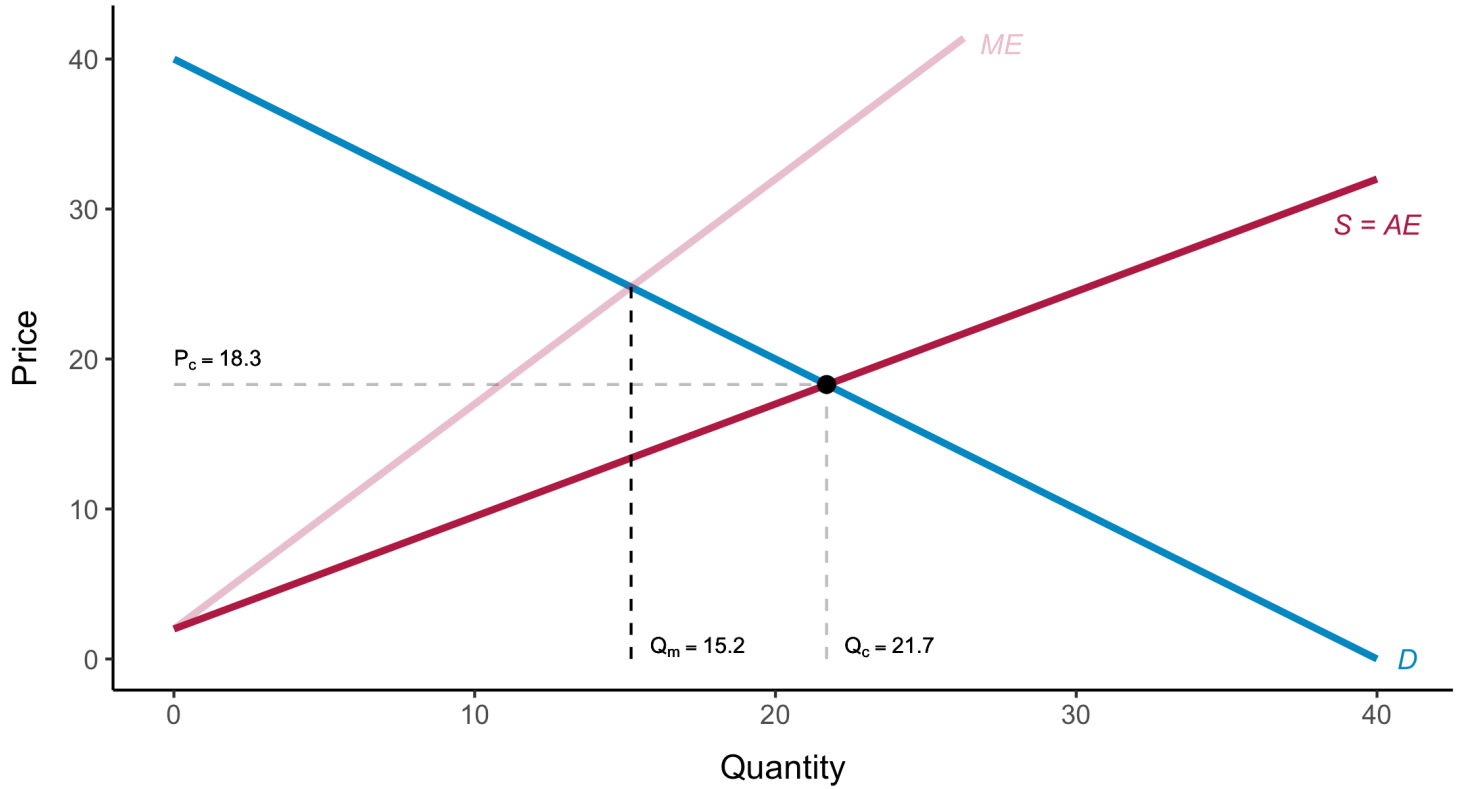
Monopsonist's Purchase Decision

However, here the single buyer has market power. So the buyer is not interested in the AE, but the ME.



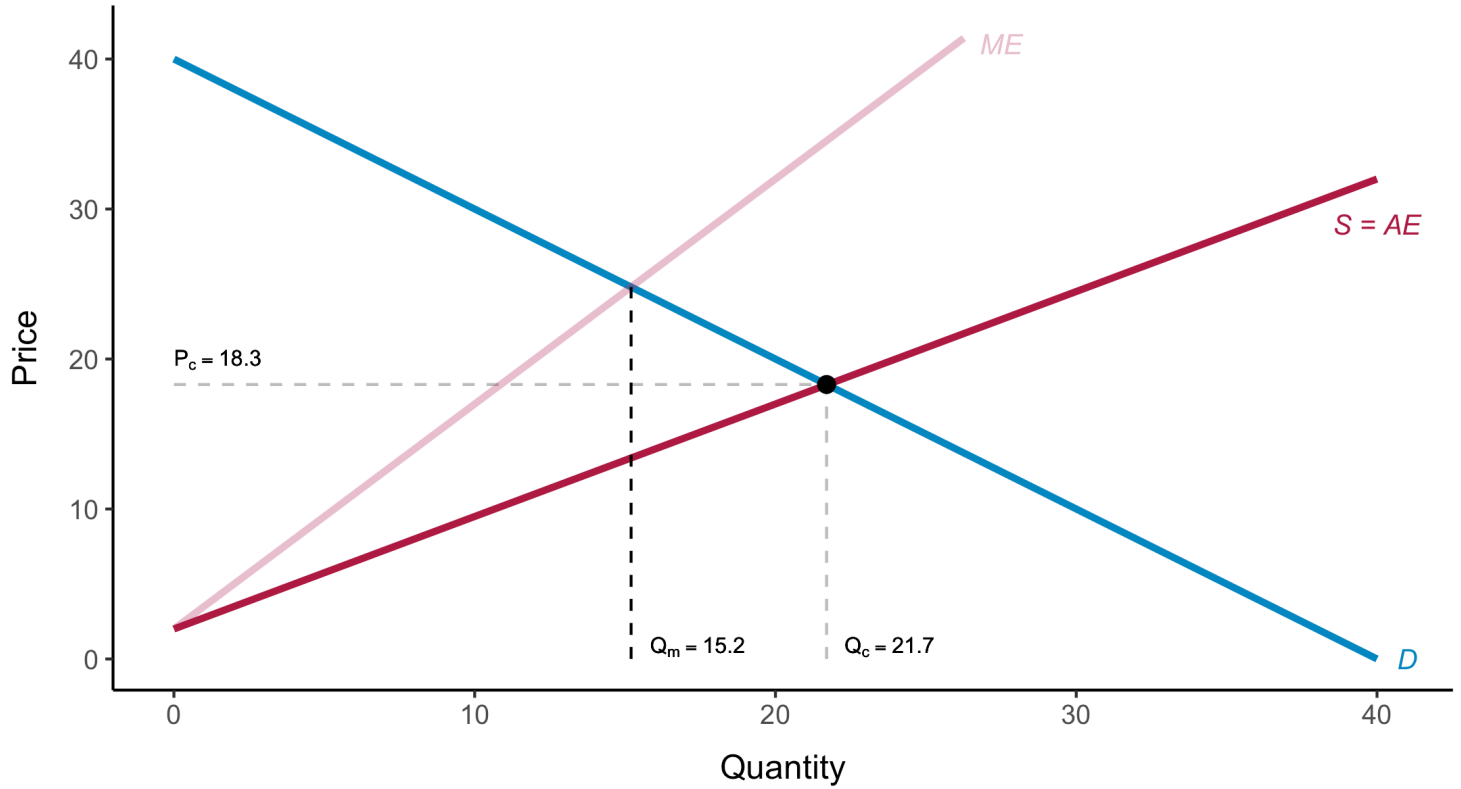
Monopsonist's Purchase Decision

Then it will set Q_m^* would be such that $ME = MV$. In this case, $Q_m^* = 15.2$.



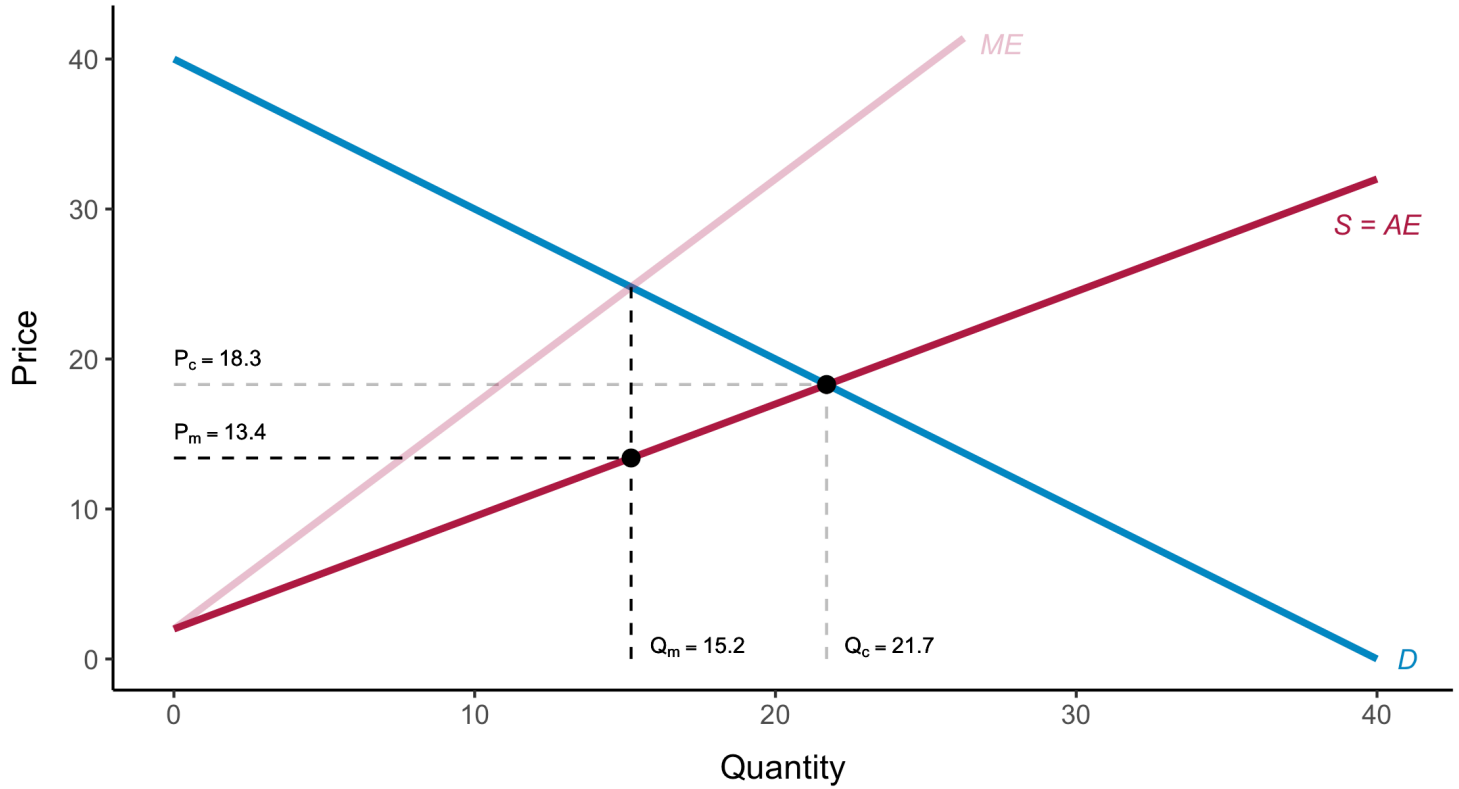
Monopsonist's Purchase Decision

The buyer's MV for the good at this quantity is $MV(Q_m^*) = 40 - 15.2 = 24.8$.



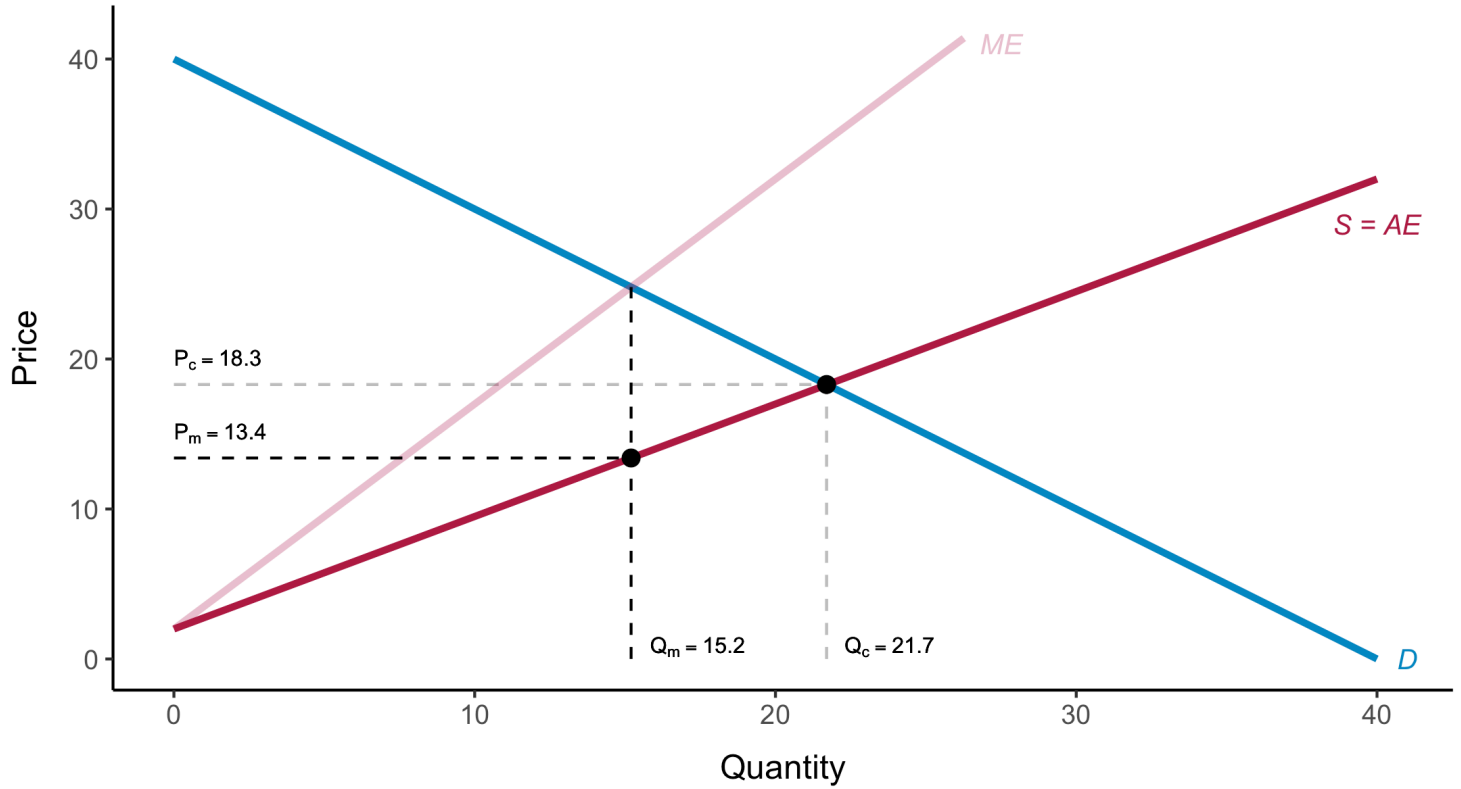
Monopsonist's Purchase Decision

The buyer's MV for the good at this quantity is $MV(Q_m^*) = 40 - 15.2 = 24.8$. However, that is not the price that the buyer will be paying. Which one is it? $P_s(Q_m^*) = 2 + .75 \cdot (15.2) = 13.4$.



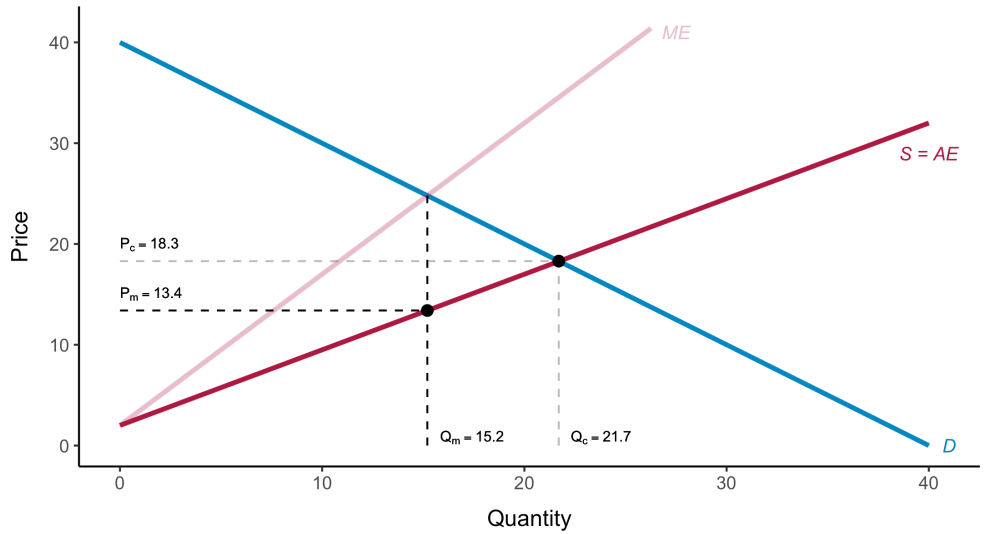
Monopsonist's Purchase Decision

Note $P_m^* < P_c^*$ and $Q_m^* < Q_c^*$.



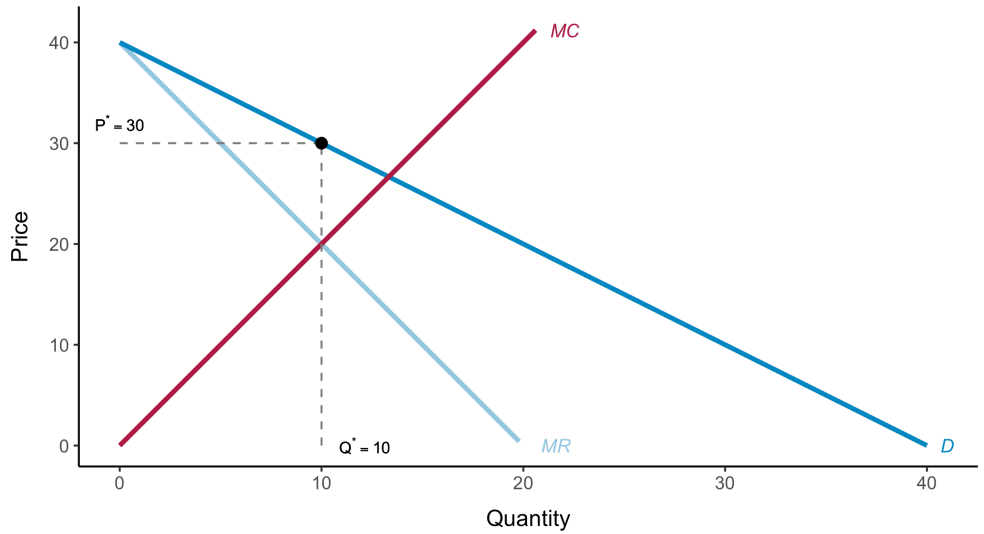
Monopsony and monopoly

Monopsony



A monopsonist reduces purchases to push prices below marginal value.

Monopoly



A monopolist restricts output to raise prices above marginal cost.

Both create inefficiencies by setting quantities lower than competitive levels.

Monopsony Power

Sources of Monopsony Power

Markets with a few firms competing as buyers are more common than pure monopsony, giving each firm some degree of monopsony power.

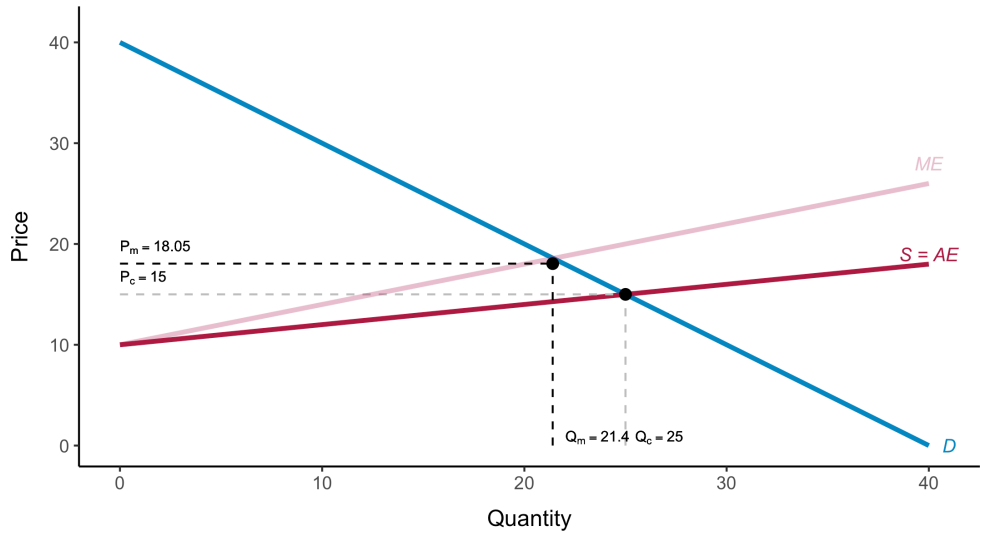
1. Elasticity of Market Supply

2. Number of buyers

3. Interactions among buyers

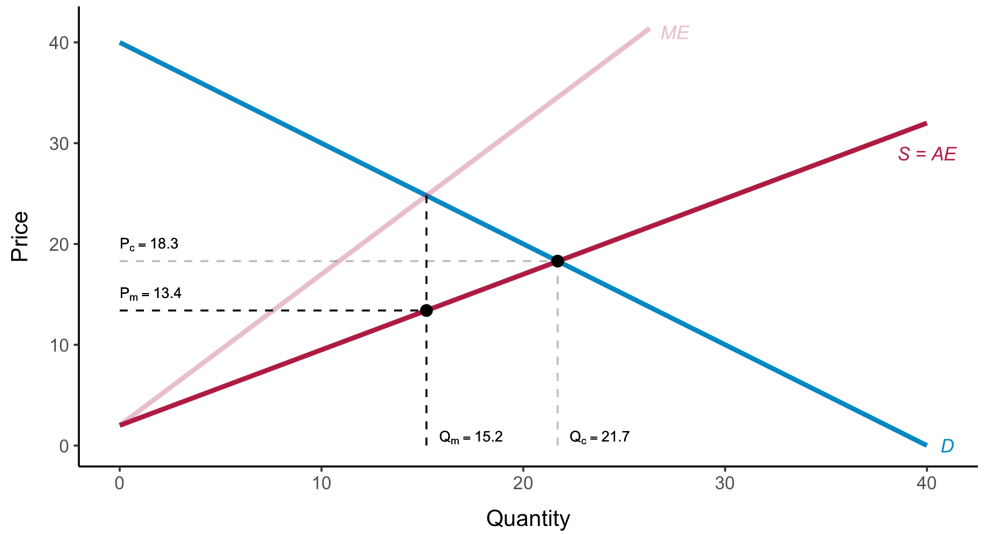
1. Elasticity of Market Supply

Elastic supply



Marginal expenditure and average expenditure do not differ by much

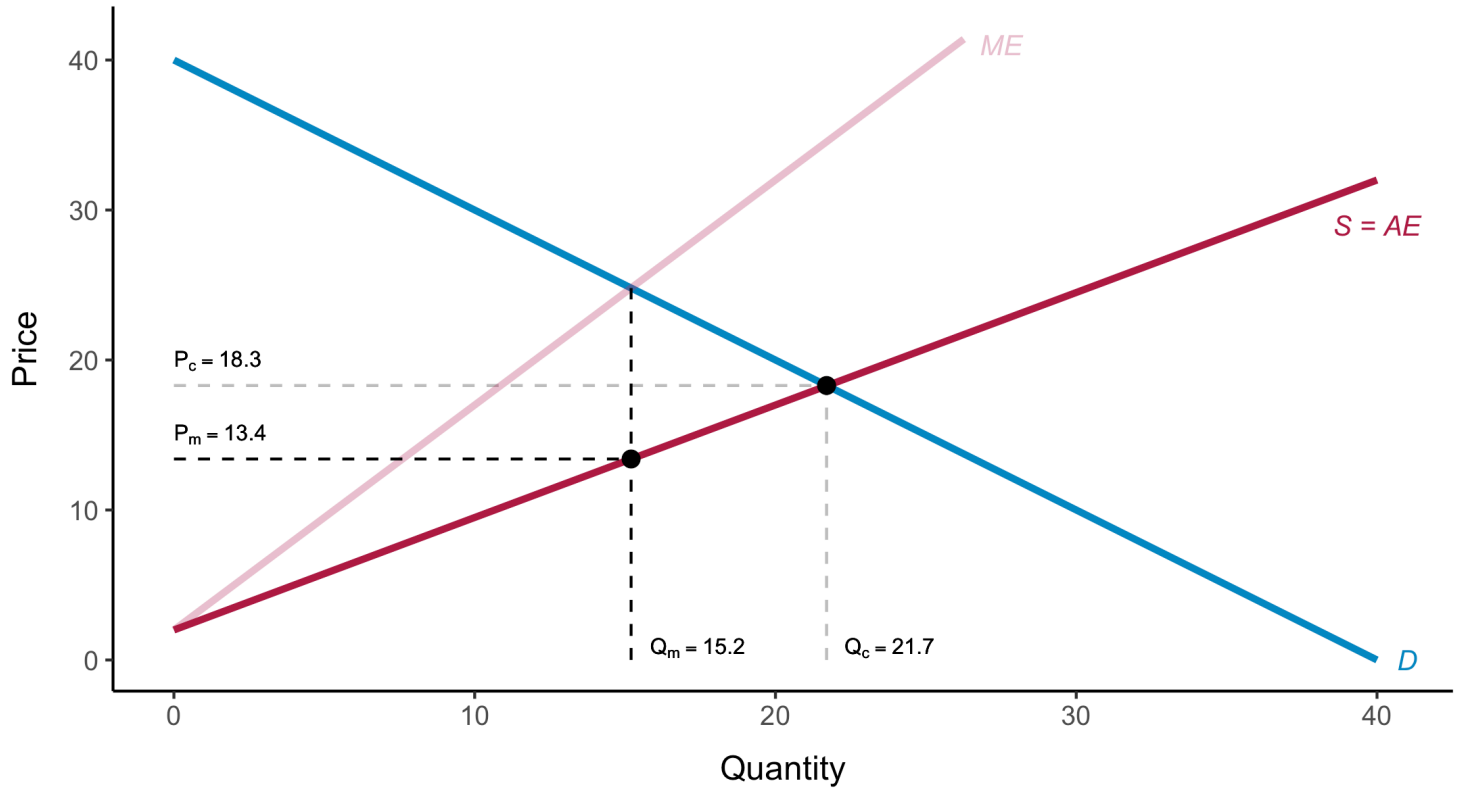
Inelastic supply



Big difference between the actual price and marginal expenditure.

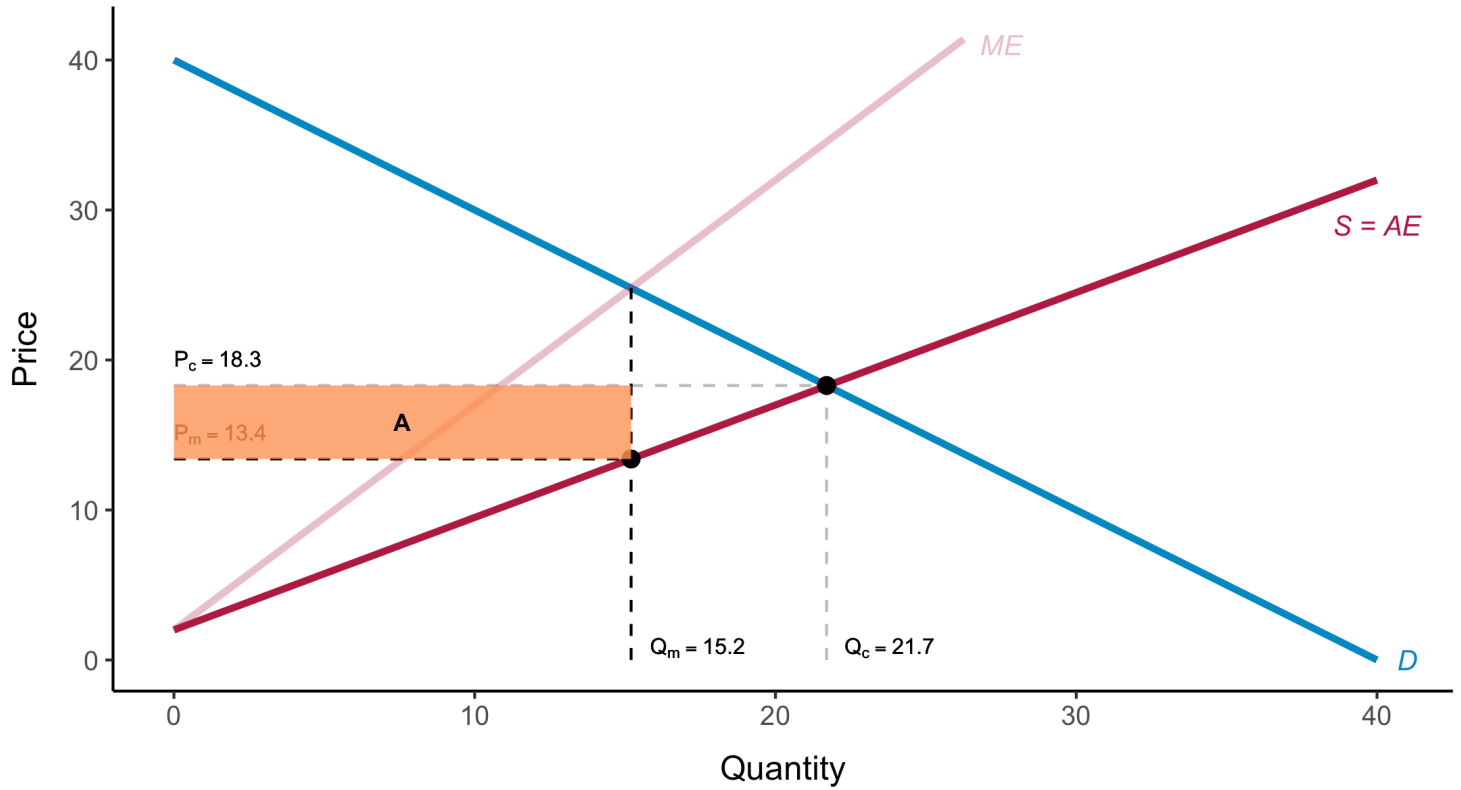
The Social Costs of Monopsony Power

Welfare analysis.



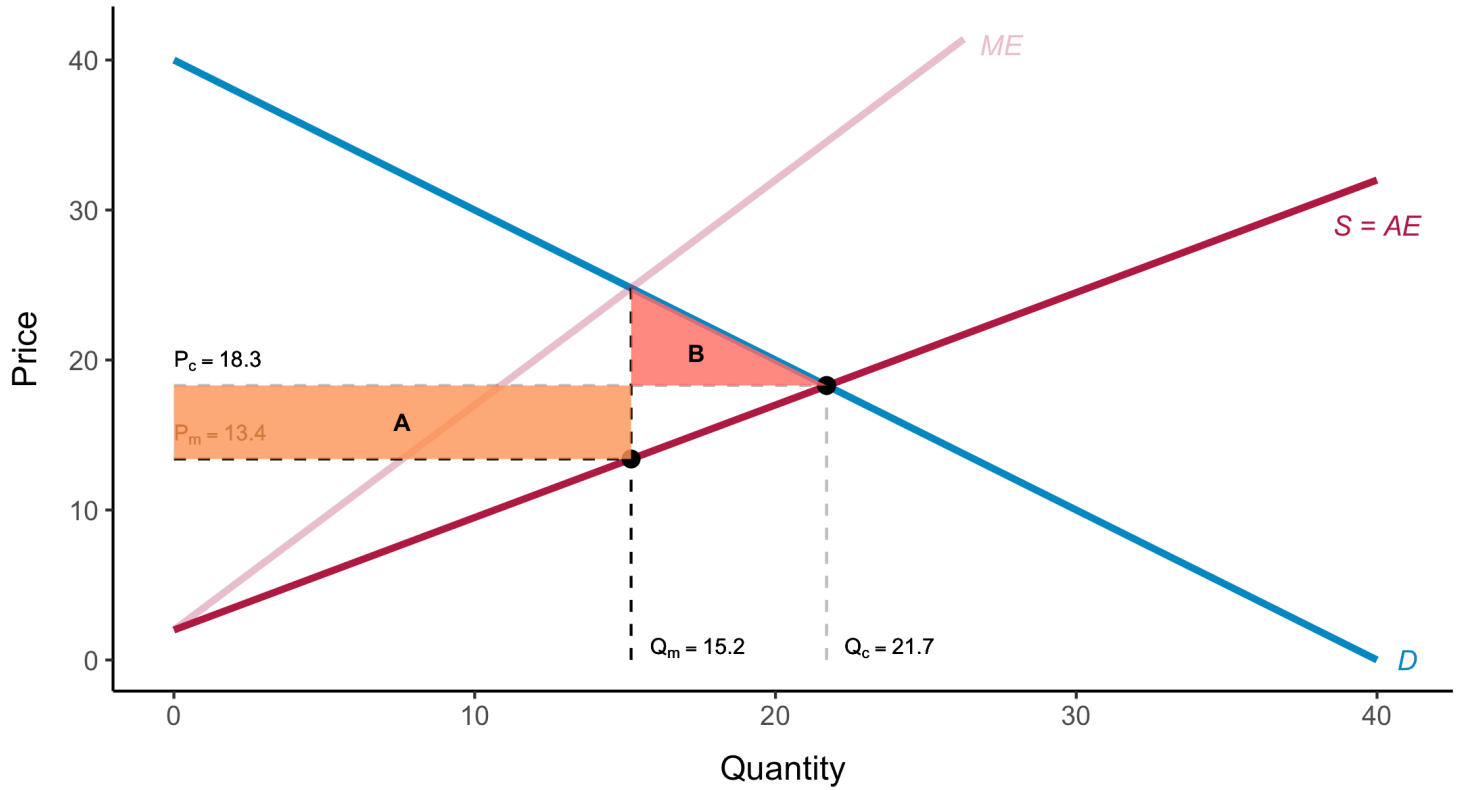
The Social Costs of Monopsony Power

Rectangle A is? Loss in producer surplus and increase in consumer surplus. The transfer.



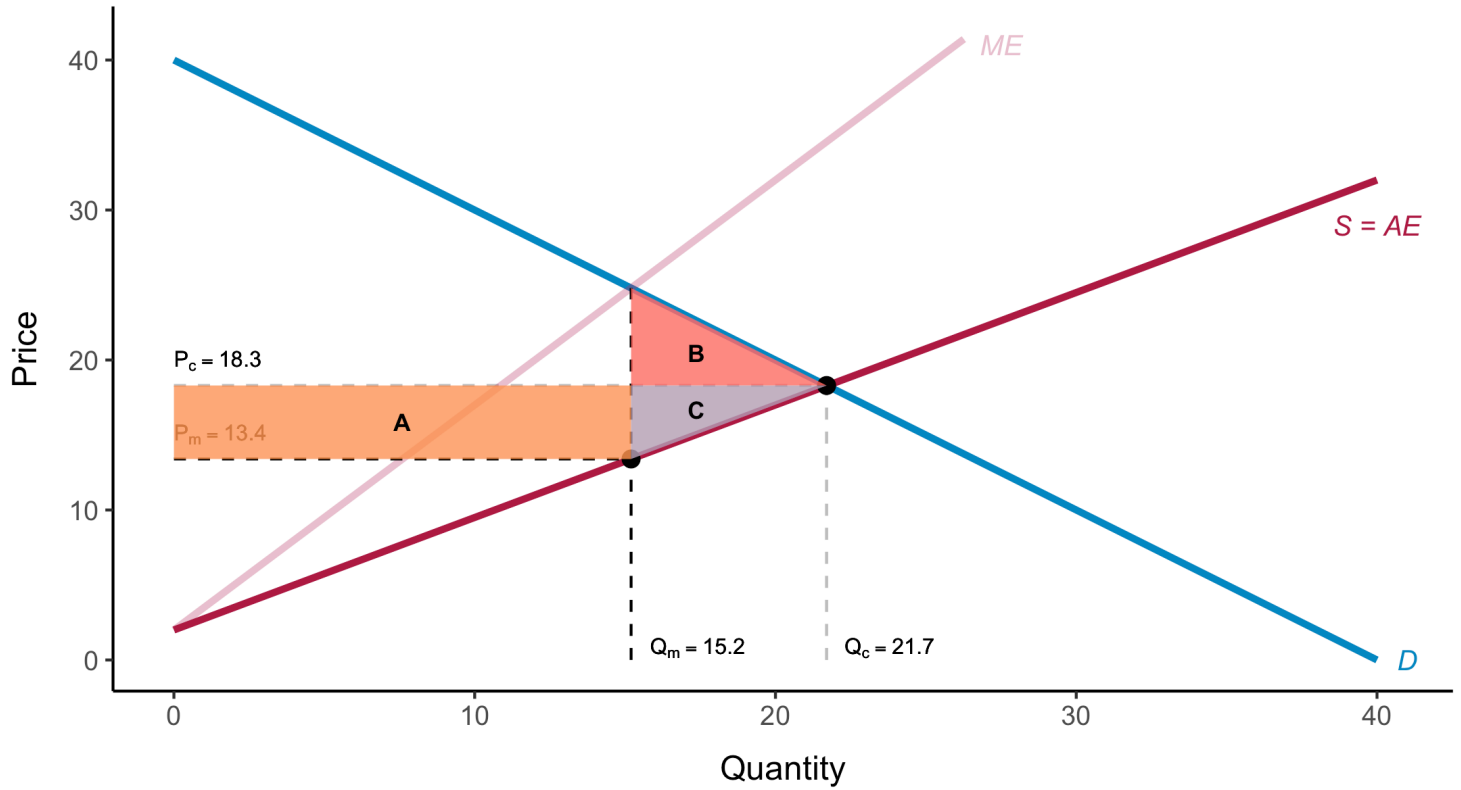
The Social Costs of Monopsony Power

Triangle B is? Loss in consumer surplus as the buyer buys less.



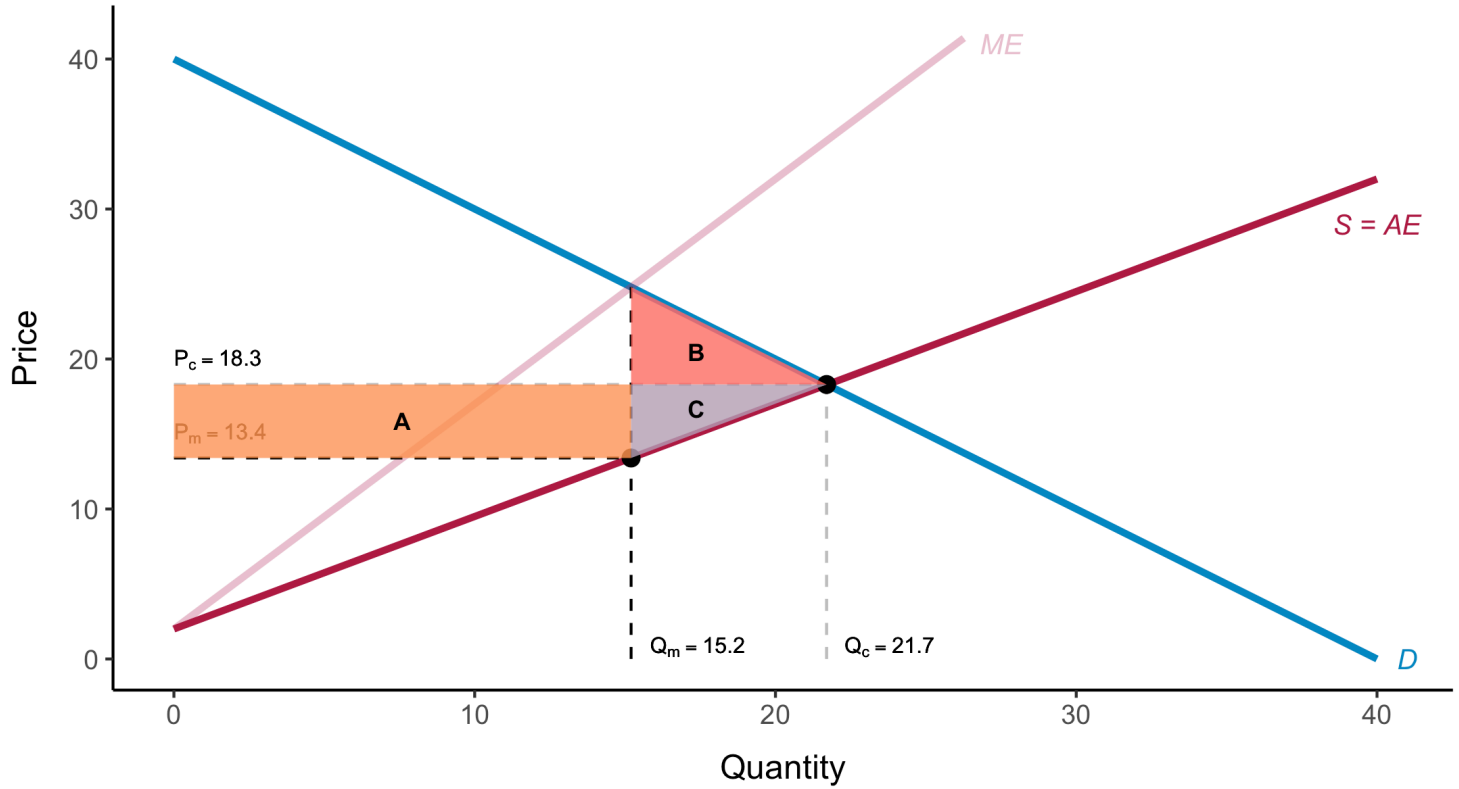
The Social Costs of Monopsony Power

Triangle C is? Loss in producer surplus as these producers leave the market.



The Social Costs of Monopsony Power

$$\Delta W = \Delta CS + \Delta PS = -A - B + A - C = -B - C$$



Limiting Market Power: Antitrust Laws

Summary

Summary

1. **Market Power**: Sellers or buyers influence prices.

2. **Types of Power**:

    - **Monopoly**: Sellers set prices above marginal cost.
    - **Monopsony**: Buyers pay below marginal value.

3. **Determinants**:

    - Number of firms: More competition reduces monopoly power.
    - Number of buyers: More buyers reduce monopsony power.
    - Elasticity: Less elastic demand/supply increases power.

4. **Social Costs**:

    - Both monopoly and monopsony reduce output, causing deadweight loss.
    - Rent-seeking can add inefficiencies.

5. **Regulation**:

    - Economies of scale sometimes justify monopolies.
    - Antitrust laws limit excessive market power.

TD

6. Suppose that an industry is characterized as follows:

$C = 100 + 2q^2$	each firm's total cost function
$MC = 4q$	firm's marginal cost function
$P = 90 - 2Q$	industry demand curve
$MR = 90 - 4Q$	industry marginal revenue curve

a. If there is *only one firm* in the industry, find the monopoly price, quantity, and level of profit.
b. Find the price, quantity, and level of profit if the industry is competitive.
c. Graphically illustrate the demand curve, marginal revenue curve, marginal cost curve, and average cost curve. Identify the difference between the profit level of the monopoly and the profit level of the competitive industry in two different ways. Verify that the two are numerically equivalent.

14. The employment of teaching assistants (TAs) by major universities can be characterized as a monopsony. Suppose the demand for TAs is $W = 30{,}000 - 125n$, where W is the wage (as an annual salary) and n is the number of TAs hired. The supply of TAs is given by $W = 1000 + 75n$.

a. If the university takes advantage of its monopsonist position, how many TAs will it hire? What wage will it pay?

b. If, instead, the university faced an infinite supply of TAs at the annual wage level of \$10,000, how many TAs would it hire?