

# Non-Competitive Markets

## Content

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1. Monopoly
2. Monopolistic Competition
3. Oligopoly

## Reading list

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Mankiw Ch 13-17

## └─ 1.1 Key features

### Monopoly

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- ⦿ A lot of buyers, but only sole seller. (Price maker)
- ⦿ Monopolist's product is rarely replaceable.
- ⦿ Barriers to entry

## └─ 1.1 Key features

# Monopoly

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Examples ?

## └─ 1.1 Key features

### Causes of monopoly

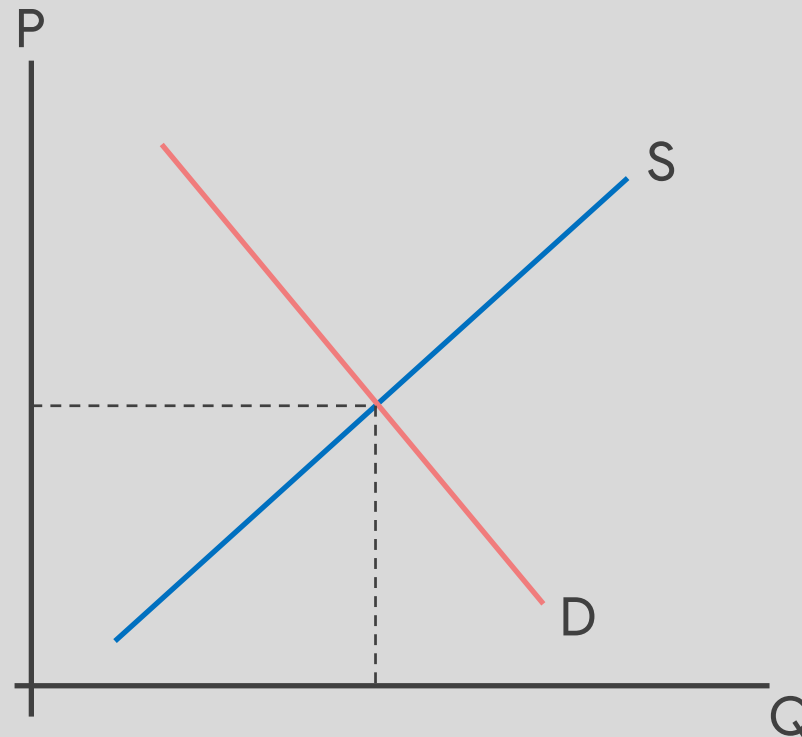
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- ⦿ An incumbent holds a significant material or factor of production.
- ⦿ There are several institutions supporting monopoly such as legal patent, concession.
- ⦿ Some product or market is natural monopoly because of its economies of scale.
- ⦿ Product differentiation.

## 1.2 Demand curve

### Price maker

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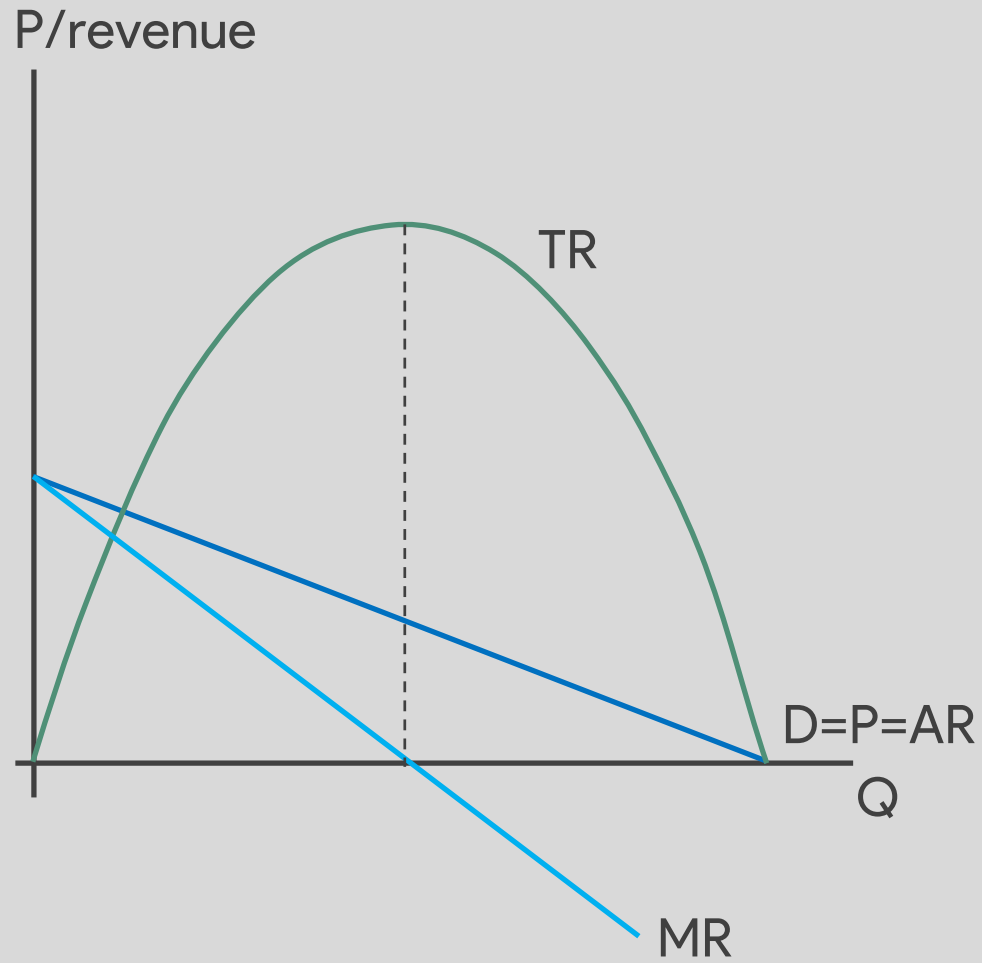


Firm = Industry

1.3 Revenue and profit

| 1 (Q)    | 2 (P) | 3 (TR)        | 4 (AR)          | 5 (MR)           |
|----------|-------|---------------|-----------------|------------------|
|          |       |               |                 |                  |
| Quantity | Price | Total revenue | Average revenue | Marginal revenue |
| 1        | 25    |               |                 |                  |
| 2        | 20    |               |                 |                  |
| 3        | 15    |               |                 |                  |
| 4        | 10    |               |                 |                  |
| 5        | 5     |               |                 |                  |

## 1.3 Revenue and profit



## └─ 1.3 Revenue and profit

- If the demand is linear, then, marginal revenue is as twice as steep compared to the demand line.

- Example:  $P = 60 - 4Q$

## 1.4 Short-run equilibrium

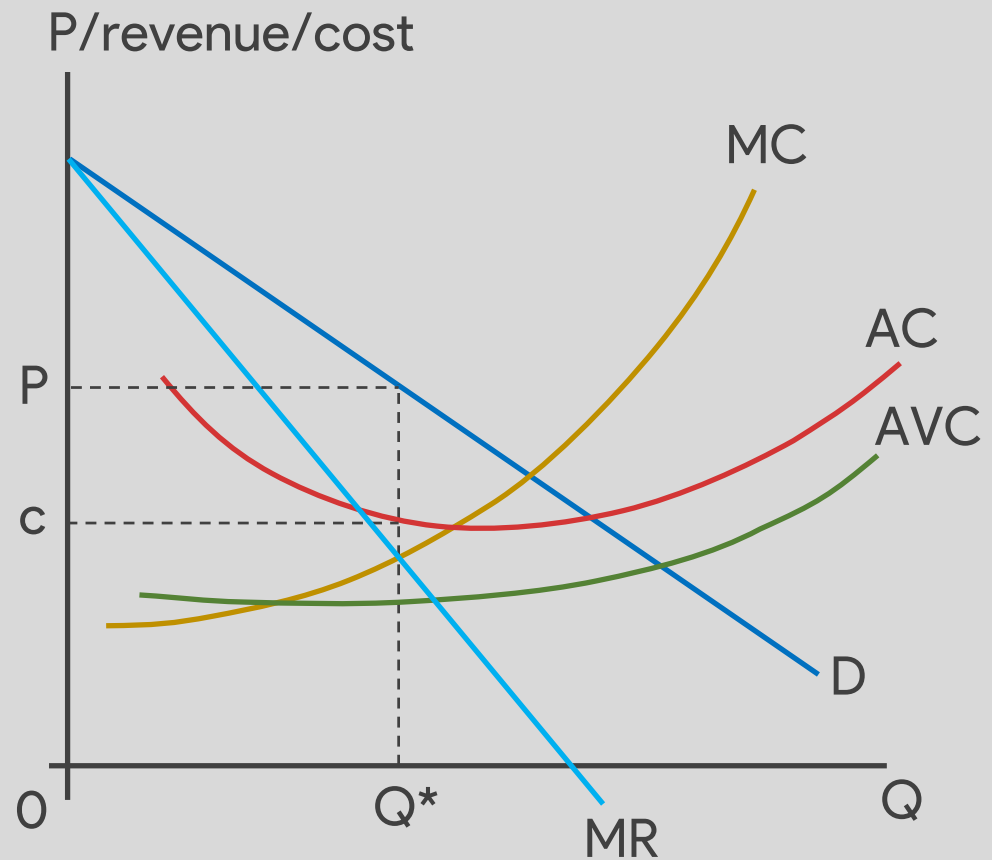
### (1) Excess profit case

Consider from average revenue/cost

● Total revenue

● Total cost

● Profit (revenue-cost)



## 1.4 Short-run equilibrium

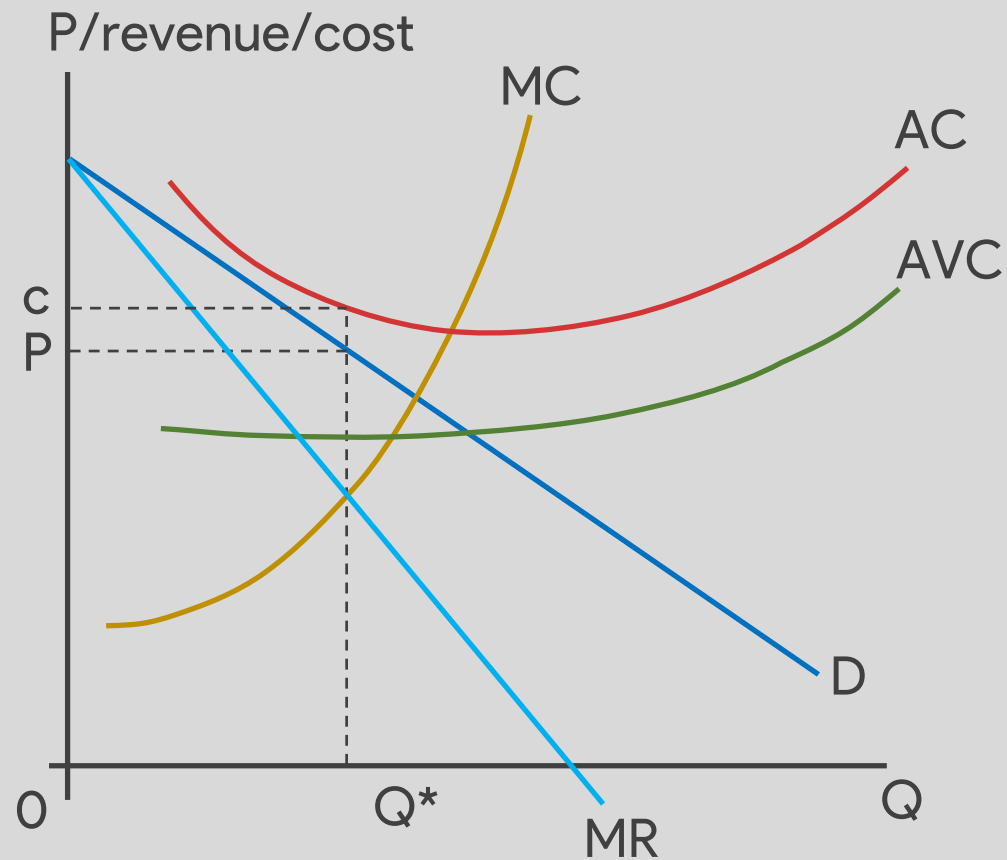
### (2) Loss

Consider from average revenue/cost

● Total revenue

● Total cost

● Profit (revenue-cost)

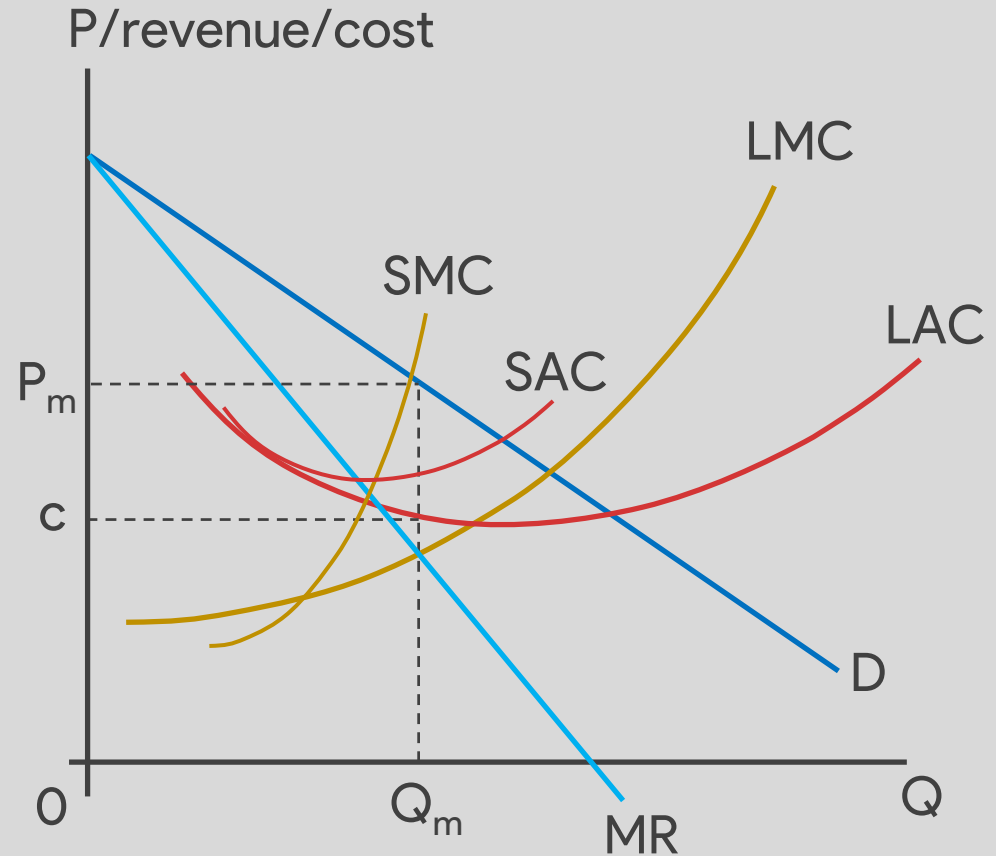


# 1. Monopoly

## Non-Competitive Markets

### 1.5 Long-run equilibrium

- In the long-run, monopolist tends to maintain market power.



## Price discrimination

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In a monopoly market, the firm can manipulate market power by selling product with different or discriminating price in order to gain consumer surplus as a monopolist's profit. Price discrimination can be divided broadly into 3 types depending on its degree.

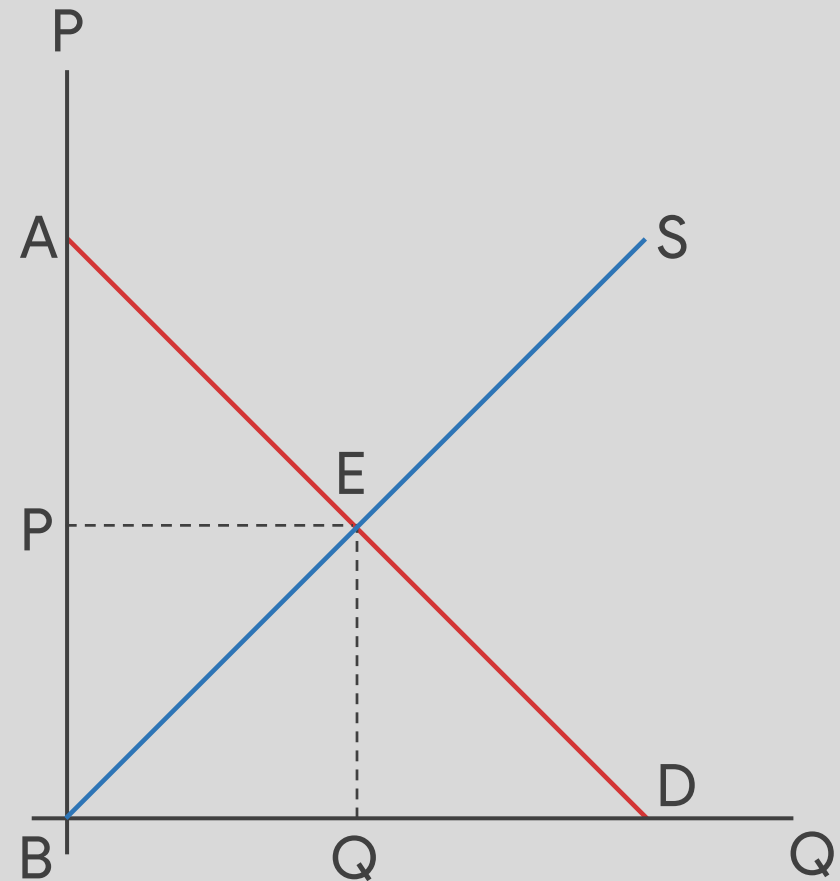
- First-degree price discrimination
- Second-degree price discrimination
- Third-degree price discrimination

## 1.6 Price Discrimination

### First-degree price discrimination

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- ⦿ The monopolist must have perfect information of every consumers' willingness to pay.
- ⦿ Total consumers' surplus then can be turned into monopolist's profit.
- ⦿ This degree of price discrimination may not be possible.

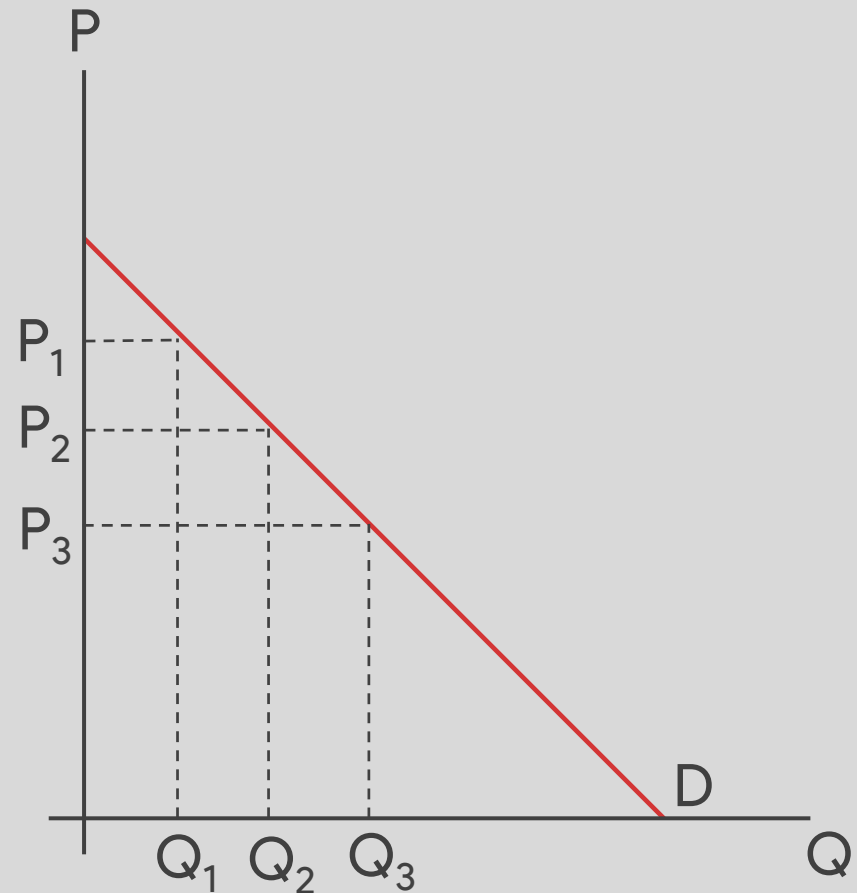


## 1.6 Price Discrimination

## Second-degree price discrimination

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- Monopolist can discriminate price by quantity sold.
- Some of the consumers' surplus can be turned into monopolist's profit.
- Mostly done with bulk sale.



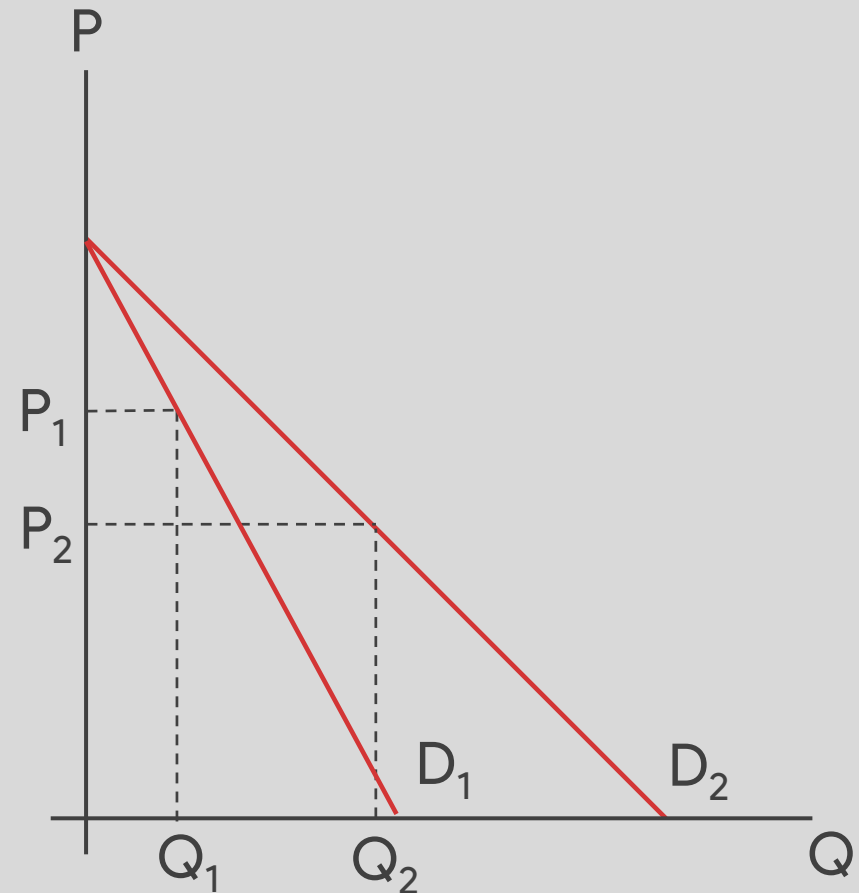
## 1.6 Price Discrimination

## Third-degree price discrimination

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Three conditions are needed to be met.

- ⦿ Consumers must be able to be divided into more than 2 groups.
- ⦿ Each group of consumer differs in their demand elasticity.
- ⦿ Consumer cannot buy with cheaper price and sell to another. (Arbitrage – taking advantage of price difference)



## └─ 1.6 Price Discrimination

### Other price discrimination schemes

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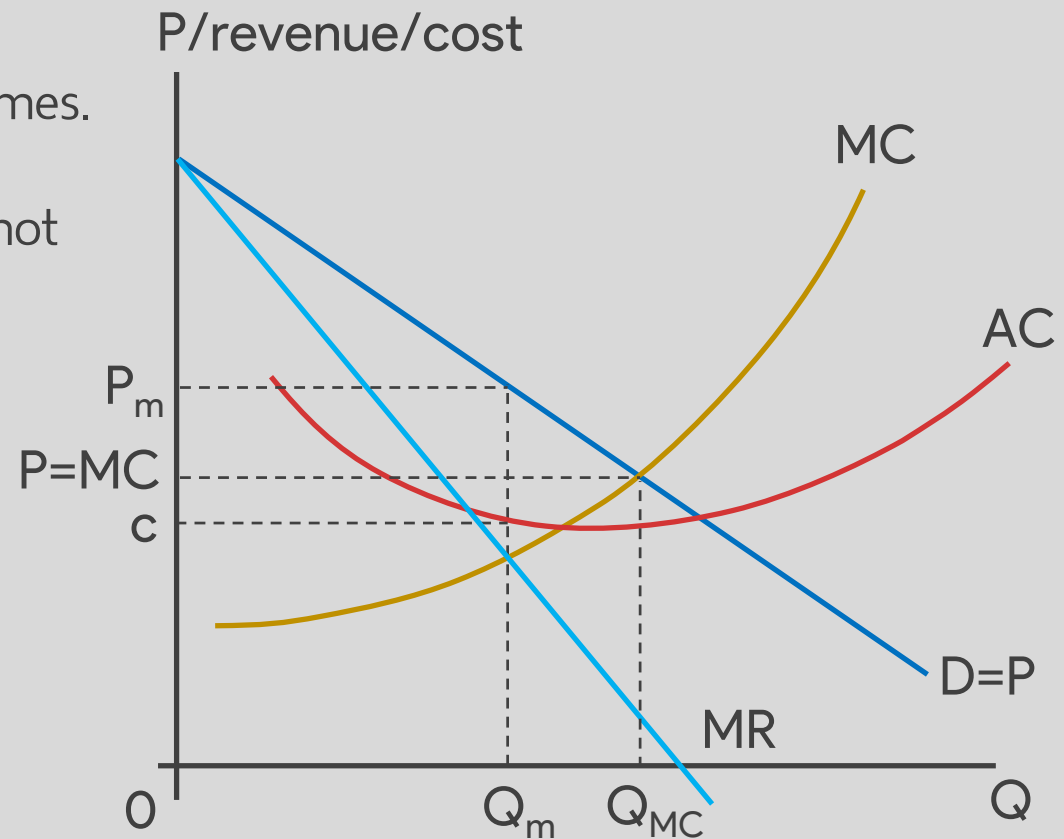
- ◎ Intertemporal price discrimination – such as tech products cycle.
- ◎ Peak-load pricing – such as airplane flight, zoo ticket, data or call limit.

## 1.7 Controlling monopolist

### Ideal price ( $P=MC$ )

Government can interfere the monopolist by setting price schemes.

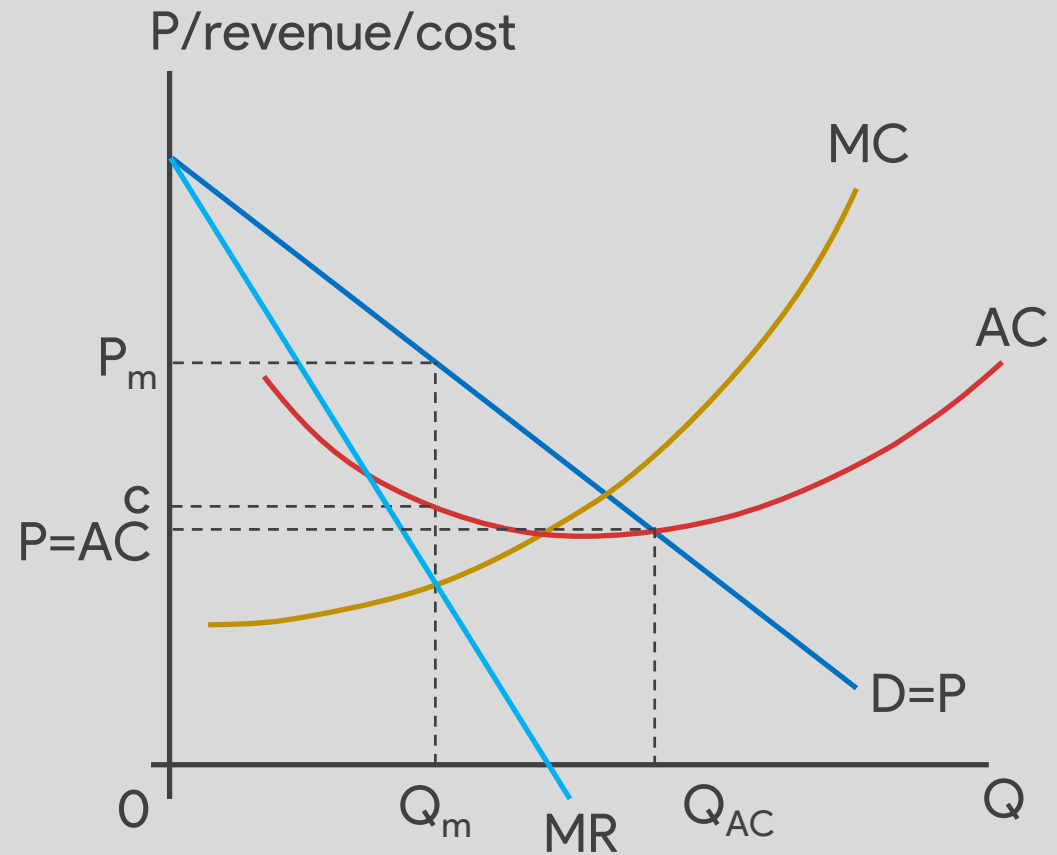
☉ Monopolist will gain profit or not depend on cost.



## 1.7 Controlling monopolist

### Fair price ( $P=AC$ )

● In this case, normal profit is guaranteed for monopolist.

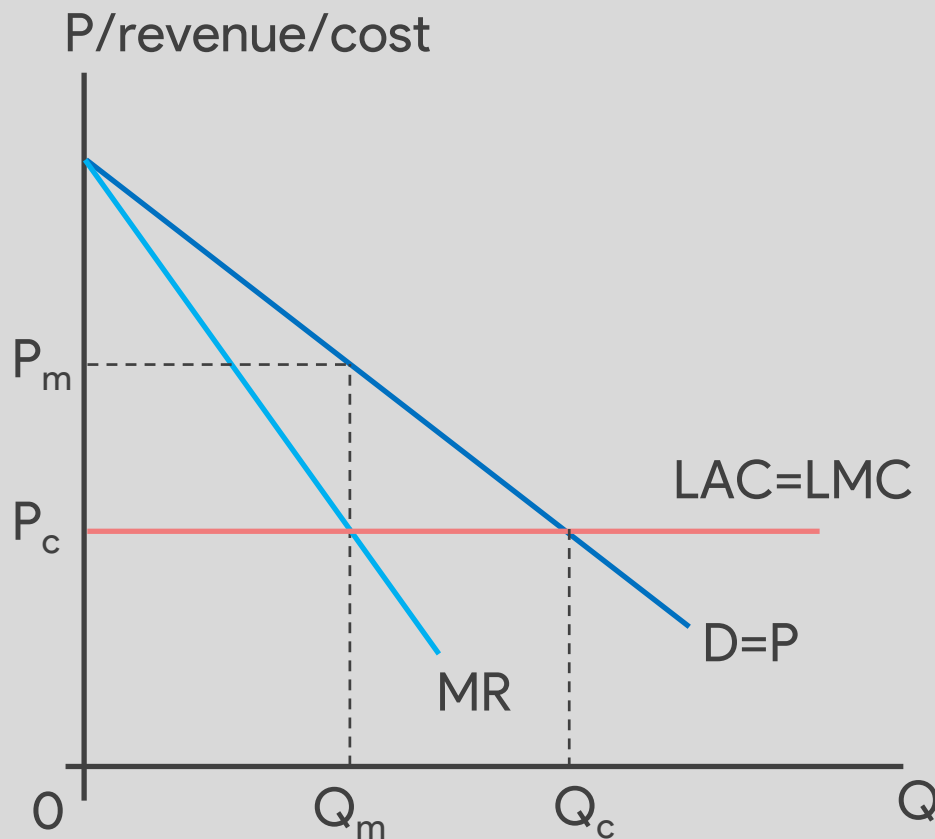


## 1.8 Comparing competitive market to monopoly.

- ⦿ Is a society always worse off if a monopolist gain excess profit in the long-run?
- ⦿ What does it mean by  $P_M > LAC > LMC$  compared to  $P_C = LAC = LMC$  in perfect competitive market.

## 1.8 Comparing competitive market to monopoly.

- Assume that efficiency and economy of scale is the same for a product in both perfect competitive and monopoly market



- CS in monopoly market.
- CS in perfect competitive market.
- Monopolist's profit.
- Deadweight loss from monopoly.

### └─ 2.1 Key features

## Monopolistic competition

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- ⦿ A lot of buyers and sellers, but not as many as in perfect competitive market.
- ⦿ Firms have market power, but not very much.
- ⦿ Products can be substitutable, can be differentiated.
- ⦿ New comers can enter the industry easily.

### └ 2.1 Key features

# Monopolistic competition

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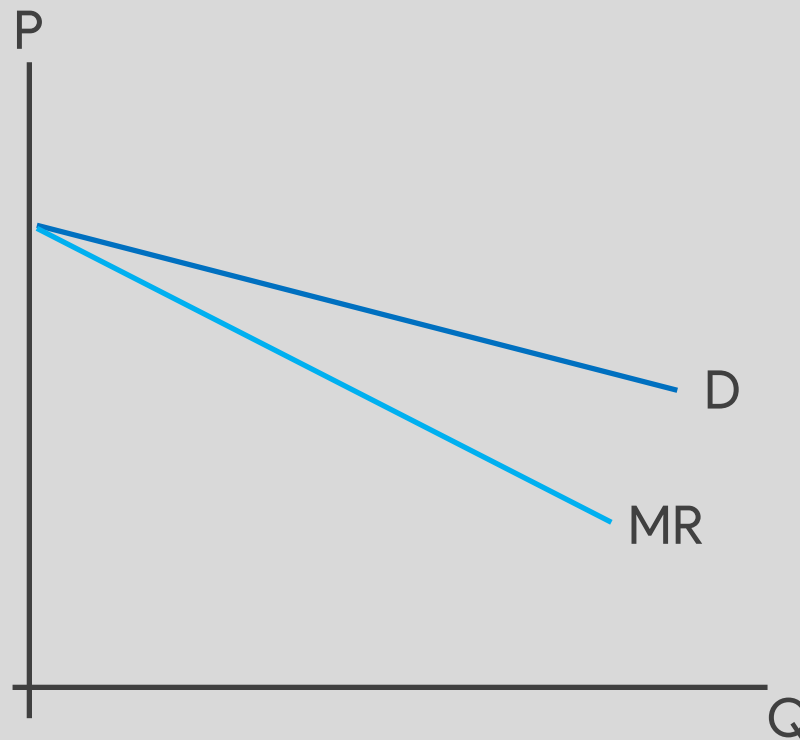
Examples?

### 2.1 Key features

# Monopolistic competition

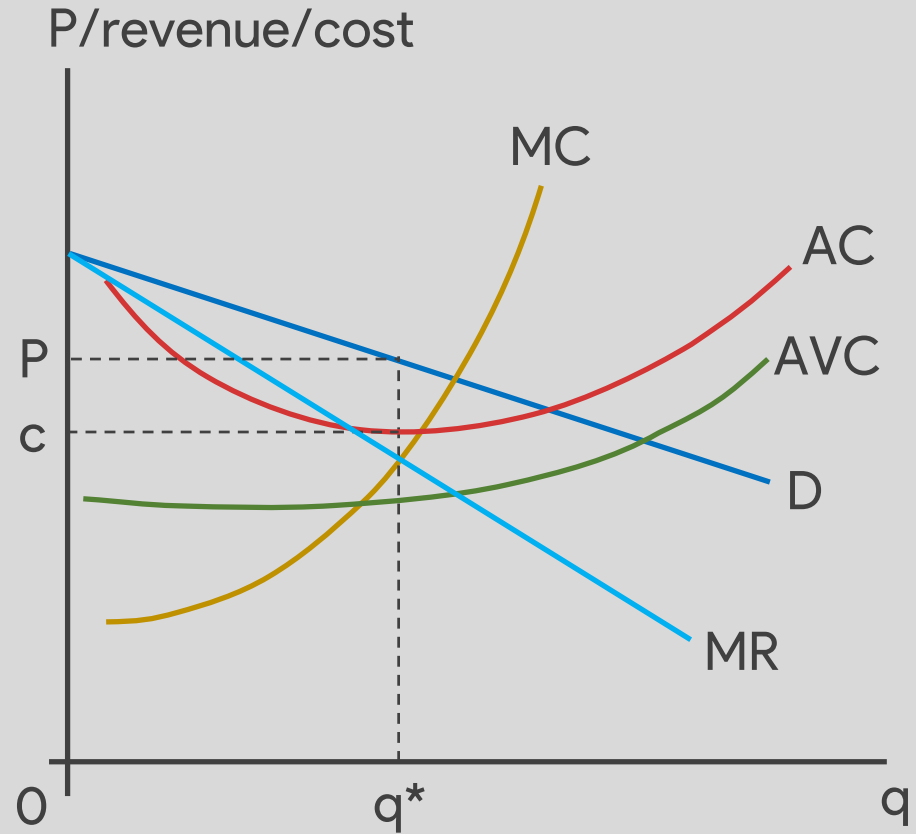
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Demand in firms' point of view.



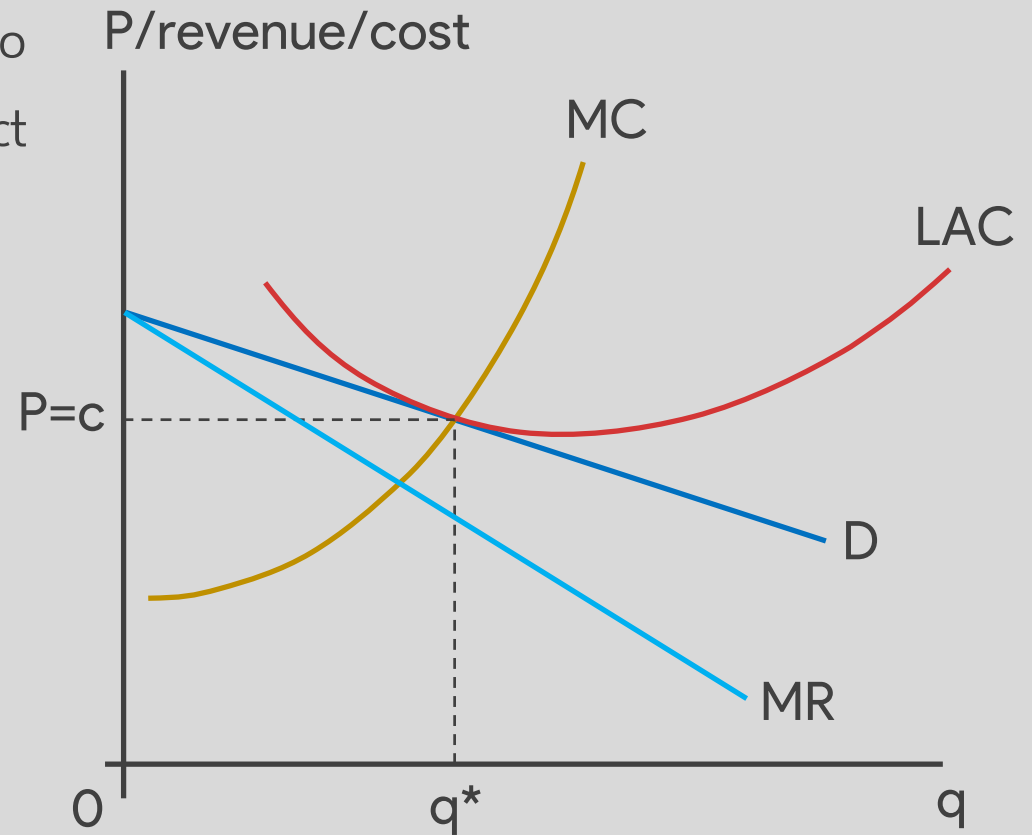
### 2.2 Short-run equilibrium

- Total revenue.
- Total cost.
- Profit (revenue-cost)



### 2.3 Long-run equilibrium

- In the long-run, firms tend to gain only normal profit as in perfect competitive market.



### └─ 3.1 Key features

# Oligopoly

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- ⦿ A lot of buyers, but only a few sellers. If there are two firms, the market is called duopoly.
- ⦿ Firm's decision affect other firms in the industry.
- ⦿ Product can be either homogenous or differentiated.
- ⦿ New producers can hardly enter the market.

### └─ 3.1 Key features

# Oligopoly

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Examples?

## └─ 3.1 Key features

## Oligopoly

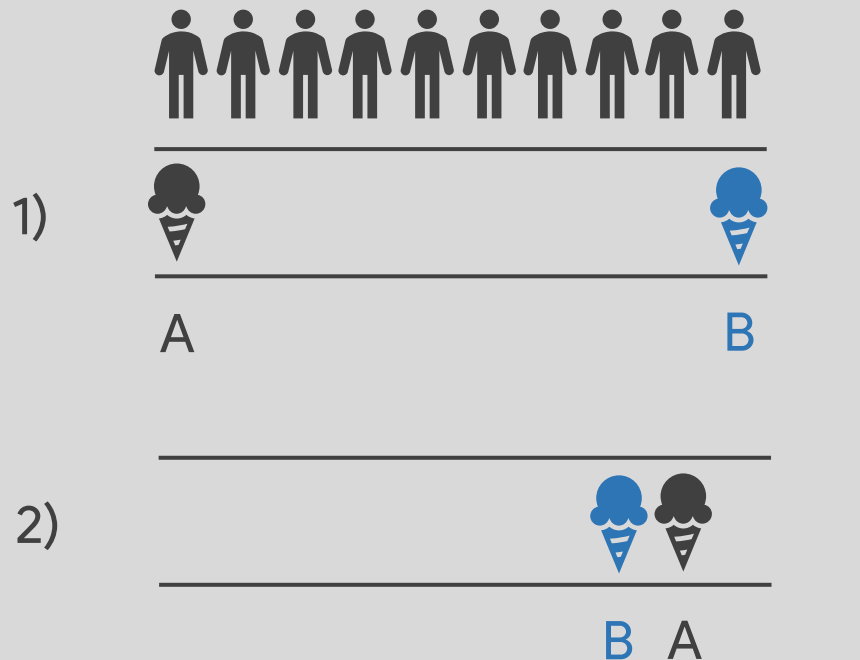
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There is no universal model for oligopoly, since competition depends on firms' actions and reactions. Therefore, there are many models that capture different situations in this type of market such as

- ◎ Kinked demand curve
- ◎ Price leadership
- ◎ Cartel
- ◎ Hotelling model
- ◎ Game theory

## 3.2 Hotelling model

Supposed that there are two ice-cream parlors A and B, they can place their shop anywhere along an horizontal line where consumers live along this line. Given that there are 10 consumers in this market and both parlors sell that same quality ice-cream at the same price. Hence, the only cost consumers are having is the travel distance.



#### └─ 3.2 Game theory

Game theory is a study of how agents in a game react under different circumstances of a game. A game's attributes are defined by.

- ⦿ Players
- ⦿ Rules
- ⦿ Payoff
- ⦿ Information

## 3.2 Game theory

## Picking a present

A father of 2 sons (A and B) is planning to buy a console for each of them (Nintendo Switch and PlayStation). Both sons can pick only one console without any knowledge of other's decision. Their utility also depends on another's decision.

|   |             | B        |             |
|---|-------------|----------|-------------|
|   |             | Nintendo | PlayStation |
| A | Nintendo    | 2 , 2    | 5 , 6       |
|   | PlayStation | 1 , 2    | 4 , 3       |

Utility of A , B

## Dominant strategy

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is a pure strategy that will maximize one's payoff without considering other's.

|   |             | B        |             |
|---|-------------|----------|-------------|
|   |             | Nintendo | PlayStation |
| A | Nintendo    | 2 , 2    | 5 , 6       |
|   | PlayStation | 1 , 2    | 4 , 3       |

Utility of A , B

⦿ Dominant strategy of A

## └ 3.2 Game theory

## Dominant strategy

---

is a pure strategy that will maximize one's payoff without considering other's.

|   |             | B        |             |
|---|-------------|----------|-------------|
|   |             | Nintendo | PlayStation |
| A | Nintendo    | 2 , 2    | 5 , 6       |
|   | PlayStation | 1 , 2    | 4 , 3       |

Utility of A , B

⦿ Dominant strategy of B

## └ 3.2 Game theory

## Dominant strategy equilibrium

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is the equilibrium of dominant strategy.

|   |             | B        |             |
|---|-------------|----------|-------------|
|   |             | Nintendo | PlayStation |
| A | Nintendo    | 2 , 2    | 5 , 6       |
|   | PlayStation | 1 , 2    | 4 , 3       |

Utility of A , B

⦿ Dominant strategy equilibrium of this game.

## 3.2 Game theory

### Confrontation game

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Supposed that there are two persons A and B confronting each other in a hallway. Both can choose to walk on their left or right in order to keep on moving forward.

|   |       | B      |        |
|---|-------|--------|--------|
|   |       | Left   | Right  |
| A | Left  | 1, 1   | -1, -1 |
|   | Right | -1, -1 | 1, 1   |

A, B Payoff

Does each player has a dominant strategy?

## 3.2 Game theory

### Nash Equilibrium

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is an equilibrium (or equilibria) which give the best result for each player, accounting other's decision.

|   |       | B      |        |
|---|-------|--------|--------|
|   |       | Left   | Right  |
| A | Left  | 1, 1   | -1, -1 |
|   | Right | -1, -1 | 1, 1   |

A , B Payoff

⦿ A's strategy

## 3.2 Game theory

### Nash Equilibrium

---

is an equilibrium (or equilibria) which give the best result for each player, accounting other's decision.

|   |       | B      |        |
|---|-------|--------|--------|
|   |       | Left   | Right  |
| A | Left  | 1, 1   | -1, -1 |
|   | Right | -1, -1 | 1, 1   |

A , B Payoff

⦿ B's strategy

## 3.2 Game theory

### Nash Equilibrium

---

is an equilibrium (or equilibria) which give the best result for each player, accounting other's decision.

|   |       | B      |        |
|---|-------|--------|--------|
|   |       | Left   | Right  |
| A | Left  | 1, 1   | -1, -1 |
|   | Right | -1, -1 | 1, 1   |

A , B Payoff

⦿ Nash equilibrium (or equilibria)

### Nash Equilibrium

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|   |              | B        |              |        |
|---|--------------|----------|--------------|--------|
|   |              | Lollipop | Marsh mallow | Nougat |
| A | Lollipop     | 2 , 2    | 5 , 6        | 1 , 5  |
|   | Marsh mallow | 1 , 2    | 4 , 3        | 0 , 0  |
|   | Nougat       | 0 , 3    | 1 , 4        | 0 , 1  |

A , B Profit

☉ If a game has a dominant strategy, it is also a Nash equilibrium.

## 3.2 Game theory

### Prisoners' dilemma

Two offenders are accused for a heist. Before they are investigated they agree upon the best solution of both being silent to serve the least jail time. Later, they are individually investigated without knowing other's response.

|   |         | B       |        |
|---|---------|---------|--------|
|   |         | Confess | Silent |
| A | Confess | 8 , 8   | 0 , 20 |
|   | Silent  | 20 , 0  | 2 , 2  |

A , B years of jail time

⦿ Does this game has a Nash equilibrium?