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Oligopoly

GCE A-LEVEL & IB ECONOMICS

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What is Oligopoly?

A market controlled by a few large firms.

- High barriers to entry and exit
  - Due to large-scale production (economies of scale) or branding/long-term standing in the market
- Interdependence
  - I.e. actions of one firm can easily affect others
- Non-price competition
  - Due to price rigidity, you will see why later
- Differentiated or homogenous goods
  - E.g. laundry powder

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Concentration Ratios

Concentration Ratios are simply the combined market share of top firms.

Can you figure our the 3, 4 and 5 firm concentration ratios in the table on the right for Hong Kong Private Residential Housing Developers?

Private Residential Housing Developers	Market Share in 2015	----------	Concentration Ratio Percentage
Developer A	33.83%		
Developer B	21.04%		
Developer C	14.47%	CR_3 (3 Firm Concentration Ratio)	
Developer D	4.97%	CR_4 (4 Firm Concentration Ratio)	
Developer E	4.32%	CR_5 (5 Firm Concentration Ratio)	

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https://www.researchgate.net/publication/317811921_Concentration_Analysis_of_New_Private_Residential_Units_Market_in_Hong_Kong?_sg=MNY8GbNcgC2X_7wp461unCrwuW7zWKvjReS7_zW8HrpGdQiWZUxkpFpaKt2ns5YlBe3TLwLiQw

Private Residential Housing Developers	Market Share in 2015	----------	Concentration Ratio Percentage
Developer A	33.83%		
Developer B	21.04%		
Developer C	14.47%	CR_3 (3 Firm Concentration Ratio)	69.34%
Developer D	4.97%	CR_4 (4 Firm Concentration Ratio)	74.31%
Developer E	4.32%	CR_5 (5 Firm Concentration Ratio)	79.63%

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Concentration Ratios

A rule of thumb is that an oligopoly exists when the top four firms in the market account for more than 60% of total market sales. (i.e. $CR_5 > 60\%$)

Perfect competition

If there are *N* firms in an industry and we are looking at the top *n* of them, equal market share for all of them means that $CR_n = n/N$. All other possible values will be greater than this.

No concentration

If CR_n is close to 0%, (which is only possible for quite a large number of firms in the industry *N*) this means perfect competition or at the very least monopolistic competition. If for example CR_4=0 %, the four largest firm in the industry would not have any significant market share.

Low concentration

0% to 40%.[5] This category ranges from perfect competition to an oligopoly.

Medium concentration

40% to 70%.[5] An industry in this range is likely an oligopoly.

High concentration

70% to 100%.[5] This category ranges from an oligopoly to monopoly.

Total concentration

100% means an extremely concentrated oligopoly. If for example CR_1= 100%, there is a monopoly.

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Examples of Oligopolies

恒基兆業地產集團
HENDERSON LAND GROUP

CHEUNG KONG (HOLDINGS) LIMITED

Real Estate Developers

https://www.scmp.com/business/article/2050088/hong-kongs-developer-cartel-beginning-lose-its-grip

Supermarket Chains

Big Four Accounting Firms

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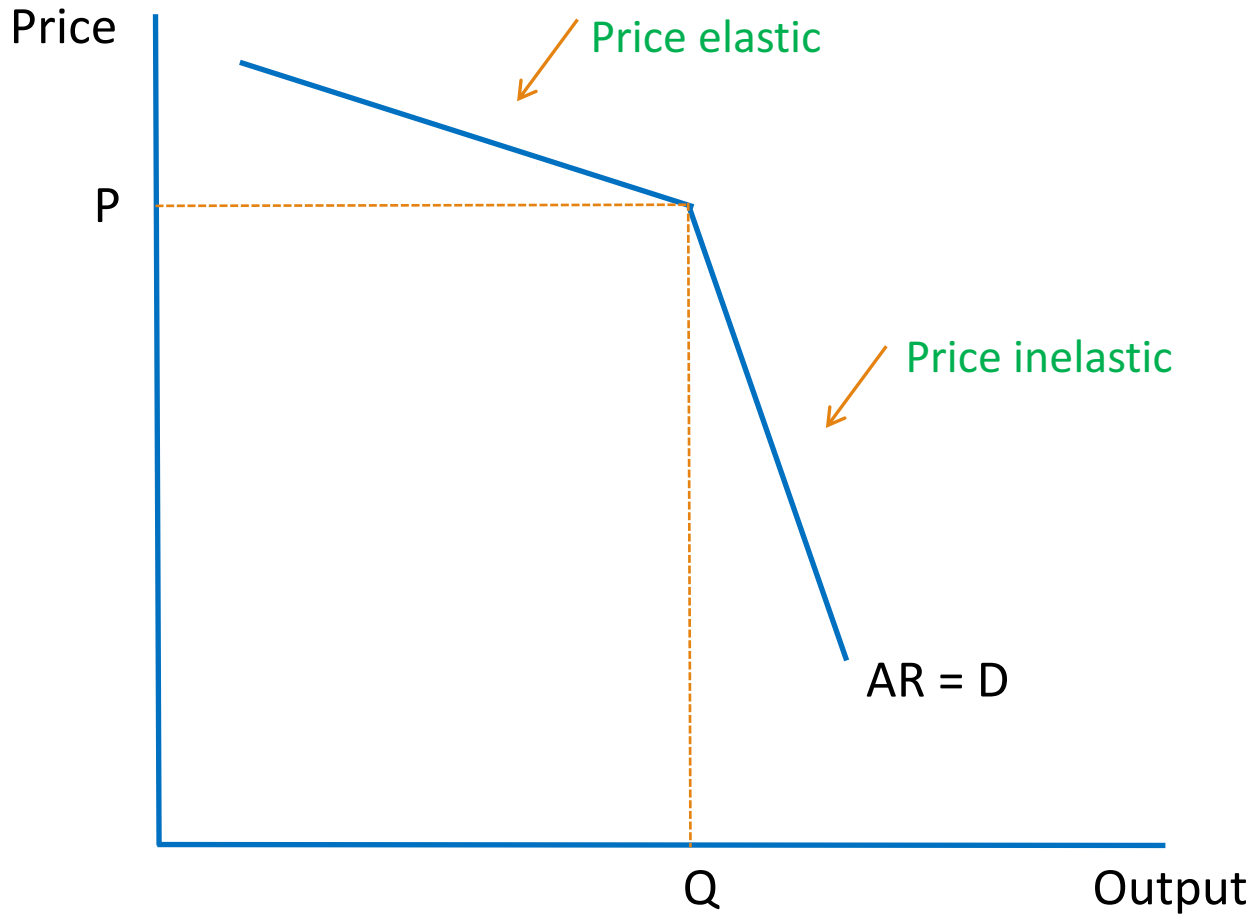
Non-Collusive Oligopoly Revenues

Under a non-collusive oligopoly, when a firm raise prices, other players will keep prices constant. Because of this, existing customers will switch to cheaper alternatives. This means a small increase in price will cause a larger fall in quantity demanded.

Hence, upper parts of the demand curve is elastic.



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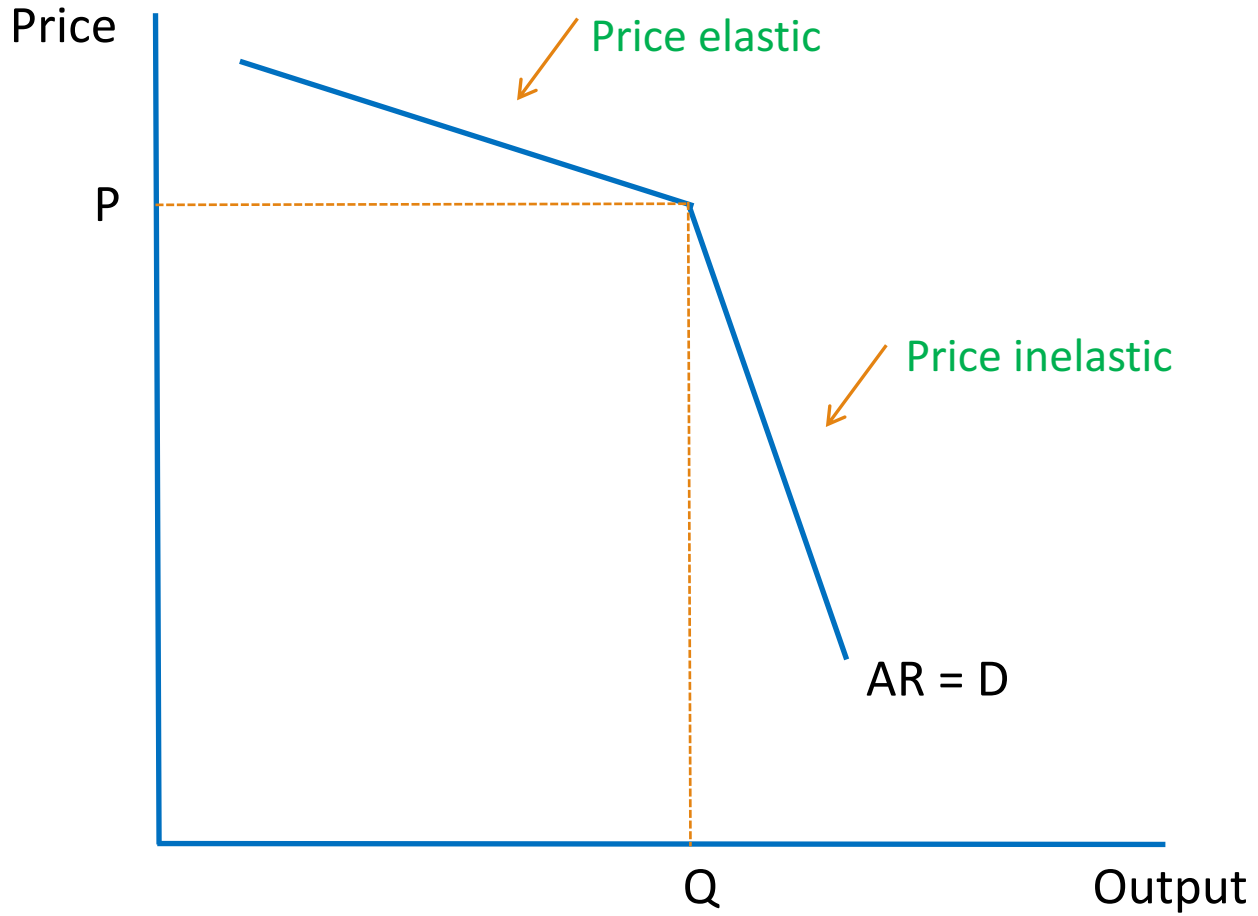
Non-Collusive Oligopoly Revenues

When a firm decrease prices, other players are assumed to also decrease prices to not lose market share. Because of this, a steep decrease in price is required to attract other customers to buy your product. This means a bigger fall in price is required to increase quantity sold.

Hence, upper parts of the demand curve is elastic.



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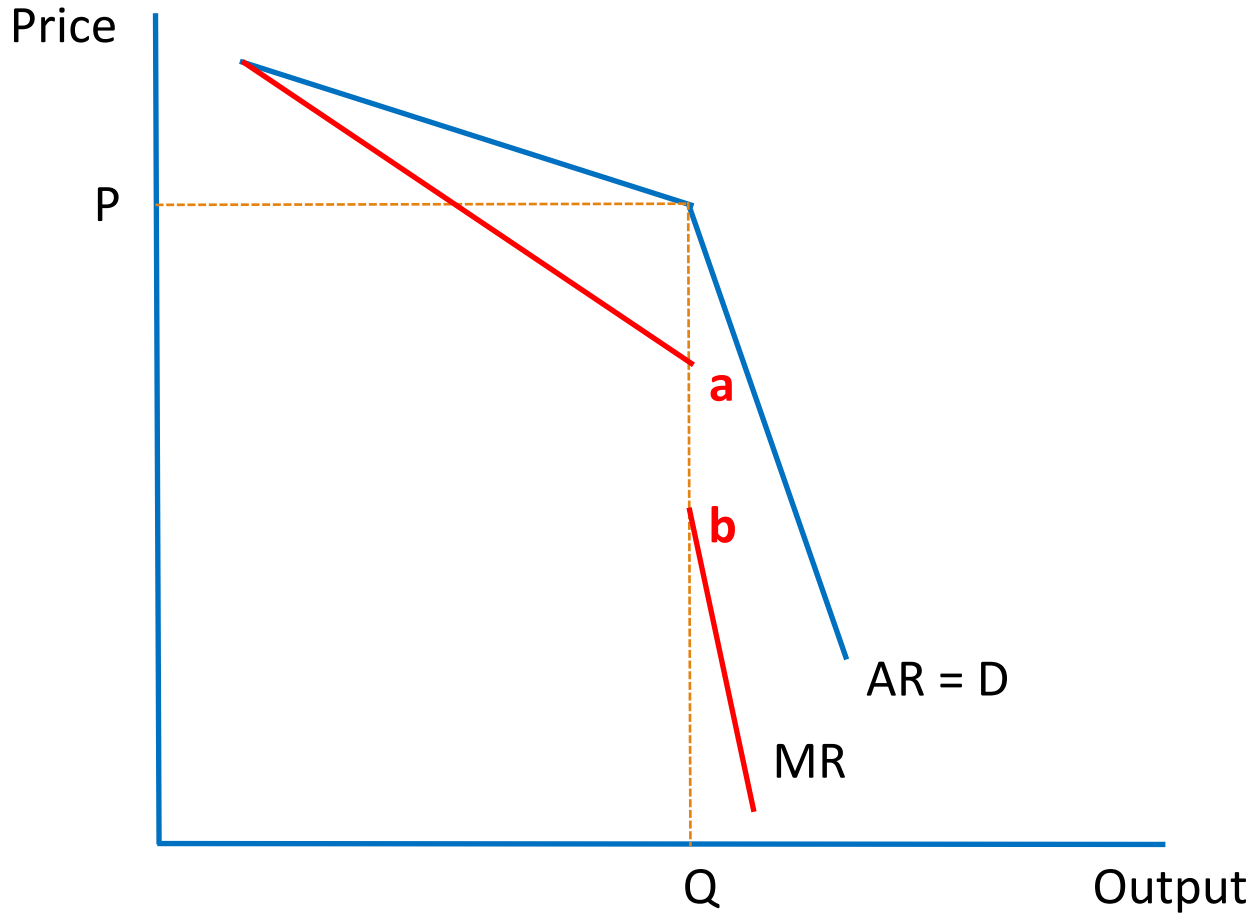
Non-Collusive Oligopoly Revenues

Given the MR is twice as steep as the AR, the MR in a kinked demand curve will shape like this.

Notice the break in the middle – there are actually 2 parts to the MR curve, one corresponding to each AR line.



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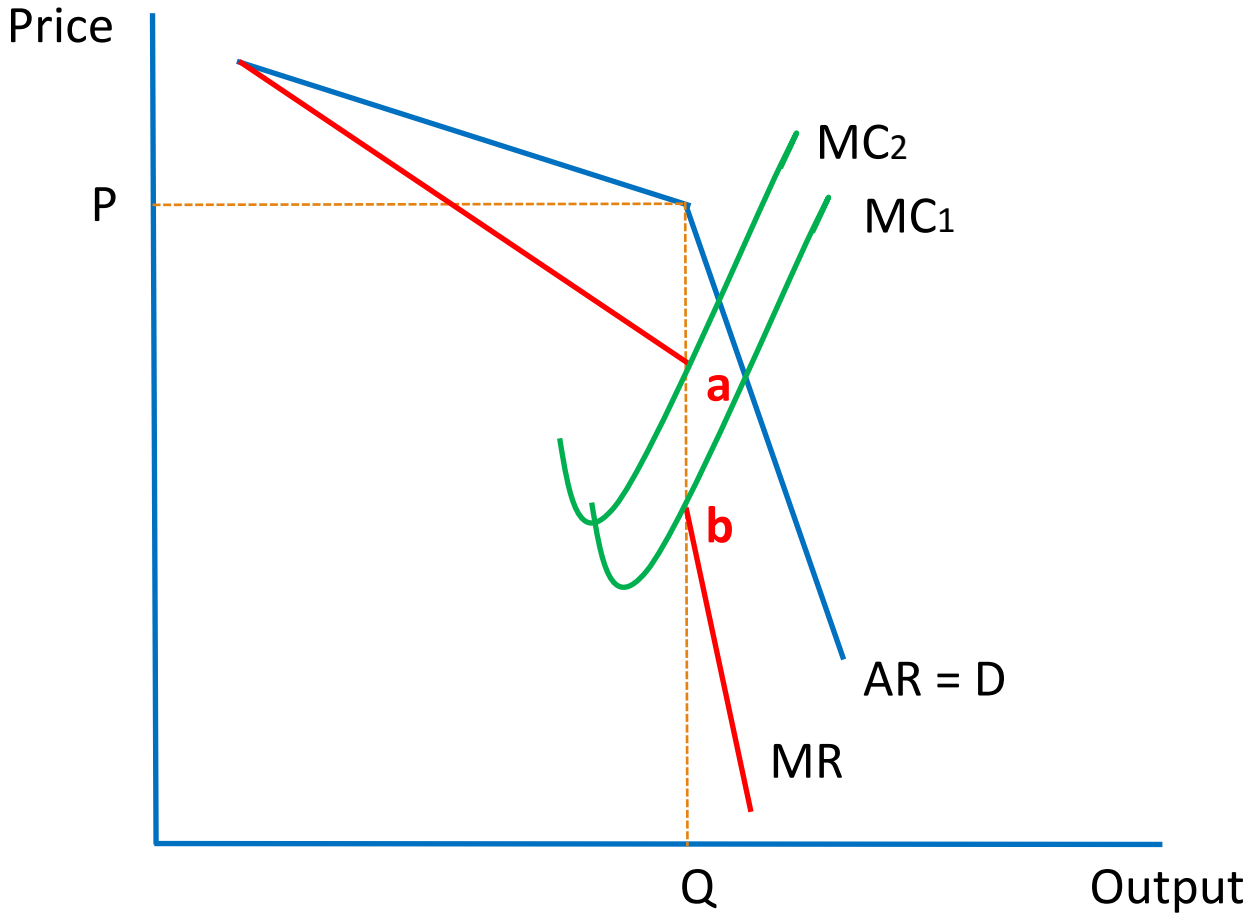
Non-Collusive Oligopoly Diagram

This is the diagram you will have when you combine the MC curve. The is no difference in price as long as the MC curve 'intersects' with MR between MC_1 and MC_2

Where does the firm maximize profits again?

You need to be aware of the profit maximization point to draw this diagram accurately – the price always need to be at the kink.



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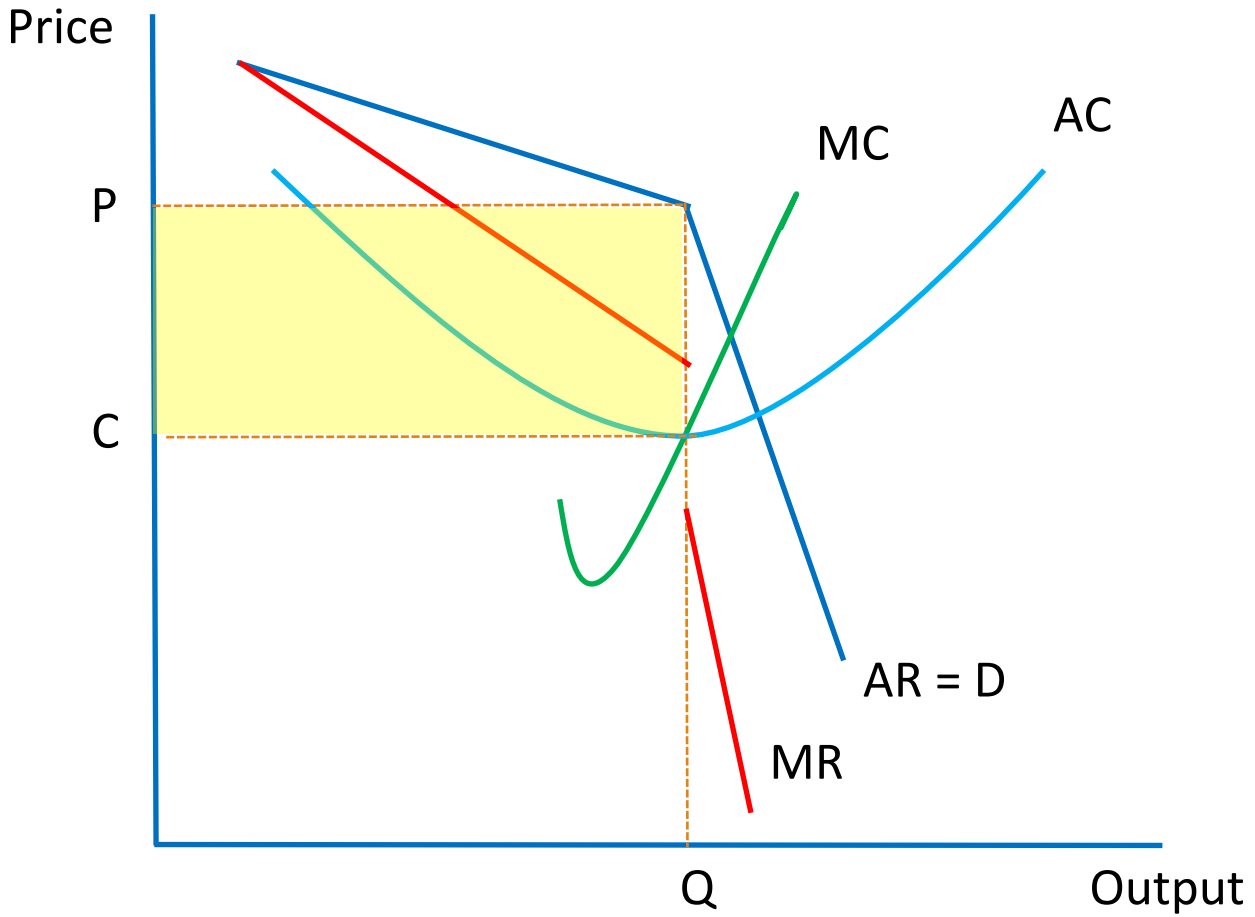
Non-Collusive Oligopoly Diagram

This diagram shows the abnormal profits that can be made in an oligopoly.



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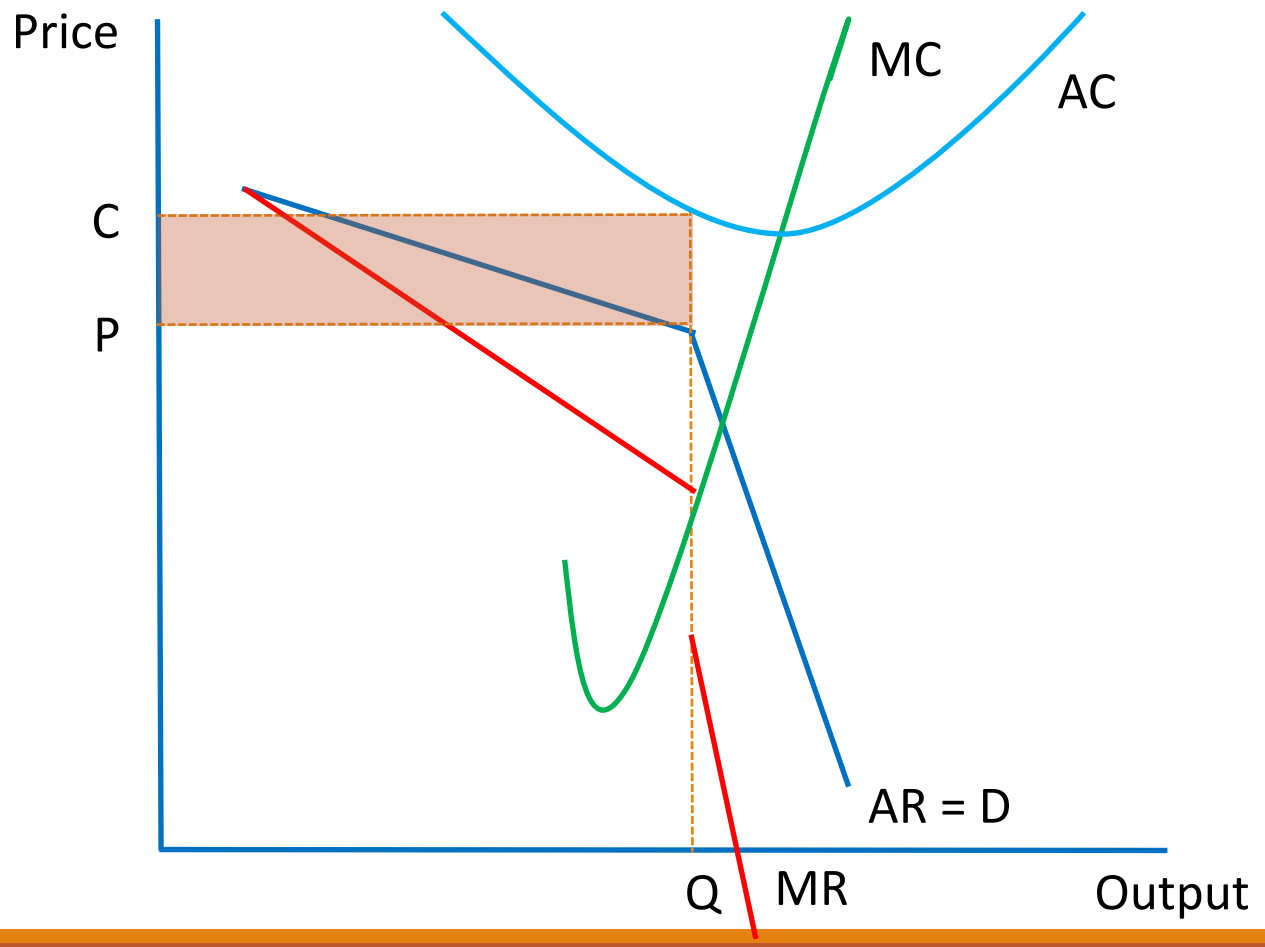
Non-Collusive Oligopoly Diagram

A loss can also be made – this all depends on where the AC and AR curve is positioned.



Are Oligopolies Competitive?

But why do we assume the firms will compete with each other for market share when prices fall?

Or why will the big players always aim to gain others' market share when a firm's prices increase?

We can think about this using an analogy.

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The Prisoner's Dilemma

Two prisoners (**players**), **Loki** and **Baelish** have been arrested for bank robbery and interrogated separately. Police have evidence of minor crimes for both prisoners. However, they are looking to pin a major crime on one or both of the prisoners. Both players have evidence on each other that they took part in the major crime.

		Baelish	
		Betray	Don't betray
Betray		5 years 5 years	15 years 1 year
Loki			
Don't betray		1 year 15 years	3 years 3 years

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The Prisoner's Dilemma

The police are willing to be more lenient if the prisoners provide them with this evidence and betray their partner in crime. Each player has a **strategy** – betray or don't betray.

There is a **payoff** for each strategy undertaken. This is shown in the table e.g. if A and B both betray they each get 5 years in prison.

		Baelish	
		Betray	Don't betray
Loki	Betray	5 years / 5 years	15 years / 1 year
	Don't betray	1 year / 15 years	3 years / 3 years

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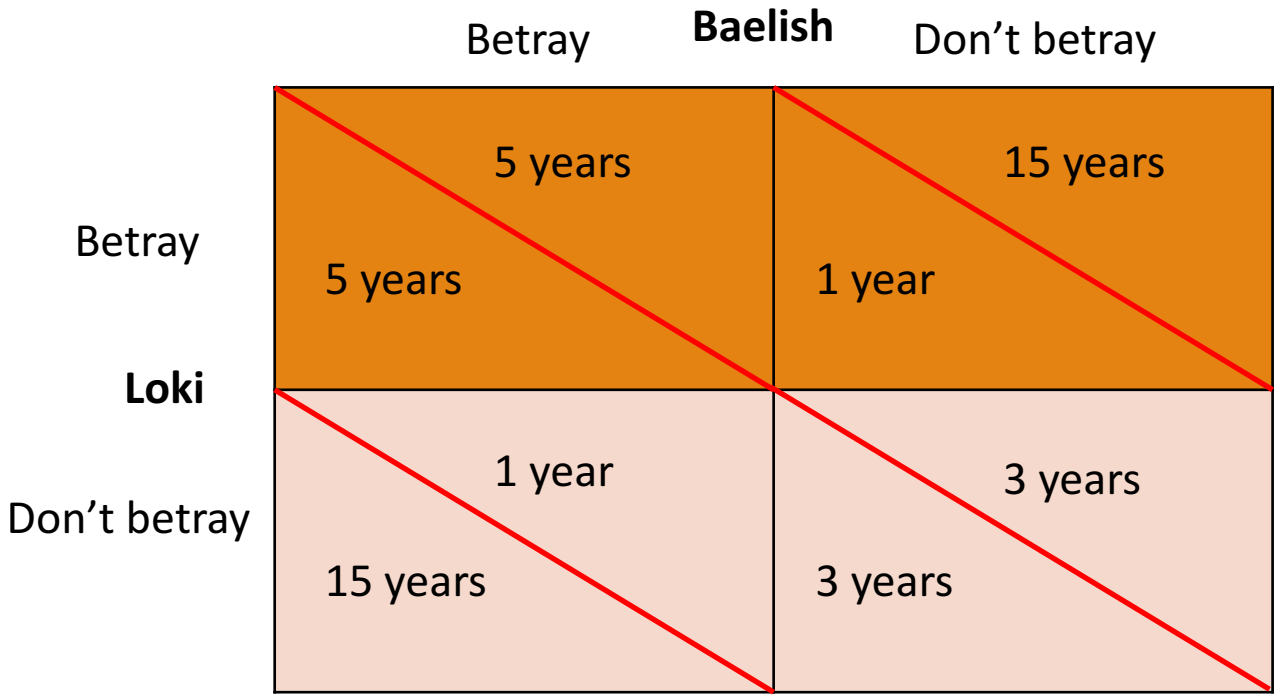
The Prisoner's Dilemma

The **dominant strategy** is the best strategy undertaken by a player **regardless** of the strategy undertaken by the other players.

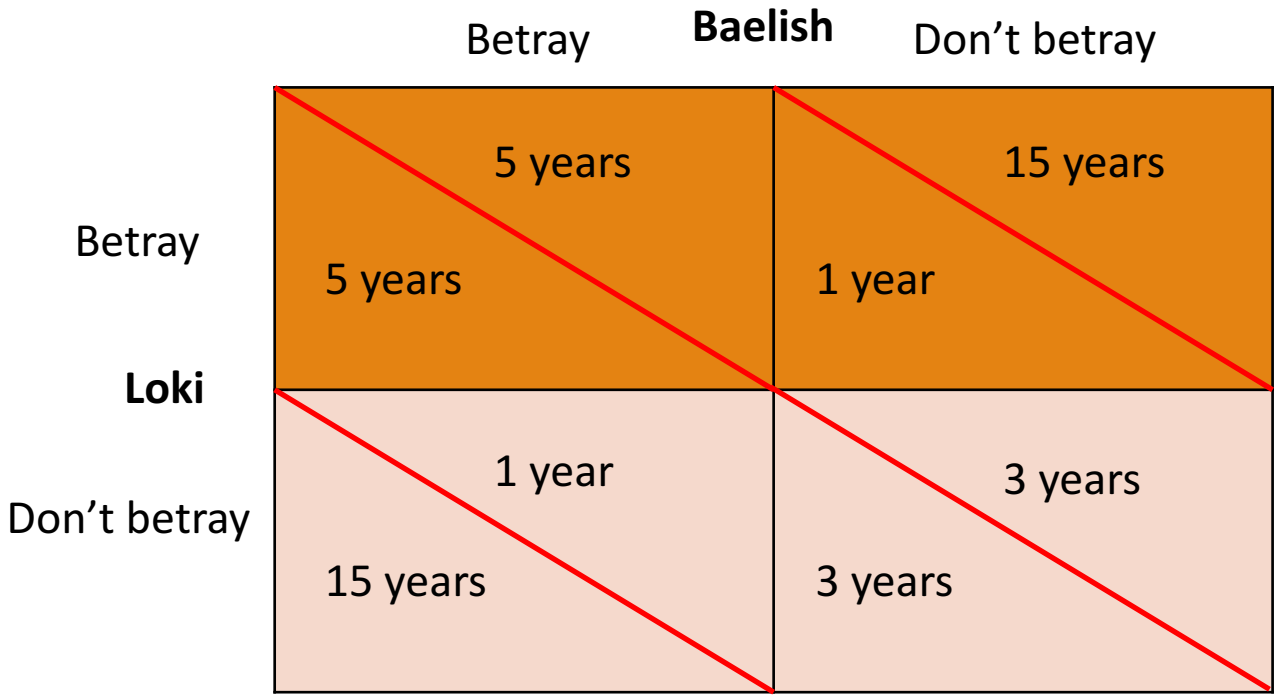
No matter if Loki betrays Baelish or not, Baelish will always get less time in prison if he betrays Loki. i.e. 5 years rather than 15 years if Loki betrays him; and 1 year rather than 3 years if Loki doesn't. Vice versa.



The Prisoner's Dilemma

Hence the dominant strategy for both of them is to betray the other. This equilibrium is what we call the **Nash equilibrium.**

This is assuming that they did not agree before hand on whether they should betray the other or not.



The Firm's Dilemma

So without a formal agreement between each other, the firms face the same problem.

The dominant strategy will be to maintain prices to keep market share.

		B: Maintain P	B: Increase P
A: Maintain P		£100 / £100	£75 / £150
A: Increase P		£150 / £75	£125 / £125

Is there a Mutually Beneficial Outcome?

In real life, firms will be able to communicate with one another.

What can the big players in the industry do/agree on, which can be mutually beneficial?

The objective of this will be to **maximize and share joint profits** in the industry, which will be higher than competing with each other.

Overt Collusion

To benefit as a group, the firms can

- Raise prices together (or set them)
- Produce an agreed, fixed amount of output (to maximize profits)
- Split the market between themselves (e.g. geographically, by product)
- Not pass on new cost savings to consumers together (e.g. from technology)

A **cartel** is a formal agreement between firms to collude in the market.

You can see the cartel acts like a monopoly and has much bigger market power compared to a firm in an oligopoly.

Case Study – Laundry Detergents

Meanwhile in Australia...

https://www.smh.com.au/business/companies/project-mastermind-colgate-colluded-with-rivals-and-woolworths-to-rip-you-off-20160428-goh9ji.html

Unilever, Colgate and Supermarket Chain Woolsworth colluding not to pass cost savings from product innovation to customers, through price fixing and output restrictions.

Tacit Collusion

However, not all types of collusion include a formal agreement (cartel) between the firms. They can also do it in an implicit manner. This is what we call tacit collusion.

For example, firms may charge the same prices as the dominant firm in the industry (instead of challenging it). The firm with **price leadership** will charge a higher amount for other firms to follow suit, such that the whole industry benefits with higher profits but consumers lose out.

This is a scenario where an implicit price agreement is in place.

The Risks of Collusion

1. Betrayal/Cheating from other Players

- Other firms in the market may not continue with the agreement. For example, if an agreement is reached to raise prices, if a player does not follow through, he will be able to gain market share for himself and reduce revenues for other players.

2. Regulation and Fines

- There is legal risk especially for an overt collusive agreement between firms. They can easily be penalized a hefty fine. Also, there will be the risk of a firm whistleblowing to the industry regulator for the activity.

The Risks of Collusion

3. Public Relations and Branding

- Collusion, when discovered, will harm the public image of firms. Public image and branding is an intangible asset that can be quite valuable to a firm given the importance of non-price competition within an oligopolistic market structure.

However, when firms collude, it is most likely that these risks are taken into account and the expected profits maximized and shared from collusion may be higher than potential losses.

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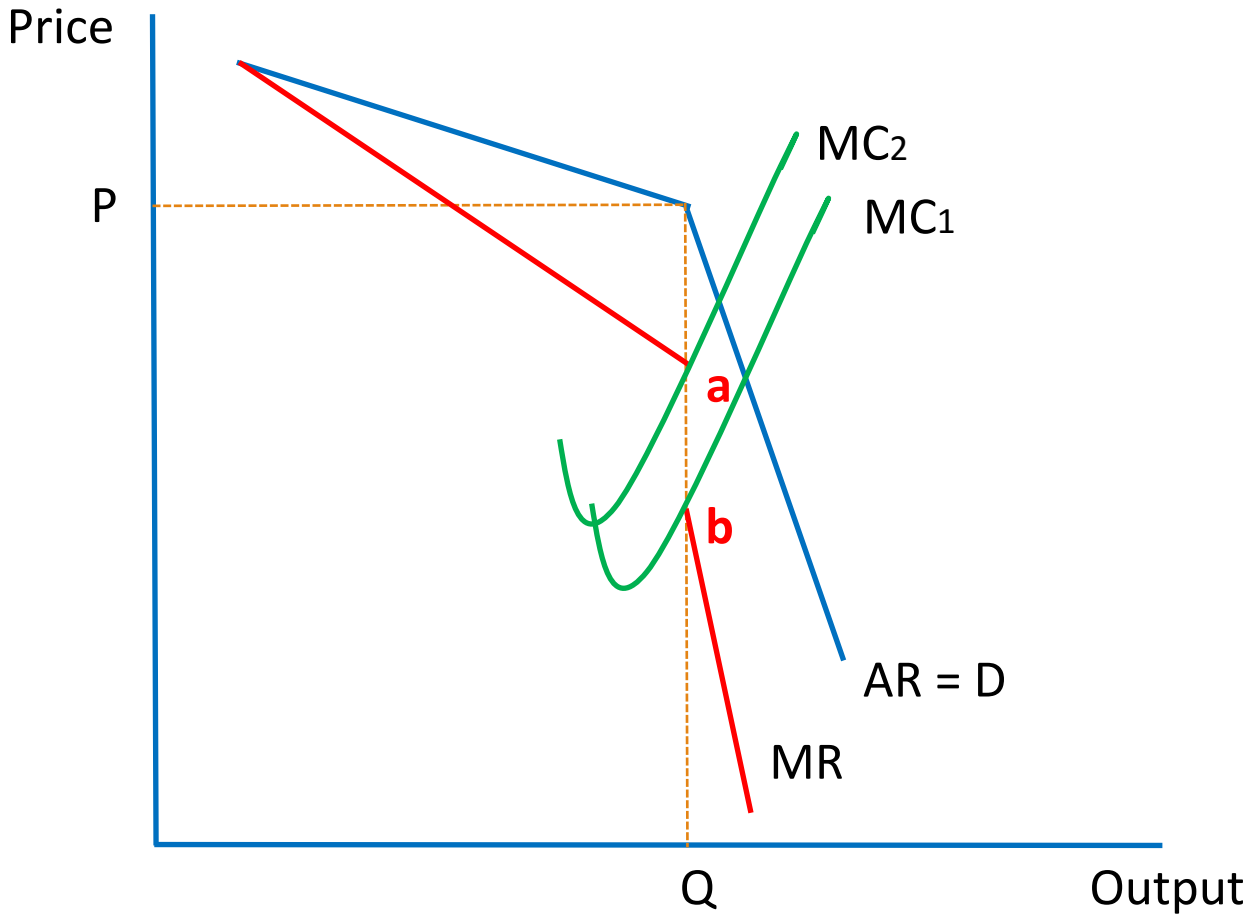
Price Competition in an Oligopoly

Why do you think oligopolies would not favor price-based competition and would exhibit **price rigidity**?



Price Competition in an Oligopoly

Price wars occur when a firm lowers price in order to increase market share. Other firms will react to losing market share by lowering price too. This will continue as firms seek to regain lost market share. The consumer will benefit from lower prices but the oligopolists will lose out as overall revenues will fall.

Hence, in a non-collusive oligopoly, prices should be stable and rigid according to theory and the diagram.

Types of Non-price Competition

Assuming an oligopoly does not collude or work with one another, they will compete with each other in terms of non-price factors. The reason is that competing on price will reduce revenues and likely affect profits.

What do you think are some ways which oligopolistic firms can compete, not on the basis of price?

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Types of Non-price Competition

Advertising is an example of a **sunk cost** and deters new entrants

Firms will spend heavily trying to establish **brand loyalty** and **repeat customers** e.g. **loyalty schemes**

By investing in **new product development** the firm can increase demand and maintain brand loyalty

Heavy **investment** undertaken will have high levels of **capital investment** in oligopoly, leading to a steady income stream for the future

Evaluating Oligopolies

How would you evaluate oligopolies? To what extent are they beneficial or harmful to society?

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Evaluating Oligopolies

Advantages:

- Generally stable prices for consumers and producers down the value chain

- Research and development through non-price competition will lead to product innovation

- Can benefit from economies of scale while passing on lower prices to consumers to some degree

Disadvantages:

- Risks of collusion may cause consumers to lose out in the long run

- Difficult to regulate and prove tacit collusion through price leadership (hard to argue what is a suitable price points given different cost structures across firms)

- Not the most efficient type of market structure possible due to profit maximization

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Short Questions - Oligopoly

- Suggest 3 characteristics of an oligopolistic market.

- Why do oligopolies generally exhibit price rigidity? Explain the shape of the kinked demand curve.

- Name 2 ways firms in oligopoly can compete with each other apart from price.

- What are some ways which firms in oligopoly can collude?

- Think of 1 advantage and 1 disadvantage under oligopoly.