ANGLO-CHINESE JUNIOR COLLEGE
JC1 Economics

H2

Firms and Decisions (2)
MARKET STRUCTURE

Reference Text (Optional):

1. Case, Fair, Oster. Principles of Economics, Special Edition for ACJC, Pearson, 2013. Chapters 12-15.
2. John Sloman, Economics, 8th Edition, Prentice Hall. Chapters 6-8.
3. Mankiw, Quah & Wilson. Principles of Economics, An Asian Edition, CENGAGE Learning. Chapters 14-17.

WHAT IS THIS TOPIC ABOUT?

In Part 1 of "Firms and Decisions – Production & Cost," we learnt that a firm's primary objective is profit maximisation, making cost concepts essential. In this next part, we explore how varying levels of competition across industries affect firms' revenues. By considering both revenue and costs, firms are better positioned to maximise profits. We will also examine cases where firms may pursue alternative objectives due to specific constraints or exceptions.

In "Firms and Decisions (2) – Market Structure", we will examine the characteristics, the behaviour as well as evaluate the performance of firms in both perfect and imperfect markets. You will learn about these four market structures:

- **Perfect competition** (many small firms, each without market power)
- Imperfect markets:
    - **Monopoly** (one firm with huge market power)
    - **Oligopoly** (few big firms dominating the market, each with strong market power but firms are inter-dependent)
    - **Monopolistic competition** (many small firms, each with weak market power)

In understanding and evaluating the behaviour and performance of such firms, the focus will be on the following key questions:

- How do firms determine their equilibrium output and price?
- How do they compete with other firms in the same industry?
- What are the implications of their behaviour from society's point of view?

In evaluating their decisions, you may want to weigh the benefits and costs of their actions, not only to the firms themselves but to consumers, other firms, and the society at large.

LEARNING OUTCOMES

Enduring Understanding:

- The primary aim of firms is to maximise profit.
- The stronger the barriers to entry, the fewer the number of firms, and hence the stronger the market power possessed by existing firms in the industry.
- Firms make decisions by comparing the marginal benefits and marginal costs of their actions.
- The firm's performance is evaluated based its on efficiency and welfare impact on society.
- Where market dominance is present in industries producing essential goods and services, the concerns relating to inefficiency and inequity may prompt government to intervene through public policy measures.

Essential Questions

- Should firms use price or non-price competition strategies to achieve their objective of profit maximisation?
- What are the factors that influence a firms' price and output decision?
- Is it desirable to have more competition in all industries?
- Should government intervene to ensure greater competition?

1. OBJECTIVES OF FIRMS (RECAP)

This section is a summary of what you have in Firms and Decisions (1) – Production & Cost.

Primary Objective: Profit Maximisation

- **Profit** is the difference between Total Revenue (TR) and Total Cost (TC). Firms can increase profit by either raising total revenue and/or reducing total cost.
- The primary assumption is that all **firms aim to maximise profit**.
- By the marginal principle, total profit will be maximised at the output level where MR=MC.
- This output level is termed the **firm's equilibrium output** and the corresponding price is the **firm's price.**

1.1 REVENUE AND COST CONCEPTS

Total Revenue (TR)	• Firm's earning from sale of total output • Price x Output (P x Q)	**Total Cost (TC)**	• Summation of the total fixed cost and total variable cost • TC = TFC + TVC • TC = AC x output produced
Average Revenue (AR)	• Earning per unit of output • $\frac{\text{Total Revenue (P x Q)}}{\text{Total Output (Q)}}$ • AR = P	**Average Cost (AC)**	• Total cost of production per unit of output • AC =AFC+AVC • $\frac{\text{Total Cost (TC)}}{\text{Total Output (Q)}}$
Marginal Revenue (MR)	• Increase in total revenue that results from production of one additional unit of output • $\frac{\text{Change in TR } (\Delta TR)}{\text{Change in Output } (\Delta Q)}$	**Marginal Cost (MC)**	• Increase in total cost that results from production of one additional unit of output • $\frac{\text{Change in TC } (\Delta TC)}{\text{Change in Output } (\Delta Q)}$

1.2 PROFIT CONCEPTS

Summary:

Economic Profit	TR and TC relationship
Normal Profit	TR = TC, or TR – TC = 0
Supernormal Profit	TR > TC, or TR – TC > 0
Subnormal Profit (Losses)	TR < TC or TR – TC < 0

2. CHARACTERISTICS OF MARKET STRUCTURES

SLS Lesson: "*Characteristics of Market Structures*"

- There are 4 types of market structure which can be classified broadly into **perfect** *(i.e. perfectly competitive)* **and imperfect markets** *(i.e. monopolistic competitive, oligopolistic and monopolistic)* based on the level of competition in the markets.
- In perfect competition, competition amongst firms is very high (many firms competing against each other). The level of competition falls as market becomes more imperfect (with fewer firms competing).
- The market structures can be determined in terms of the following **characteristics**:
  - **(A)** Barriers to entry
  - **(B)** Number and size of firms in the industry
  - **(C)** Nature of product (whether products are homogeneous or differentiated)
  - **(D)** Perfect/Imperfect information and knowledge

2.1 CHARACTERISTICS OF MARKET STRUCTURES

(A) Barriers To Entry

- Barriers to entry refer to restrictions or constraints that make entry of new firms into an industry difficult or impossible. The existence of barriers to entry makes the market less contestable and less competitive.
- The **strength of the barriers to entry influences the number and size of firms in the market and hence the market power of each firm.**
  - Strong barriers to entry protect incumbent firms by restricting entry of new firms. With fewer firms in the industry, this will imply the presence of a few large firms (oligopoly) or in the extreme case, a single firm (monopoly) in the market.
  - In contrast, in the absence of barriers to entry or presence of weak barriers to entry, it will give rise to many small firms (perfect competition & monopolistic competition).

Types of Barriers to Entry

A1. Cost barriers (economies of scale)

- In the previous set of notes, we described production techniques in which as output increases, long run average costs falls. This implies that a firm can exploit internal economies of scale.
- For example, a large firm will be able to reap very large internal economies of scale which are cost savings arising from spreading its cost over a larger output. The firm may be in a better bargaining position to purchase inputs in bulk at discounted prices which help to spread costs over a larger output, leading to a decrease in long run average cost. *(Note, it could also be other type of EOS. It is important to explain what type of EOS that the firm can exploit.)* With a lower average cost, the firm would have the ability to price their goods/service competitively (lower as compared to their rivals). This would make it difficult for new firms to enter and compete with the existing firms.

A2. Financial barriers

- Financial barriers refer to the financial resources available as well as the ability to raise funds required for infrastructure, machinery, R&D and advertising.
- Companies which are limited by funds available and are restricted in its financial resources due to its inability to raise funds through selling of shares or saving its profits will find it harder to enter and compete in the industry.
- Therefore, industry which requires a significant investment of financial resources to set up operations will pose a significant barrier for prospective entrants.

A3. Legal barriers and Government Regulation

- Legal barriers are made by governments to grant **exclusive (monopoly) rights** to the innovator, ensuring that the firms have sufficient market size and power to recover costs and make profits. These barriers take the form of patents, trademarks, copyrights and licence to operate.
    - Example: A patent is an exclusive right given to a firm to use, sell, or market an invention for a specified period, usually a few years. This may act as an incentive to the firm to innovate as it allows the firm to establish a potential monopoly in the particular good which allows it to reap supernormal profits to cover its research costs. Pharmaceuticals is an example of an industry with the use of patents to encourage the discovery of new medical drugs or solutions to maintain their monopoly status.
- Governments frequently restrict the entrance of new firms into certain public utilities industries such as electricity, telecommunication services, and garbage collection. The government has **national interests** in such industries, **hence the need to restrict any foreign players entering such industries**. In such cases, the government hopes that with limited competition, there will be desirable outcomes for the country, such as lower price and ongoing technological improvements that will benefit consumers and the economy (refer to section 5.2 for more details on how a larger firm is better able to achieve dynamic efficiency and charge a lower price).

A4. Anti-Competitive Strategies of incumbent firms

When existing dominant firms adopt strategies to strengthen their market presence and to deter new firms from entering, such deliberate restrictive practices are classified as contrived barriers.

Examples:

- Established firm may adopt anti-competitive pricing strategy called limit pricing to prevent the entry of new firms. Limit pricing entails the firm setting a price below the average cost of potential entrants to deter potential entrants from entering the market. Prospective entrants may be deterred from entering the market as they have to

Refer to section 3.5 for more information about limit pricing.

set the same or lower price or in order to be price competitive but doing so will cause them to operate at a loss.

- Taking over other potential competitors (such as acquisition).
- Established firm may strengthen brand loyalty through aggressive marketing or product differentiation, making it difficult for new firms to penetrate the market. If a firm produces a clearly differentiated product, where the consumer associates the product with its brand, it will be very difficult for a new firm to break into that market. In this case, the problem for new firms is not the inability to produce at lower enough costs but being unable to produce a product sufficiently attractive to consumers who are loyal to a familiar brand.
    - Examples of strong brand image include The Coca-Cola Company, Nescafe, Scotch tape and Grab.

A5. Access to inputs and markets

- Owning scarce resources, which other firms could use, creates a considerable barrier to entry, such as an airline controlling access to an airport.
- Example: De Beers once had control over almost 90% of rough diamonds worldwide. It was one of the first companies to open mines and had a monopoly power over the diamond harvesting throughout Africa. They also buy diamonds directly from other companies allowing them to hold a huge share of the supply of raw diamonds.

A6. Information Barriers

- Firms may require information before they enter a market. Examples of information include:
    - Firms need information about the consumers' preference, knowledge on the production process and source of factor input.
    - Producers are concerned about information regarding prices, costs and market conditions. Market conditions include production technology and behaviour of other firms, and behaviour of consumers.
    - There are some production processes and technologies that are patented and hence are legally protected and owned by firms. This makes them unavailable to other firms, making it difficult for new firms to enter.
- The lack of such information may act as a barrier to potential firms wanting to enter the market. Technical know-how, trade secrets and secret recipes of food and beverage markets are also examples of information barrier to enter a market.

(B) Number and Size Of Firms

- There are many small firms in perfectly competitive and monopolistically competitive markets, each having an insignificantly small share of the market. Therefore, the actions of firms in these

markets are unlikely to affect its rivals to any great extent. As a result, these firms are relatively independent of each other.

- In contrast, an oligopoly occurs when just a few firms share a large proportion of the market. While it is possible that there exists many other small firms in an oligopolistic market, collectively, these small firms make up only a small proportion of the market. As there are only a few dominant firms in an oligopoly, each firm is affected by its rivals' actions. This implies that each firm has to take into account the action of other firms in an oligopoly. In other words, firms in an oligopoly are **mutually interdependent**.
- In the case of a monopoly, it exists when there is only one dominant firm in the market.
- Do take note that the strength of barriers to entry will influence the number and size of firms in the market which will determine the level of competition within the market.
    - The stronger the barriers to entry, the smaller the number of firms and the larger the size of the firm in the market. The level of competition will also decrease as the barriers to entry get stronger.

(C) Nature of Product

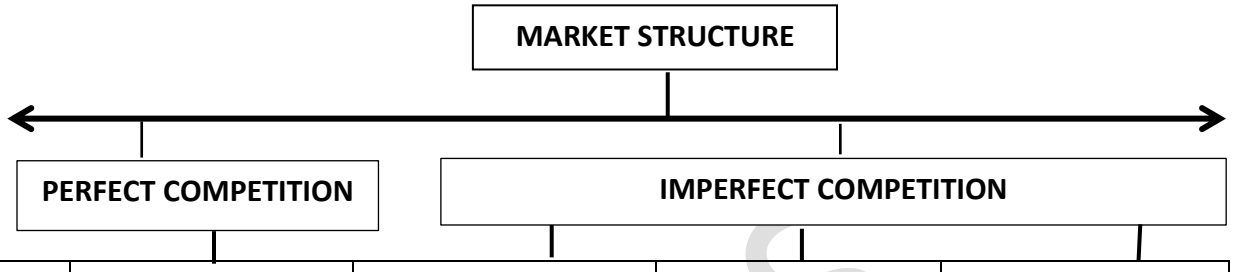
- The level of competition in the market is also influenced by the nature of products sold by the firms. When there are many firms selling similar products, there will be many substitutes available, thus the level of competition is high.
- Hence firms differ in terms of whether products sold are **homogeneous** (perfect substitutes) or **differentiated** (imperfect substitutes).
- Generally, the level of competition drops as products become more unique. However, there are exceptions such as oligopolies, that can produce either differentiated goods e.g. gaming consoles or homogeneous goods e.g. petrol and still have a relatively high level of competition.

(D) Imperfect Information / Knowledge

- Consumers are primarily concerned about information regarding price, quality and availability of the product.
- Where information pertaining to market conditions, such as type of products sold and price set, is known by all sellers and buyers (i.e. presence of perfect information), the market tends to be more competitive. For example, e-commerce platform apps such as Amazon and Lazada has made it easier for consumers to compare prices and reviews of products of different brands instantly, without having to visit their respective physical stores.
- On the other hand, where information is imperfect between buyers, as well as between buyers and sellers, there exists differing prices and the market tends to be less competitive.

2.2 TYPES OF MARKET STRUCTURES AND THEIR CHARACTERISTICS

The characteristics of market structures determines the extent of a firm's market power within the industry it operates in.



	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
Examples	• Very few examples in the real world • Commodity markets e.g. global-coffee markets, share / equities market	• Services and retailing industries, such as hair salon and clothes retailing	• Petrol refining companies such as Shell, Caltex, Exxon Mobil and Esso • Telco industry	• SingPost in providing local postal service (snail mail) • PUB in Singapore's water supply management
Barriers to entry	**No barriers to entry** This market structure is based on the assumptions which lead to ease of entry • Perfect knowledge • Perfect factor mobility	**Weak barriers to entry** Does not require much knowledge and resources to enter the industry	**Strong barriers to entry** • High set-up cost & large economies of scale • Generally capital- & technology-intensive industries	**Extremely strong barriers to entry** Tend to be cost barriers and legal barriers put up by governments
Number & size of firms in industry	**Many small firms** due to the absence of barriers to entry Implies that firms in perfect competition are independent	**Many small firms** due to the weak barriers There may exist a few large firms but they do not command a combined large market share (as compared to oligopoly) Implies that firms in monopolistic competition are relatively independent.	**A few large firms** controlling a large market share (their combined market share forms a majority portion of the total market) Implies that firms in an oligopoly are interdependent.	**Only one firm or one firm with dominant market share**

	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
Nature of product	**Homogeneous products** (perfect substitutes)	**Slightly differentiated products** (close substitutes)	**Homogenous products or extensively differentiated products**	**Product has few and poor or no substitutes**
Imperfect information	**Perfect information** Producers are fully aware of prices, costs & market opportunities (including production technology and behaviours of other firms).	**Imperfect Information**		

2.2.1 **Natural Monopoly**

Now that you have learned about the different market structures, it's important to understand a special case within the monopoly structure known as a natural monopoly. **A natural monopoly occurs in an industry where a single firm can produce the entire market output at a lower cost than if there were multiple firms in the market.** This happens due to significant internal economies of scale.

In a natural monopoly, the firm faces high fixed costs, such as those from infrastructure and technology, but relatively low variable costs. As the firm increases its output, the fixed costs are spread over more units, causing the average total cost (ATC) to fall. This leads to a declining ATC over a wide range of output, where the Minimum Efficiency Scale (MES) output is higher. Due to the large extent of iEOS enjoyed, it is more efficient for one firm to serve the entire market than for multiple smaller firms to do so.

Examples of natural monopolies include industries like utilities (e.g. water supply or electricity distribution), where duplication of infrastructure would be costly and inefficient.

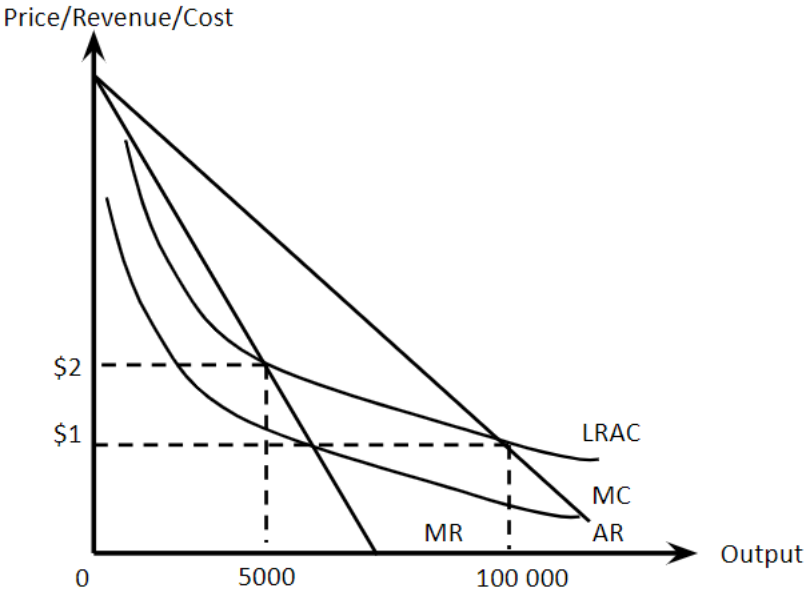
Therefore, the Minimum Efficient Scale[1] is not reached until the firm has become very large in relation to the total size of the market. This implies that average cost is minimised with only one firm in the industry.

In this instance, it may be better for a single firm to provide a good or service to the entire market than to allow more than one firm in the market.

[1] Recall from "Firms and Decisions (1) – Production & Cost", Minimum efficient scale (MES) is the output at which the long run average cost of production is the lowest possible. At this point all internal economies of scale are exploited. If MES is only achieved when output is relatively high, it is likely that the market can only support few large firms or only one firm.

With reference to Figure 1, due to high fixed costs and low marginal costs of production, the long run average cost (LRAC) curve of a natural monopoly keeps falling because of continuous economies of scale. Therefore, the curve is downward sloping throughout its entire range, unlike the standard LRAC curve, which is U-shaped. In addition, the marginal cost (MC) will always be below the average cost over the whole range of possible output.

Figure 1: Cost and revenue curves of natural monopoly



With reference to figure 1, one large-scale plant can produce 100 000 units at an average cost of $1. If the industry is restructured into two firms, each producing 50 000 units, the industry could produce the same amount, but at a higher average cost of $2 per unit. Hence this demonstrates that it may be better to allow one firm to produce the entire market output as it is able to do so at a lower average cost due to the large internal economies of scale that can only be realised at a significantly larger output. With lower average cost, the firm could have the potential to charge at a lower price.

In addition, trying to increase competition by encouraging new entrants into the market can create result in allocative inefficiency. The welfare loss to society would exist if the new entrant had to duplicate all the fixed factors – that is, the infrastructure. It may be more allocative efficient to allow only one firm to supply to the market because allowing competition would mean a **wasteful duplication of resources**.

- Consider a utility company providing electricity. The initial costs of setting up power plants, transmission lines, and distribution networks are extremely high. However, once the infrastructure is in place, the cost of providing electricity to an additional household is relatively low. If multiple companies attempted to build separate infrastructures, the average costs would be much higher overall, resulting in higher prices for consumers and a lower consumer

surplus. Thus, a single firm can serve the entire market more efficiently, exemplifying a natural monopoly.

In some cases, the natural monopoly may be state-owned. In Singapore, PUB is a natural monopoly for water supply. Providing water requires laying extensive pipes throughout the country. Having one firm allows the cost of high capital outlay to be spread over a large quantity, resulting in lower average cost.

Think! If perfect competition (PC) is an unrealistic model for the real world, then why do we learn it?

- PC model predicts the efficiency outcomes (welfare effects) if the conditions assumed are present (this will be explained later on).
- It acts as a useful benchmark for the study of imperfect markets which are more representative of the real world.
- Market dominance is a source of market failure. The PC model is useful as a yardstick when considering government intervention to deal with this market failure.

2.3 DIFFERENCES BETWEEN PERFECT AND IMPERFECT MARKETS

SLS Lesson: "*Perfectly vs Imperfectly Competitive Market Structures*"

2.3.1 Differences in market power

- The key distinguishing characteristic between perfect and imperfect markets is the **presence and strength of barriers to entry**. In perfect markets, barriers to entry are minimal or non-existent, allowing new firms to enter freely and maintain competitive pressure. In contrast, imperfect markets are characterized by significant barriers to entry, which grant existing firms **greater market power** (the ability to influence market supply and consequently, the prices of their goods).
- Perfectly competitive firms are the only ones described to being perfect market, having no barriers to entry and selling identical or homogeneous products, hence, **no market power to influence market supply and hence market price**. It has to take the prevailing price given by the market, determined by forces of demand and supply.
- Firms in imperfect market would vary in their strength of barriers to entry, and hence, **vary in their ability to influence price** (or output). Therefore, a monopolistically competitive firms would have the weakest barriers to entry, and hence, the least market power. Monopoly on the other hand would have the strongest barriers of entry, and hence, the highest market power to set prices or output.

Perfect Markets	Imperfect Markets
• Firms do not possess **market power**.	• Firms possess **market power** and the extent of market power can vary, depending on the strength of barriers to entry. • Imperfect markets vary in the extent of market power, with ○ **Monopolistic competition** having the weakest market power. ○ **Oligopoly** having strong market power but not as strong as the monopoly. ○ **Monopoly** having the strongest market power.
• Firms are **price takers**. They have no power to influence the price. They have to take the price determined by market forces of demand and supply.	• Firms are **price setters**, i.e. have the ability to set own price through their control over their output.
• At the prevailing price, they can sell unlimited quantity within their capacity.	• Firms with market power can choose either the price they want to charge or the quantity they want to produce — but not both independently — because they face a downward-sloping demand curve. Once they decide on one, the other is automatically determined by how consumers respond to price changes.

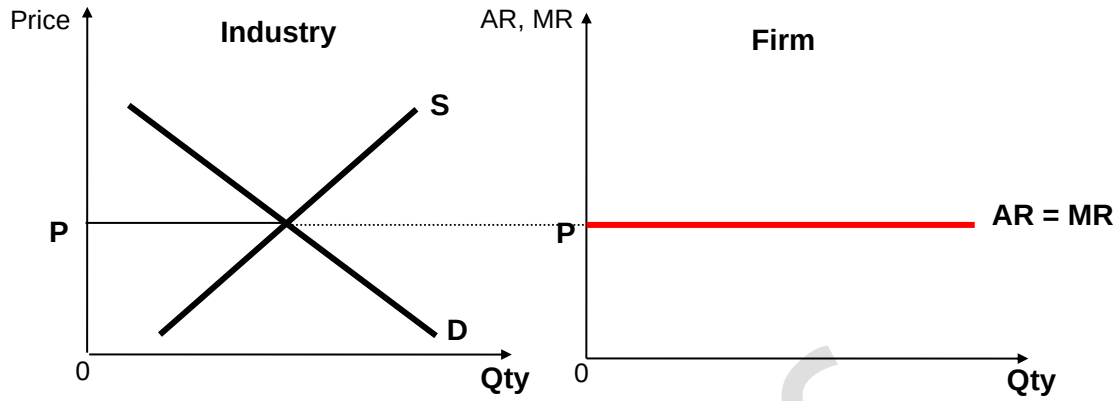
2.3.2 Differences in revenue curves

Revenue curves of firms in perfect market

Total, average and marginal revenue schedules of a perfectly competitive firm (price taker). *Refer to 1.1 for the revenue concepts.*

QUANTITY	PRICE	TR	AR	MR
1	8	8	*8*	*8*
2	8	16	*8*	*8*
3	8	24	*8*	*8*
4	8	32	*8*	*8*
5	8	40	*8*	*8*

Figure 2: Revenue Curves of a Perfectly Competitive Firm (Price Taker)



Average revenue (AR) is defined as **revenue per unit of output** and is the **same** as the **demand curve** for the firm's product as it shows the price consumers are willing to pay for each quantity sold by this firm.

Due to it being a small firm in a perfectly competitive market consisting of numerous other small firms selling homogeneous products, it has no market power to influence market supply and takes the price determined by the market. In other words, a perfectly competitive firm is a **price taker** which means it can sell any quantity of its product at the prevailing market price. The firm's actions do not affect the market price because its output is a negligible fraction of the total market supply.

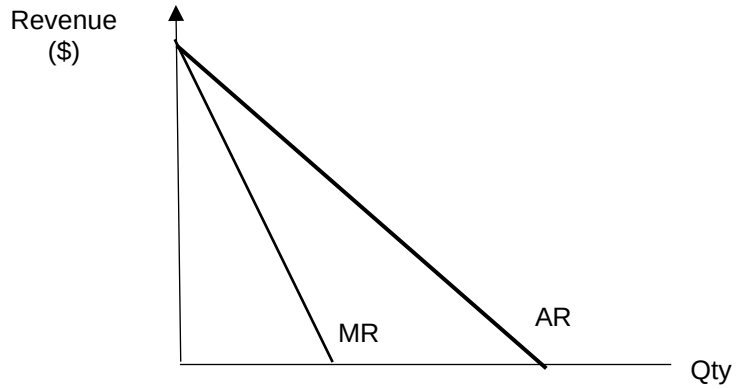
The price of the product is **constant** for any level of the firm's output, which means that **both the revenue per unit (AR) and the additional revenue from selling one more unit/ marginal revenue (MR) are equal to the market price.** Since the AR curve is the demand curve and given that price is constant in a perfectly competitive market, the **firm's** demand curve is horizontal indicating that it is perfectly price elastic.

Revenue curves of firms in imperfect markets

Total, average and marginal revenue schedules of an imperfectly competitive firm. *Refer to Section 1.1 for the revenue concepts.*

QUANTITY	PRICE	TR	AR	MR
1	8	8	*8*	*8*
2	7	14	*7*	*6*
3	6	18	*6*	*4*
4	5	20	*5*	*2*
5	4	20	*4*	*0*
6	3	18	*3*	-2

Figure 3: Revenue Curves of a Price Setter



An imperfectly competitive firm has the market power to influence **either** the price **or** quantity sold. With a downward sloping demand curve, it still has to lower price to increase quantity sold. Its AR curve, which is its demand curve, is downward sloping and becomes more price inelastic as market power increases. The MR curve is downward sloping but is lower than the AR curve.

Why is the MR curve steeper than the AR curve?

In an imperfectly competitive market, a firm faces a downward-sloping demand curve. This means that to sell an additional unit, the firm must lower its price—not just for the extra unit, but for all previous units sold. While this increases revenue from the extra unit sold, it also reduces revenue from each of the earlier units sold. As a result, marginal revenue (MR) is less than average revenue (AR), which is simply the price at that quantity.

2.4 LEVEL OF COMPETITION

Measure of Level of Competition: Market Concentration Ratio

While the number of firms can indicate the level of competition in a market, it does not give a complete picture. For instance, a market may have many firms (suggesting perfect or monopolistic competition) but if the top two firms account for 95% of total output, the market behaves more like an oligopoly. In such cases, actual competition remains low despite the large number of firms.

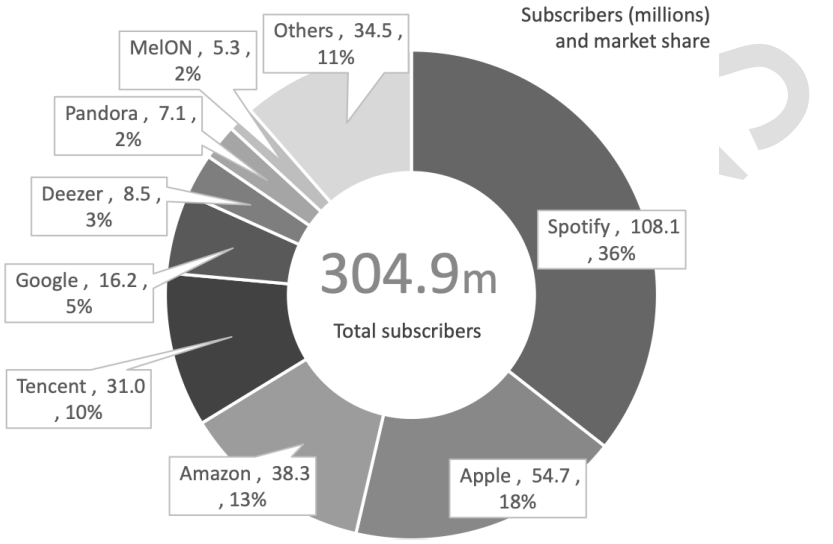
Thus, the number of producers may not be a good indicator of the level of competition in a market. A better indicator is the **market concentration ratio of the firms.**

- Market concentration refers to the extent to which a few firms dominate an industry's output and is often used to assess the level of competition. It is typically measured using a **concentration ratio**, which shows the percentage of total sales, revenue, or production accounted for by the largest firms in the industry.

- Example: The simplest measure of concentration ratio involves adding the market share of the 3, 4 or 5 largest firms. This is known as **3-firm, 4-firm or 5-firm concentration ratio**. The market share refers to the percentage of total sales, revenue or production accounted for by the three, four or five largest firms in the industry.
- Although there is no definitive 'rule' about what ratio constitutes an oligopoly, a 3-firm concentration ratio of over 60% would indicate a highly oligopolistic market.

Try it yourself: (Attempt this in the SLS learning package)

Figure 4: Market share of Global Streaming Music Subscription (%)



Source: MIDiA Research, 2019

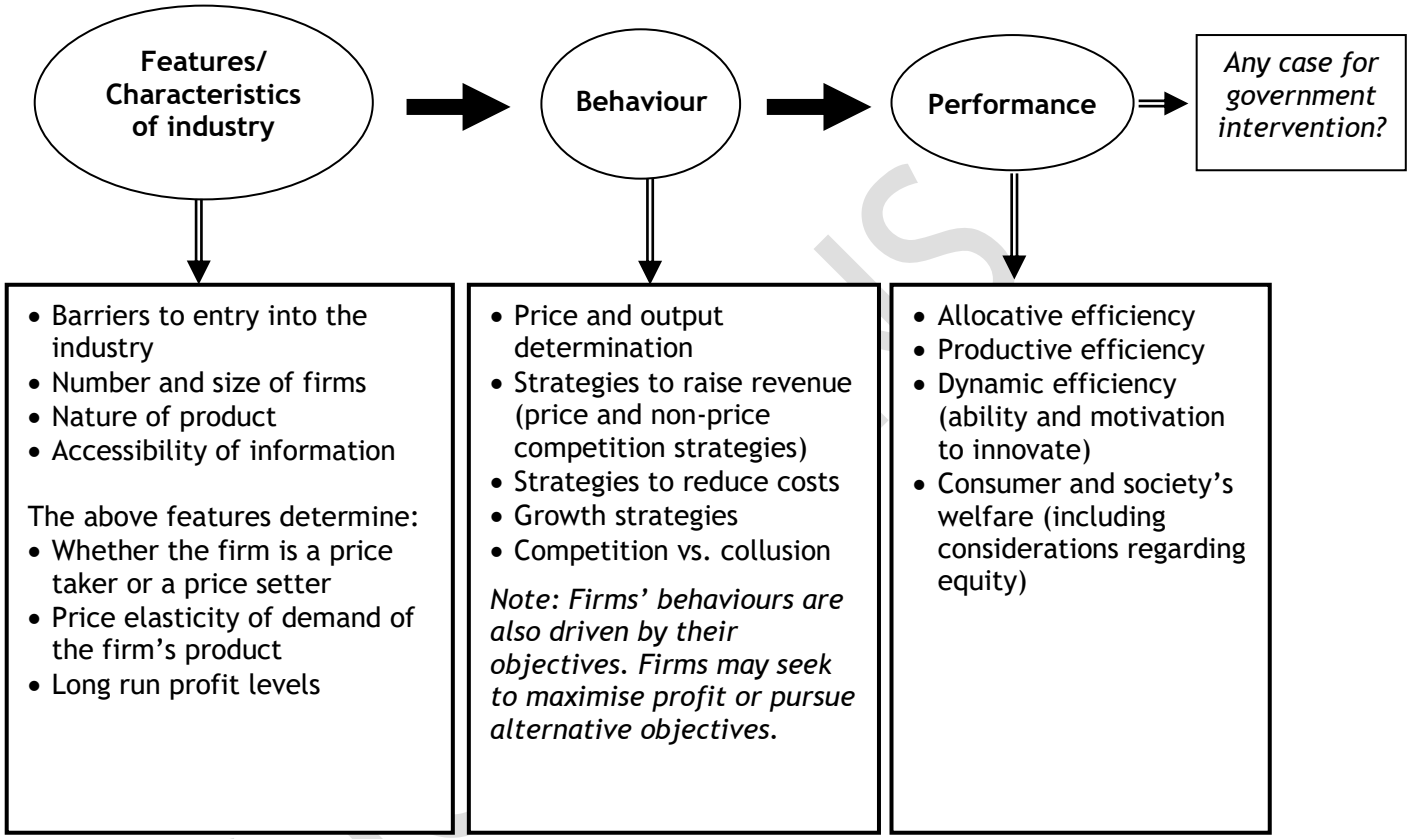
- What is the 3 firm concentration ratio?
- Which market structure model describes this industry?

Key ideas from Sections 1 & 2

1. Firms in all market structures are assumed to aim for profit maximisation.
2. Barriers to entry affect how easily new firms can enter an industry. The higher the barriers, the stronger the market power of existing firms and the lower the level of competition—shaping the overall market structure.
3. Perfect competition and monopoly are extreme ends in the market structure spectrum in terms of market power – firms in perfectly competition have no market power while monopoly possesses very strong market power.
4. Although there are many small firms in monopolistic competition, each firm has weak market power due to product differentiation.
5. Besides the number of firms, the market concentration ratio provides a more accurate measure to how much competition there is in a market.

3. BEHAVIOUR OF FIRMS I: PRICE AND OUTPUT DECISIONS AND TYPES OF PROFITS

By understanding the industry's characteristics, we would be able to understand the behaviour of the firms and later on evaluate their performance.



The different characteristics of the market structure that the firms are operating in will influence the price and output decisions made by them. We shall examine their price and output decisions in the short run and long run.

3.1 PROFIT MAXIMISING EQUILIBRIUM

SLS Lesson: "*Equilibrium Price and Output of a Firm*"

Recall:

- In "Firms and Decisions (1) – Production & Cost", we learnt that **short run** is the time period during which there is at least one fixed factor i.e. the firm's cost is made up of fixed cost and variable cost.
- By the marginal principle, **total profit will be maximised** at the output level **where MR=MC**.
- Equilibrium point shows the output and price where total profit is maximum. This output level is termed the **firm's equilibrium output** and the corresponding price is **equilibrium price.**

Figure 5a: Equilibrium output for a perfectly competitive firm

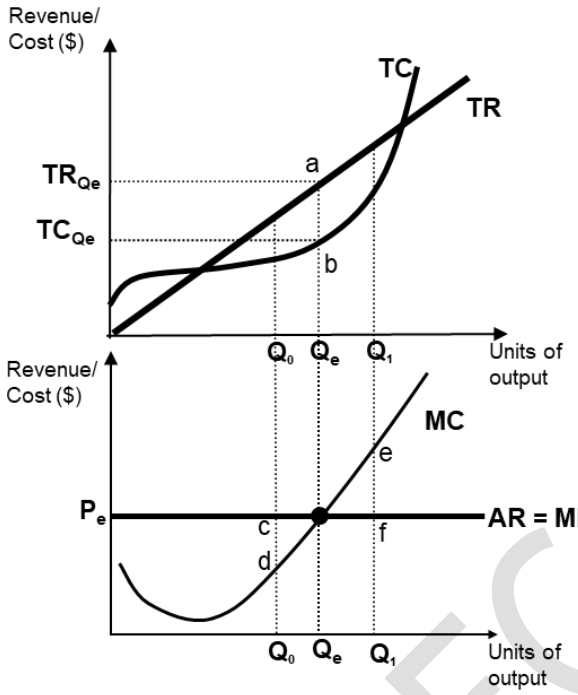
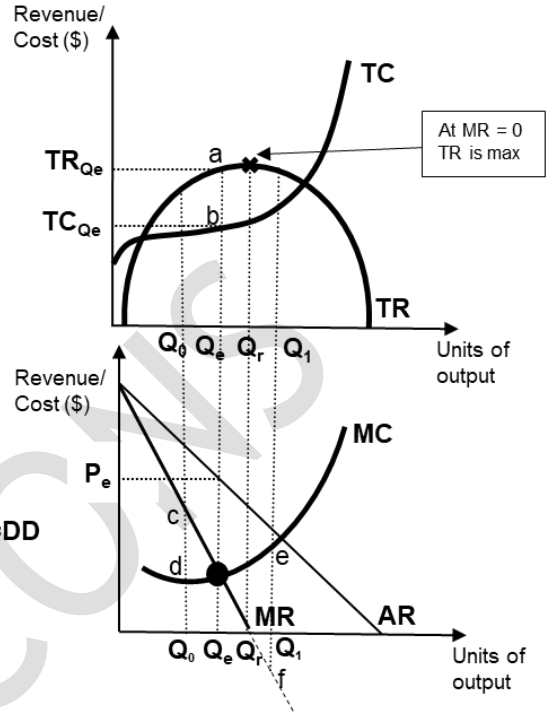


Figure 5b: Equilibrium output for an imperfectly competitive firm



Note: TC/TR diagram is not in the A level syllabus. It is shown here to help you understand why MC = MR is the profit maximising condition.

Q_0	• At Q_0 MR>MC → the revenue earned from producing an additional unit exceeds the cost of producing it. Producing the additional unit would increase profit by the difference between MR and MC. Since profit can be increased if output can still be increased, profit is not maximised if firms produce at Q_0.
Q_1	• At Q_1 MR<MC → producing at this unit cost the firm more than the firm gets in revenue. This unit lowered the firm's profit by the difference between MC and MR, and reducing the production would avoid this, increasing profit instead. Since profit can still be increased, profit us not maximised if firms produce at Q1.
Q_e	• At Q_e, MR = MC. This implies that neither increasing nor decreasing output can increase profits any further. Hence, profits are maximised. • This is also the output where the difference between total revenue and total cost is the greatest.

Q_r	• The total revenue of the firm is highest when output is at Q_r. • As long as marginal revenue is positive, a rise in output will raise total revenue. However, once marginal revenue becomes negative, a rise in output will cause total revenue to fall. The peak of the TR curve will be where MR = 0. This occurs at Q_r. • Note that profit maximising output is different from the output where total revenue is the highest ($Q_e \neq Q_r$).

3.2 TYPES OF PROFITS

3.2.1 Types of Profits of Firms in the Short Run

SLS Lesson: "*Types of Profit and Profit Determination*"

The types of profits (supernormal, normal, subnormal) experienced by firms is an **outcome of firms' decisions**. In turn, the types of profits will determine the survival of the firm in the short run and long run.

At the firm's profit maximising equilibrium output, firms in all market structures (perfectly competitive, monopoly, monopolistically competitive or oligopoly) **can earn any of the 3 profit types of profits in the short run** (normal/supernormal/subnormal).

This section will cover the diagrammatic representation of the 3 different types of profits for both perfect and imperfect markets, as well as firms' decision whether to shut down in the short run.

A. Supernormal Profits (when AR>AC)

Figure 6a: Supernormal Profit of Perfectly Competitive firms

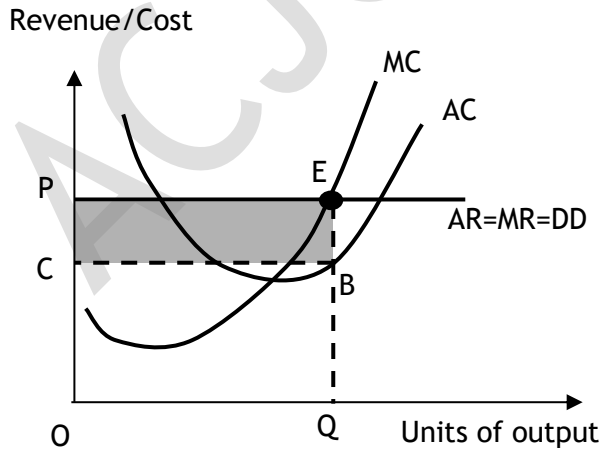
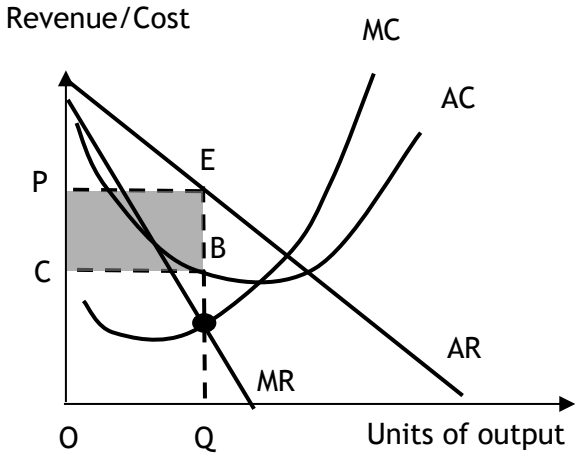


Figure 6b: Supernormal Profit of Imperfectly Competitive firms



Both perfect and imperfectly competitive firms (monopoly, monopolistically competitive firm and oligopoly) maximise profit at the point when **MC = MR**.

When a firm maximises its profit, firm's equilibrium output is Q and firm's price is P. At this equilibrium output, average profit/per unit profit is positive as AR > AC (by distance EB). The firms are earning supernormal profit.

Total Revenue (TR)	= Price x Output = Average Revenue (AR) x Output = OP x OQ = **area OPEQ**
Total Cost (TC)	= Average Cost (AC) x Output = OC x OQ = **area OCBQ**
Economic Profit	= Total Revenue (AR) – Total Cost (TC) = area OPEQ – area OCBQ = **area PEBC (supernormal profit)**

Supernormal profit earned as AR > AC, therefore TR > TC at Q.

B. Normal Profit (when AR=AC)

Figure 7a: Normal Profit of <u>Perfectly</u> Competitive firms

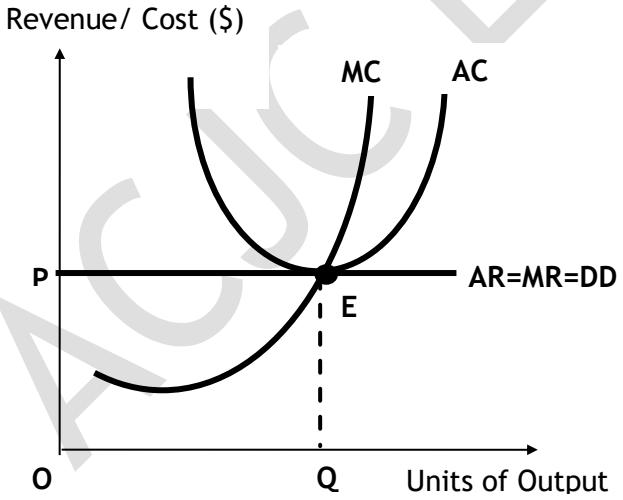
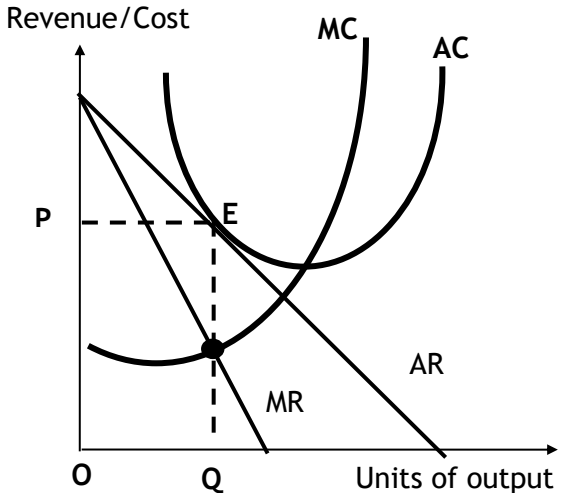


Figure 7b: Normal Profit of <u>Imperfectly</u> Competitive firms



Both perfect and imperfectly competitive firms (monopoly, monopolistically competitive firm and oligopoly) maximise profit at the point when **MC = MR**.

When a firm maximises its profit, firm's equilibrium output is Q and firm's price is P. At this equilibrium output, AR = AC. The firms are earning normal profit.

Total Revenue (TR)	= Price x Output = Average Revenue (AR) x Output = OP x OQ = **area OPEQ**
Total Cost (TC)	= Average Cost (AC) x Output = OC x OQ = **area OPEQ**
Economic Profit	= Total Revenue (AR) - Total Cost (TC) = **zero (normal profit)**

Normal profit earned as AR = AC, therefore TR = TC at Q.

C. Subnormal Profit (when AR<AC). This is also known as also known as a loss.

Figure 8a: Subnormal Profit of <u>Perfectly</u> Competitive firms

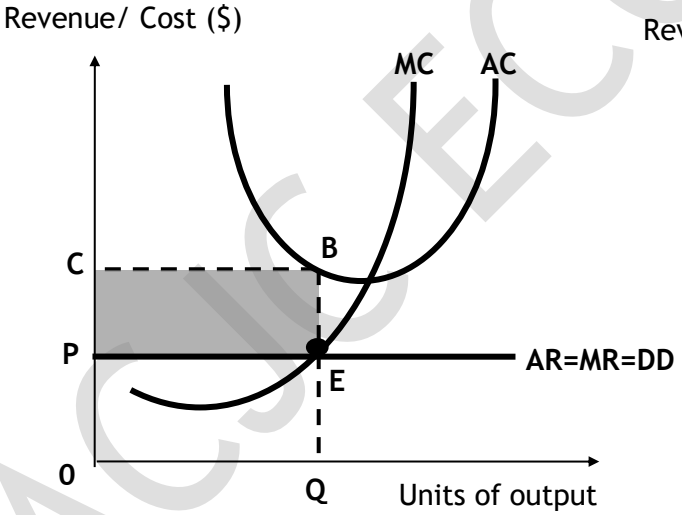
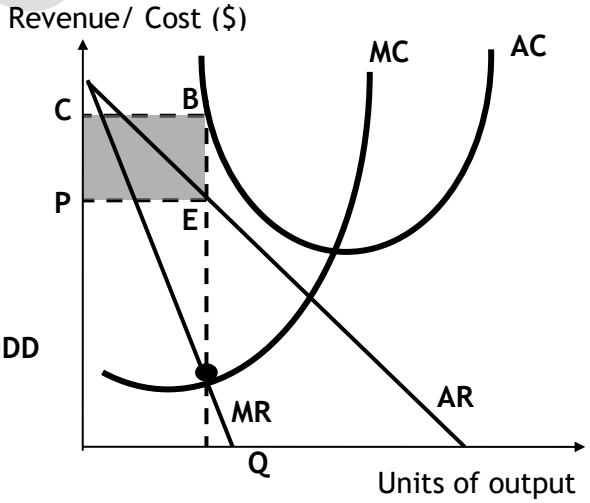


Figure 8b: Subnormal Profit of <u>Imperfectly</u> Competitive firms



Both perfect and imperfectly competitive firms (monopoly, monopolistically competitive firm and oligopoly) maximise profit at the point when **MC = MR**.

When a firm maximises its profit, firm's equilibrium output is Q and firm's price is P. At this equilibrium output, AR < AC. The firms are earning subnormal profit.

Total Revenue (TR)	= Price x Output = Average Revenue (AR) x Output = OP x OQ = **area OPEQ**
Total Cost (TC)	= Average Cost (AC) x Output = OC x OQ = **area OCBQ**
Economic Profit	= Total Revenue (TR) – Total Cost (TC) = area OPEQ – area OCBQ = **area PEBC (subnormal profits; losses)**

Subnormal profit earned as AR < AC, therefore TR < TC at Q.

3.2.2 Shut-Down Condition in the Short Run

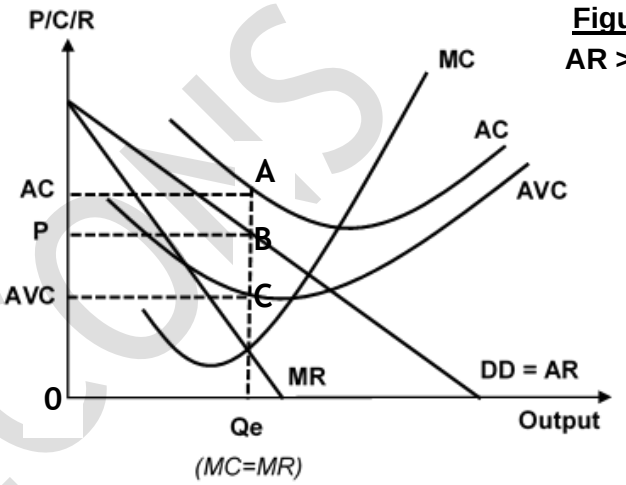
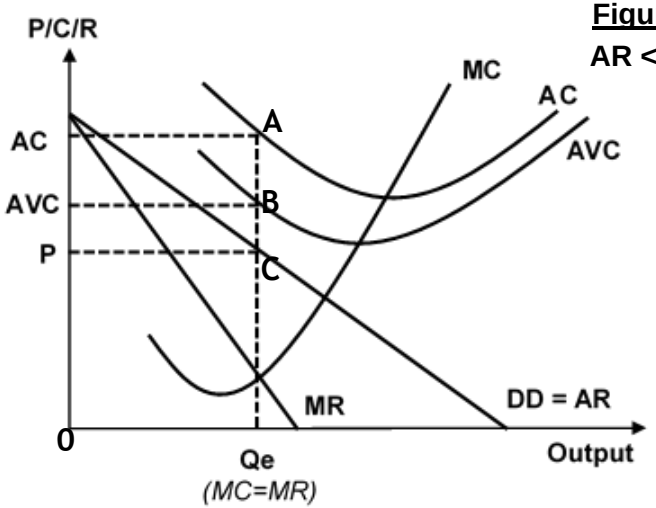
Note that the explanation below is applicable to <u>all</u> market structures.

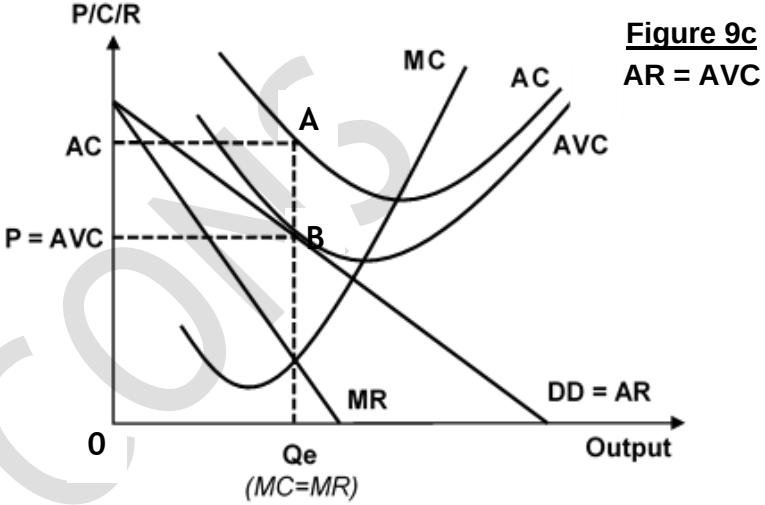
When the firm earns subnormal profit, it is making a loss. In the **long run**, a firm that earns subnormal profit will shut down and exit the market. However, in the **short run**, should the firm shut down immediately or continue production?

- An implication of the profit maximising objective of firms is that when firms earn subnormal profit, their immediate aim is to minimise losses.
- To achieve this, firms will **weigh the average revenue (or total revenue) against average variable cost (or total variable cost)** because whether a firm continues or shut down, it will still incur fixed costs in short run.
- If the firm produces, it will have to incur TVC but if it shuts down, there is no TVC. Hence for a firm **<u>to continue producing with a loss, TR should cover TVC</u>.**

The decision by firms to produce or shut-down is a behaviour of firms. However, this behaviour is only made after assessing the profitability of firms. That is, a firm only considers shutting down in the short run if it makes **subnormal profits**, and its **total revenue < total variable cost**.

Also note that a firm may make subnormal profits despite producing at its profit maximisation output where MC = MR. A firm making subnormal profits does not imply that the firm's objective is not one of profit maximisation.

<table>
<tr><th></th><th colspan="2">Shut-down condition for Imperfectly Competitive firms</th></tr>
<tr><td>Case 1:
Where the firm's
AR > AVC,
i.e. revenue can cover variable cost:</td><td>• If it shuts down, its loss is equivalent to the entire fixed cost, Area ACACAvc.
• If it continues production, it can use its revenue to fully cover its variable cost, and part of its fixed cost. In this case, its loss is only part of the fixed cost, Area AcABP. Compared to shutting down, (where it has to bear the entire fixed cost itself) its loss is less if it continues production.
• Therefore, to minimise loss, the firm should continue production.</td><td>A firm making subnormal profits in the short run but continuing in production.
<u>Figure 9a</u>
AR > AVC
 
</td></tr>
<tr><td>Case 2:
Where the firm's
AR < AVC,
i.e. revenue is less than variable cost:</td><td>• If it shuts down, its loss is equivalent to the entire fixed cost, Area AcABAvc.
• If it continues production, its revenue is not enough to cover both fixed cost and variable cost. In this case, its loss is the entire fixed cost as well as part of the variable cost that its revenue is unable to cover, Area AcACP. Compared to shutting down, its loss is greater if it continues production.
• Therefore, the firm should shut down immediately to minimise its loss.</td><td>A firm that will shut down.
<u>Figure 9b</u>
AR < AVC
 
</td></tr>
</table>

Case 3: Where the firm's AR = AVC	• Whether the firm continues or shut down, its loss is confined to its fixed cost only, Area AcABP. • So, the firm may consider other factors when deciding to continue production.	A firm making subnormal profits in the short run and indifferent between producing or shutting down.  **Figure 9c** **AR = AVC**

Reasons why a firm may choose NOT to shut down in the short run:

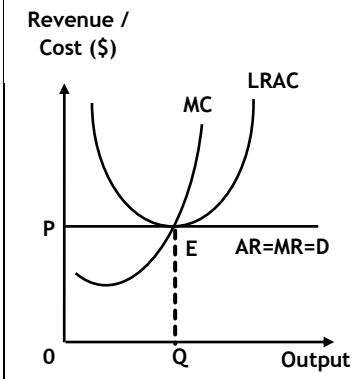
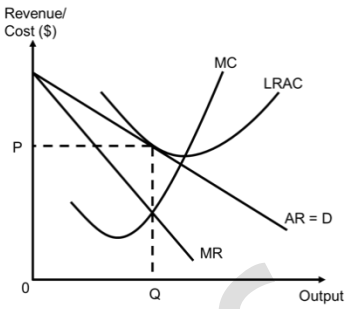
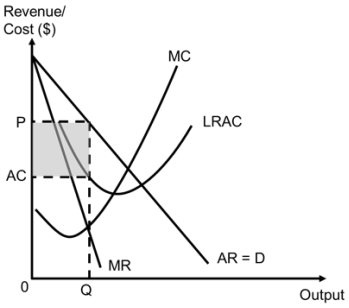
While a firm should shut down in the short run to minimise loss when the AR is unable to cover the AVC, there can be reasons why a firm may choose not to do so. Firms might continue operating if they expect market conditions to improve in the near future. This could be due to anticipated increases in demand, seasonal trends, or expected cost reductions. By continuing production, the firm maintains its presence in the market, preserving customer relationships and brand loyalty. Shutting down could lead to losing customers to competitors, making it harder to re-enter the market later.

3.2.3 Profit level of Firms in the Long Run

- Recall from "Firms and Decisions (1) – Production & Cost", in the long run, existing firms are no longer tied down by fixed costs. All costs incurred are variable costs. To remain in an industry, firms will aim to make **at least normal profit** (the profit level is equivalent to the next best profit forgone from an alternative industry).
- The long run equilibrium of an industry is the condition when all market adjustments are stabilised. Firms no longer have the incentive to change their plant size, or enter and exit the industry.
- When firms make supernormal profit in the short run, new firms will be attracted into the industry. However, the different strengths of barriers to entry in the different market structures will lead to different types of profit earned in the long run.

How an industry adjusts from SR to LR equilibrium when SUPERNORMAL PROFIT is earned by the firm IN THE SHORT RUN

	Perfect competition	**Monopolistic competition**	**Oligopoly / Monopoly**
Barriers to entry/ Ease of entry and exit	Absence of barriers to entry New firms will be able to enter easily	Weak barriers to entry New firms will be able to enter relatively easily	Strong / Very strong barriers to entry New firms will **NOT** be able to enter
Adjustment process (incentive to enter the market)	**Industry supply increases** as firms enter ↓ Market equilibrium price & firm's output decreases ↓ Supernormal profit is reduced/eroded ↓ Equilibrium price decreases with entry of new firms until it is equal to firm's average cost of production. Firms earn normal profits. ↓ No incentive of new firms to enter	As there are now more substitutes available, **individual firm's demand will decrease & become more price elastic** ↓ Individual firm's price and output decreases ↓ Supernormal profit is reduced/eroded. ↓ Demand decreases causing price to fall until Price is equal to firm's average cost of production. Firms earn normal profits. ↓ No incentive of new firms to enter	No adjustment as no new firms are able to enter the industry to compete for supernormal profits

LR profit	A PC firm will earn **normal profit** in the long run	A MC firm will earn **normal profit** in the long run	Oligopolies & monopolies **retain their supernormal profit** in long run
LR profit (diagram)	 Figure 10a	 Figure 10b	 Figure 10c

Similarly, when firms make subnormal profit in the short run, firms that are not able to cover their variable cost will leave the industry (zero output).

How an industry adjusts from SR to LR equilibrium when SUBNORMAL profit is earned in the SHORT RUN

	Perfect competition	**Monopolistic competition**	**Oligopoly / Monopoly**
Barriers to entry/ Ease of entry and exit	Absence of barriers to entry and exit Firms will be able to exit (shut down) easily	Weak barriers to entry and exit Firms will be able to exit (shut down) easily	Strong / Very strong barriers to entry and exit Firms with losses and are not able to cover variable cost in the short run will still have to leave
Adjustment process (incentive to leave the mkt)	**Industry supply will decrease**; equilibrium price and firm's output increases and subnormal profit is reduced.	**Individual firms that are remaining will have a higher and less price elastic demand** as there are fewer substitutes available.	**Individual firms that are remaining will have higher and more price inelastic demand** as there are fewer or poorer substitutes available.
	Equilibrium price increases until it is equal to the firm's average cost of production → normal profit is earned	Individual firm's price and output increase, until the price is equal to the firm's average cost of production → normal profit is earned	Individual firm's price and output increase.
LR profit	A PC firm will earn **normal profit** in the long run.	A MC firm will earn **normal profit** in the long run.	An oligopoly or monopoly can **earn**

			<u>supernormal or normal profit</u> in the LR.

<u>Key ideas from the whole of Section 3.1</u>

1. Firms can earn any of the 3 types of profits (normal / supernormal / subnormal) in **short run.**
2. Profit levels provide signals to the movement of resources – whether more resources will enter or whether the resources currently used in the industry will leave it.
3. For firms to remain in the industry in the **long run**, they must earn either normal profit (which is equal to opportunity cost) or supernormal profit.
4. Perfectly competitive and monopolistically competitive firms can only earn normal profit in the **long run**.

3.3 EQUILIBRIUM OF A FIRM WITH IMPERFECT INFORMATION (Cost-plus Pricing)

SLS Lesson: "*Cost-Plus Pricing*"

Unless otherwise stated, firms are always assumed to be trying to profit maximise. In reality, firms **<u>may not have perfect information</u>** on their marginal revenue (MR) nor their marginal costs (MC). Firms lack perfect information due to market complexity, information asymmetry and rapid changes.

- Market complexity: Markets are inherently complex with numerous variables affecting supply and demand. It is impossible for firms to have complete and accurate information about all these variables simultaneously.
- Information asymmetry: Firms often face information asymmetry where one party (e.g., consumers, suppliers) has more or better information than the firm. This can lead to suboptimal decision-making.
- Rapid Changes: Markets and economic conditions change rapidly due to technological advancements, regulatory changes, and shifting consumer preferences. Keeping up with these changes in real-time is challenging.

These factors make it impossible for firms to have complete and accurate information in real-time. Hence, firms may not know the exact output where MR = MC. This also implies that firms may not know the corresponding profit maximising price to set.

In practice, firms may adopt simpler rules-of-thumb pricing models for price and output decisions. A common simple pricing model is ***cost-plus pricing*** or ***mark-up pricing***. Producers simply work out the price by adding a certain percentage (mark-up) for profit on top of its average total costs (average fixed cost + average variable cost).

Price = Average Cost + profit mark-up

Recall that the profit maximising output level for a firm is where MC= MR. To maximise profit, the firm should set the price as determined by the consumers' willing and ability to pay which is reflected by the demand (AR) curve. However, the firm may not have perfect information on its demand. Therefore, it may choose to adopt a mark-up of X above the average cost and thus the price the good would be P = AC + X. As such, while the firm is not maximising its profit the firm can still ensure it is earning supernormal profit.

There are several determinants affecting a firm's price when it is using cost-plus pricing.

- The firm's intended level of profit.
    - Firms with imperfect information may set a target profit, and price their goods to achieve this target. The higher the intended level of profits a firm sets, the higher the mark-up. This is because the firm needs to ensure that the revenue generated covers both the costs and the desired profit margin.
- The level of competition firms face in their industry.
    - The degree of competition in the industry significantly impacts mark-up levels. Firms in industries with fewer competitors and less competition tend to be able to set a higher mark-up because there are fewer alternative products for consumers. Conversely, in highly competitive industries, firms must keep mark-ups lower to remain price-competitive and attract customers.
- Market conditions
    - Expanding Markets: In markets with increasing demand, firms can afford to set higher mark-ups as consumers are willing to pay more.
    - Contracting Markets: In markets with decreasing demand, firms may lower their mark-ups to stimulate sales and remain competitive.
    - Rising Costs: If firms face rising production costs while demand remains constant, they may reduce mark-ups to maintain sales volume and market share even though doing so may reduce their profit level.
- Number of products a firm has (multi-product mark-ups)
    - Firms with a diverse product range might adjust mark-ups based on the profitability of each product. More profitable products can have higher mark-ups as usually demand for the product may be more price inelastic as it may be perceived as being unique as compared to the products from other rival firms, while less profitable or new products might have lower mark-ups to attract customers and increase market penetration.

3.4 PRICE AND OUTPUT DECISIONS FOR <u>OLIGOPOLIES</u>

Competition and Collusion:

- Unlike perfect competition, monopoly and monopolistic competition, there is no single or simple set of rules for equilibrium in an oligopolistic market.

SLS Lesson:
"*Price and Output Decisions for Competitive Oligopolies*"

- The existence of a few but large firms make each of them highly powerful in influencing market supply or price but they become **mutual interdependent** in their behaviour and business decisions.
- The pricing and output decision of one firm is often based on its prediction of its rival firms' behaviour. As such, the pricing and output decisions in this market may differ according to whether they adopt the collusive or non-collusive behaviour model.
- Due to the high degree of interdependence between firms, oligopolies often experience **price rigidity** in the market whereby price remains rigid and stable in the market. This price rigidity can be found in both a competitive and a collusive oligopoly.

3.4.1 Competitive / Non-collusive Behaviour

To explain price rigidity in a competitive oligopoly:

- Oligopolistic firms, having a significant market share of the industry, are large enough for the actions of one firm to affect the profitability of other firms in the industry. This implies firms have a high degree of **mutual interdependence**, where the action of one firm depends on the prediction or response of the actions of other firms.
- When a firm reduces its price, rivals are likely to follow. This is because goods in an oligopoly tend to be substitutes. The fall in the price of a rival's goods will cause consumers to switch to the cheaper alternative. To prevent the fall in demand for their own goods, all other rivals will reduce their prices too. Hence, the firm faces a **price inelastic demand** curve for prices below the rigid/established price as the other firms are also selling at lower price. The firm's quantity demanded increases by less than the proportionate decrease in price. The firm's total revenue will decrease. Furthermore, if firms constantly try to lower their prices below their rivals', a price wars may occur, leading to lower revenue and profit for all firms.
- When the firm raises its price above the rigid/established price, rival firms may not follow. This is because consumers will now switch to the relatively cheaper goods of the rivals. Hence, the firm that raises its price will face a **price elastic demand**. The rise in price will result in a more than proportionate fall in quantity demanded. The firm's revenue falls.
- Since both increasing and decreasing prices lead to a fall in total revenue, and therefore profits if costs remain constant, oligopolies tend not to engage in price competition. Instead, **there is a tendency for prices in oligopolistic markets to be rigid and stable**.
- Instead, oligopolies tend to engage in **non-price competition** between firms in their attempt to maintain or increase market share. For example, big supermarkets like NTUC and GIANT undertake these marketing strategies such as store loyalty cards, home delivery systems, extension of opening hours (24-hour shopping), innovative use of technology for shoppers including self-scanning, and internet shopping services to compete among themselves.

Note: Mutual interdependence which causes price rigidity is one of the key characteristics of an oligopoly.

3.4.2 Collusive Behaviour

SLS Lesson: "*Price and Output Decisions for Collusive Oligopolies*"

- The price rigidity or stability in the oligopolistic industry could also be due to collusion among firms. However, collusion is illegal in many countries.
- Collusion is practised usually to avoid price competition between firms. There can be different collusive behaviours.
    - **Price fixing**: Firms in an oligopoly agree to set prices at a certain level to maximize joint profits and reduce competition. Through price collusion, firms are in fact acting as a monopoly.
    - If firms collude to raise price together, there will not be cheaper substitutes available for consumers to switch to. This implies that PED<1, and a firm's rise in price will result in a less than proportionate fall in quantity demanded. The gain in revenue due to higher prices per unit will exceed the loss in revenue due to fewer units sold, allowing all firms to increase their total revenue. Assuming total costs remain the same, profits for all firms would rise.
    - Cartel arrangement: Firms may also collude by agreeing to produce pre-agreed level of output so that they can collectively influence market price through quantity restriction.
        - The success of such collusion, however, depends on whether members abide by the production quota assigned to each. The following problems in cartels can lead to cheating incidents, i.e. member firms overshooting their quota and under-cutting price illegally.
            - Different cost conditions among members
            - Different objectives among members
            - Product differentiation (e.g. varying grade of the product)

Although collusion is illegal, economists generally agree that it is very rare for oligopolists to set prices independently. An alternative to overt collusion is **tacit collusion.**

3.4.3 Tacit collusion (or price leadership)

- While overt collusion is illegal, it is very rare for oligopolists to set prices independently. Very often, oligopolistic firms are involved in tacit collusion.
    - **Tacit collusion is an unwritten and unspoken understanding through which firms agree to limit their competition.**
    - This happens when other firms follow the price changes set by a dominant firm (usually the largest firm or the firm that has been particularly good at assessing changes in demand or cost).
    - The price leader will generally tend to set a price high enough that the least cost-efficient firm in the market may earn some return above the competitive level.
- Firms in an industry are more likely to collude under these conditions:
    - Presence of few firms and thus no strong threat of new competition (strong barriers to entry).

- Homogeneous or highly similar products
- Common production methods and common costs
- Industry is stable when demand and production costs do not fluctuate wildly. This makes agreement or prediction easier.

Effects of collusion in an oligopoly on society:

Note: This is linked to Section 5: Performance and Evaluation of Market Structure. It would be better to review this section after understanding Section 5.

Collusion in an oligopoly, where firms agree to set prices or limit production to reduce competition, has several significant effects on society.

1. **Higher prices and lower consumer surplus for consumers**:
   - Collusion leads to artificially high prices as firms agree to keep prices above competitive levels. This reduces consumer surplus, which means consumers pay more for goods and services than they would in a competitive market.
2. **Reduced output**:
   - To maintain higher prices, colluding firms often limit production. This creates artificial scarcity, further driving up prices and reducing the availability of goods and services for consumers.
3. **Lack of innovation**:
   - With reduced competition, firms have less incentive to innovate or improve their products and services. This can lead to stagnation in product quality and technological advancement, leading to dynamic inefficiency, negatively impacting consumer choice and long-term economic growth.

3.5 PRICE AND OUTPUT DECISIONS IN CONTESTABLE MARKETS

SLS

SLS Lesson: "*Market Contestability*"

Instead of the level of competition (perfect competition, monopolistic competition, oligopoly or monopoly) that determines the price and output level of a firm, the **threat of competition** can also determine the pricing and output level of a firm.

- Markets are considered 'contestable' if new firms can enter and leave without incurring large losses.
- Contestable markets are imperfect markets in which there are barriers to entry, but firms still face **potential competition**.

Reasons why markets may be contestable:

- Innovations with technologies and the potential for change in government policies are some factors that make an industry contestable.
- Disruptive technology and market contestability:
    - In recent years, the emergence of disruptive technology has been one of the driving forces in increasing competition in traditional markets with low market contestability. Disruptive technology is defined as an innovation that significantly alters the way that consumers, industries, or businesses operate allowing them to enter and compete in traditional businesses and industries which were previously seen to be oligopolistic or having low market contestability.
    - Disruptive technologies enable small firms with fewer resources to successfully challenge established incumbent firms by lowering barriers to entry and reducing economies of scale.
        - **Cost Reduction**: Disruptive technologies often lower the initial investment required to enter a market. For instance, the rise of cloud computing has reduced the need for expensive physical infrastructure. For example, startups can now rent server space on-demand, drastically cutting down capital requirements and operational costs. This makes it easier for new firms to enter the market and compete with established players without the heavy burden of upfront investments. Refer to the further examples below on how technology helps retailers and fintech companies to cut cost.
        - **Reduced Economies of Scale**: Traditional industries often rely on economies of scale, where larger firms have a cost advantage due to their size. Disruptive technologies can erode these advantages by making production and distribution processes more efficient and accessible. For instance, 3D printing technology allows small firms to manufacture products without the need for large-scale factories, thereby reducing the cost differential between small and large firms. This democratization of production capabilities enables smaller firms to compete effectively against industry giants.
    - These small (disruptive) firms are usually start-ups that have created a different business model that leverages on technology to create an user experience which is often simple, platform-based and convenient. These firms tend to identify, and target

overlooked segments, or unmet needs, in a market. These disruptive firms thereby pose a major threat to incumbent firms increasing market contestability or making a market more contestable.

- Examples of disruptive technologies and firms
  - Web-based video streaming technology disrupting Cable TV
    - On-demand viewing (Netflix) has disrupted traditional broadcasting firms like Starhub Cable, Radio and cinema operators increasing the market contestability in this industry.
  - Mobile Ride-hailing platform apps
    - Mobile ride-hailing platforms (Uber, Grab, Gojek) connecting consumers who needs rides with drivers willing to provide them has disrupted traditional taxi operators (street hail and call-to-book-a cab)
    - This technology has increased the market contestability of the ride-hailing industry in Singapore as it is no longer dominated by a few large firms, i.e. the traditional taxi service industry
  - **Retail**
    - E-commerce platforms like Amazon have disrupted traditional brick-and-mortar retail by offering a wider selection of goods at competitive prices, often with greater convenience. This has increased market contestability by enabling smaller retailers to reach a global audience without significant upfront costs.
  - **Financial Services**
    - Fintech companies using blockchain and mobile technologies have disrupted traditional banking and financial services. By offering lower-cost and more accessible financial products, they have made the market more contestable and forced traditional banks to innovate.

Behaviour of firms in contestable markets:

- The **threat of competition** causes these firms to adopt competitive pricing (charging a lower price) and behaviour to deter competition, even though there might only be one or very few firms in the industry.
  - For example, the threat of competition can force a monopoly to be more efficient to be able to charge a lower price (below profit maximisation price) to deter the potential new entrants.

Example of competitive pricing: Limit Pricing

- **Limit pricing** is the practice where a monopolist or oligopolist set price below the average cost of potential entrants to <u>deter potential entrants from entering the market</u>.

- The existing firm, being established and producing a larger output, tends to have a lower average cost than potential entrants. The existing firm can set a price lower than the potential entrants' average cost, but still higher than its own average cost. This implies that while firms that practice limit pricing are still making supernormal profits, but they are not maximising their profits (they are not making as much profit as they can).
- The potential entrant has to set the same price as the existing firm if it wants to compete successful, but doing so will not be profitable. Hence, the potential entrant will not enter the market.
- Had the potential entrant entered the market, the existing firm would lose some market share and may not continue earning supernormal profits.
- While limit pricing causes the existing firm to earn lower supernormal profits in the short term, it allows the firm to continue to earn supernormal profits in the long run.

3.6 ALTERNATIVE OBJECTIVES OF FIRMS

Although a firm is assumed to be profit maximising, there are circumstances in which a firm may pursue other objectives. Nonetheless in the long run, most firms ultimately aim to maximise profits.

3.6.1 Profit Satisficing

Some firms may aim to make a **sufficient level of profit** rather than maximising it. The firm does this by producing at any output where P > AC (i.e. supernormal profits are made), even if MR is not equal to MC at this output. This may apply for the following cases:

1. It may be **costly and difficult to obtain sufficient information** to achieve profit-maximisation.
   - This includes firms that have several production locations internationally (where firms specialise parts of its production processes in different countries) and multiple product offerings (where a firm is involved in the production more than just one product under its brand name). These firms are likely to find it harder and costlier to gather information about costs, making it harder for such firms to fulfil its profit-maximising condition of MC=MR.
   - As such, they may resort to simpler pricing models such as cost-plus pricing (*Refer to Section 3.3 for a detailed explanation of cost-plus pricing*), which is a mark-up on top of the average cost of goods. This price can be adjusted according to how well the goods are selling. While this ensures the firm is profitable, it may not have reached its optimum level.
2. Some firms and workers prefer to **avoid undue stress** or perceived challenges from expansion that comes with increasing profit levels. For example, family-run businesses. They may choose to just produce a lower output than profit-maximising output level.

3. Shareholders and the decision-makers such as managers may be **pursuing different objectives**:

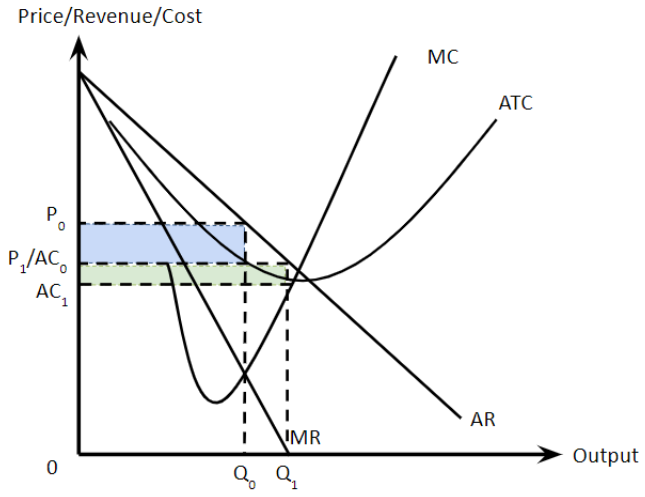
   - Shareholders (owners) of the firm might be interested in maximising profits but are too far removed from the operations of the firm to be fully aware of the optimal decisions that need to be made in order to maximise profits.
   - Actual decision-makers, such as regional managers, could be aiming to achieve a given level of profits that are deemed to be acceptable by the shareholders although it is lower than the profit-maximising level. This allows them to enjoy other benefits such as shorter operating hours, lower levels of stress, and better staff welfare.

3.6.2 Revenue Maximisation

This may apply for sales managers and commission-based employees whose **income is dependent on the total revenue** earned by the firm. For example, car salesmen and insurance agents might choose to maximise revenue rather than profits because job performance may be measured by amount of revenue brought into the company. This is usually because increasing sales and maximizing revenue may also be a way of raising market share in an industry. Do note that sales managers and commission-based employees would still ensure at least normal profit is being earned while maximising revenue as the failure to do so would cause the firm to shut down in the long run.

With reference to Figure 11, in order to maximise revenue, sales managers and commission-based employees might make decisions to increase production levels to the point where marginal revenue is zero (Q_1) and in so doing, set a price (P_1) that is lower than what is required for profit-maximising.

Figure 11: A revenue maximising firm



Revenue maximisation occurs when marginal revenue is zero as,

- If producers produce at any output **below** Q_1 (example Q_0), marginal revenue is positive. This means that the additional

quantity sold would add to the total revenue. Thus, producers who want to maximise revenue will not stop at Q0 and will instead increase output to Q1. This causes the total revenue to increase (i.e. revenue maximisation has not yet been reached).

- If producers produce at any output **above** Q1, marginal revenue is negative. This means that the additional quantity sold would actually lead to a fall in total revenue. Thus, producers who want to maximise revenue will not want to produce beyond Q1 and will instead reduce output to Q1.
- Only when producers produce at Q0, the marginal revenue is zero where total revenue have been maximised.

Thus, sales managers' decisions will enable the firm to increase its total revenue but not necessarily profits, and profits level depends on the total cost as production levels increases too. As seen from the diagram, the increase in production due to revenue maximisation has reduced the level of profits.

3.6.3 Gain Market Dominance

Firms may aim to **capture larger market share or maintain their market dominance** rather than profit maximising by setting a lower price than profit-maximizing price. This could be due to:

(i) Firms wanting to **drive rival firms out** of the market and increase their market share so that the firm **could dominate the market**.

- Prior to the Grab and Uber merger, Grab and Uber would often engage in fierce competition by offering discounts to their ride hailing services. This was with the intention of capturing larger market share and dominate the market.
- As firms drive rival firms out and capture more market share, there will be fewer substitutes in the market. Hence, their demand becomes more price inelastic. In the long run, this allows the firm to set higher prices to earn higher revenue and possibly higher profit.

(ii) Firms being **aware of potential entrants** into the market. To avoid losing market share to these new entrants, incumbent (those existing in the industry) firms could decide to focus on retaining their dominant market share or increasing their market share.

- For example, in 2016 SingTel, StarHub and M1 rolled out lower price plan and new data plans in anticipation of the entry of TPG Teleco into the telco market. This was done to retain its customers or prevent existing customers from switch to TPG, maintaining its market share and hence possible market share dominance.

Market share dominance ensures that their demand remains price inelastic, hence allowing the firms to set high prices and high revenue.

3.6.4 Increase of Social Welfare

This aim is likely to be upheld by state-owned companies or social enterprises which may make social welfare a greater consideration than profit maximisation.

The main goal of social enterprises is to address social, environmental, or community issues. Profit is not the primary objective but rather a means to sustain their mission-driven activities. They produce products and sell them to tackle social problems, improve local communities, or the environment. Examples include (these)abilities Pte Ltd and Little Heroes' Dreams Ltd in Singapore that aim to help persons with disabilities (PwDs) and underprivileged children respectively.

Take note: What are the factors affecting a firm's price and output decision?

We have learnt that firms make price & output decisions based on:

1. **Firms' costs and revenue** *(see Section 3.1* "Firms and Decisions (1) – Production & Cost" *notes)*
2. **Firms' objectives**
   - The assumption is that, firms aim to maximise profits and thus will decide prices and outputs when MC = MR.
   - Nonetheless, these decisions may differ in the short run, depending on a firm's objectives if it is not profit maximising.
   - A firm that seeks to maximise revenue (at MR=0) would set lower prices and produce higher output than a profit-maximising one.
3. **Mark-up pricing models** as in reality, firms do not have information MR and MC.

Other considerations that influence firms' pricing and output decision: (see Sections 3.3 and 3.4)

4. **Competitors' actions**
   - Firms do not make decisions independently but consider their competitors' actions.
   - Monopolies may not have direct competitors yet; they are mindful of the need to deter the entry of potential rivals.
   - Oligopoly firms display mutual interdependence and would consider the actions and reactions of rivals in making their pricing and output decisions such as adopting the price set by the dominant rival firm.
5. **Business risks and uncertainty**
   - Business risks and uncertainty may include unpredictable fluctuations in demand e.g. due to changes in tastes and preferences, sudden entrance of new rivals or changes in government policies.
   - Such risks and uncertainty may cause a firm to make more cautious decisions such as producing an output level which is lower than the profit-maximising output.
6. **Threat of Competition (Market contestability)**
   - Firms will adopt more competitive (lower) pricing instead of profit-maximising (higher) pricing to deter potential competition.

4. BEHAVIOUR OF FIRMS II: STRATEGIES TO INCREASE PROFITS

Most firms aim to maximise profit and also to increase their profits. The firm will have to ensure that it maintains high revenue and low cost. Therefore, firms will have to adopt strategies to increase revenue and lower costs. Each strategy is determined by key considerations such as the firm's objective, its cost conditions and the extent of its market power.

4.1 STRATEGIES TO RAISE REVENUE

4.1.1 Price-Strategies to Raise Revenue

SLS Lesson:
"*Price Strategies to Raise Revenue*"

A. Raising / Lowering Prices to Raise Revenue

- The price strategies (of lowering or raising price) adopted by firms to raise revenue can be guided by the **price elasticity of demand of their goods and services which is influenced by the level of competition in the markets that the firms operate in.**
    - When there is a high level of competition, such as monopolistic competition, firms face a price elastic demand for their goods, and may adopt price discounts (i.e. adopt competitive pricing by lowering price) to increase revenue.
    - With a price elastic demand, decrease in price will lead to a more than proportionate increase in quantity demanded of their goods. The decrease in price will decrease the total revenue (TR) which is less than the increase in TR due to the more than proportionate increase in quantity demanded. Hence, overall, the TR will increase.
        - Example: Bakeries tend to give discounts/reduce price to increase total revenue.
        - However, there is a limit as to how much firms can lower their prices. This limit is often determined by the production cost incurred. Firms cannot lower their prices indefinitely as losses will eventually be incurred. Hence this strategy may not be sustainable in the long run.
        - This is especially true for small firms with limited internal economies of scale. These small firms tend to operate with a higher average cost. Large firms, on the other hand, will enjoy substantial internal economies of scale and operate with a lower average cost. Thus, large firms have a greater ability to reduce price compared to smaller firms.
    - On the other hand, when there is a low level of competition, such as those monopolies and oligopolies, firms face a price inelastic. With a price inelastic demand, firm will increase the price, leading to a less than proportionate decrease in quantity demanded of their goods. The increase in price will increase the total revenue (TR) which is more than the decrease in TR due to the decrease in quantity demanded. Hence, overall, the TR will increase.

[Note, however, that some industries dealing with essentials, such as transportation & utilities, may be subjected to government policies on pricing.]

B. Price Discrimination to Raise Revenue

- Price discrimination is a form of pricing strategy that firms adopt to increase their total revenue.
- Price discrimination is the practice of firms **charging a different price** for the **same product** and the price difference **cannot be explained by differences in costs of production**. Firms may charge the same good differently to different groups of customers or different units bought.
- Examples:
    - Doctors charge higher-income patients more than the lower-income patients for same medicine prescriptions.
    - Students pay lower bus fares compared to working adults for the same trip.
- Firms with market power (firms in monopolistic competition, oligopoly and monopoly) can adopt price discrimination as they have the ability to determine price. The stronger the market power, the greater the ability to price discriminate.

Necessary conditions for firms to be able to adopt price discrimination.

1. The firms must be able to set its price. Thus, price discrimination will be possible under imperfect competition (monopolistic competition, oligopoly and monopoly market structure) where firms are price setters but will be impossible under perfect competition where firms are price takers.
2. Markets are separable, which means the firm can clearly tell the distinct groups of people to charge different prices to (e.g. through units of purchase, types of consumers, time of consumption, domestic vs export, age of consumers, etc.).
3. Differing price elasticity of demand between separated markets (markets with lower price elasticity of demand charged higher price, vice versa.)
4. Resale of good between consumers is not possible or the cost of reselling exceeds the price difference. It is generally easier to price discriminate in service industries where resale is not possible.

Third Degree Price Discrimination:

- This is the case where the firm charges different prices in different markets according to the price elasticity of demand in each market.
    - Market with less price elastic demand is charged a higher price than a market faced with a more price elastic demand. For market with price elastic demand, the firm will lower the price, leading to a more than proportionate increase in quantity demanded. The decrease in price will decrease the total revenue (TR) which is less than the increase in TR due to the increase in quantity demanded. Hence, overall, the TR will increase. For market with price inelastic demand, the firm will increase price to increase TR.

Refer to Annex 1 at the end of the notes to learn about first and second degree price discrimination.

- This will enable firms to generate larger total revenue and thus higher profit assuming total costs remain unchanged (compared to charging a single price for all consumers).
- Examples:
  - Airlines, movie theatres and many other industries charge lower price for children and elderly.
  - Airline tickets when booked months earlier are priced lower and last-minute ones are priced higher. Closer to the date and time of the scheduled service, the ticket price tends to be higher as the consumer's demand for a flight becomes more price inelastic. This is because those who booked late often have fewer substitutes for travel to their intended destination, therefore likely to be willing and able to pay a much higher price.

Welfare Implications of Price Discrimination:

Firm's decision to price discriminate can influence their profit levels and impact efficiency and equity.

- **Undesirable effects**
  - There is an absorption of consumer surplus by firm, resulting in a lower consumer surplus enjoyed. This is because some consumers are now charged a higher price which reduces their consumer surplus and allows the firm to earn more revenue.

- **Desirable effects:**
  - For market with more price elastic demand, firm will decrease the price and increase the output for the market. It is likely that the overall output increase and higher consumption level is made possible.
    - Output under a price-discriminating firm is generally higher and closer to the allocative efficient output than a single-price firm.
    - Under price discrimination, market with price elastic demand will see a lower price, making the goods more affordable for the consumers. This allows consumers from lower income groups to consume a good or service which they could otherwise not afford.
    - Example: The charging of lower transport fares for students and retirees has a positive impact on welfare of lower-income individuals.

  - The extra revenue/profit earned by the firm is likely to be reinvested and ultimately benefits consumers through lower price and greater variety.
    - Example: Patented drugs are priced higher in high-income countries so that the firms can sell at cheaper prices in low-income countries. Extra revenue gained can be potentially used for R & D expenditure such as new and expensive medical drugs.
  - Firm is able to supply a good which is otherwise not profitable under single pricing.

- In certain industries, the average cost of production may be higher than the average revenue and price (AR=P). Firms will be earning subnormal profit if a single price is charged in the market.
- However, with price discrimination, firms earn a higher level of revenue, making the production of the good profitable.

C. Limit Pricing and Predatory Pricing:

Limit pricing has been covered in the earlier section. Refer to Section 3.5 for more details on limit pricing.

Predatory Pricing:

- **Predatory pricing** refers to the act where a monopolist or oligopolist sets price below their own average cost to drive competitors out of the market.
- Since price is set below the firm's average cost, a firm practicing predatory pricing will make a loss in the short run.
- However, once competitors leave the market, there will be fewer substitutes and the firm will gain a larger market share, which implies a higher and more price inelastic demand for its good / service. An increase in demand will lead to an increase in both price and quantity causing the total revenue (TR) to increase. At the same time, a more price inelastic demand will see the firm increasing the price. This will lead to a less than proportionate decrease in quantity demanded. The increase in price will increase TR which is more than the decrease in TR due to the fall in quantity demanded. Overall, the TR increase and thus, profit will increase, assuming cost conditions remain the same.

Comparison of Limit Pricing and Predatory Pricing:

Limit Pricing	**Predatory Pricing**
Objective: **Prevent entry** of potential competitors into the market	Objective: **Drive out** competitors from the market
Incumbent firm does not make a loss, but may earn less profits.	Incumbent firm makes a loss in the short term.
When successfully implemented, allows the incumbent firm to earn higher profits in the long term.	

Note: While limit and predatory pricing are price strategies, these strategies do not increase revenue or profits in the short run. Instead, they help reduce entrants or drive out rivals so that the demand for the remaining firm will be higher, allowing the remaining firm to achieve a profit maximising output where MC = MR that is higher and charge a higher price. This allows firms to increase revenue and profits in the long run.

4.1.2 Non-Price Strategies to Raise Revenue

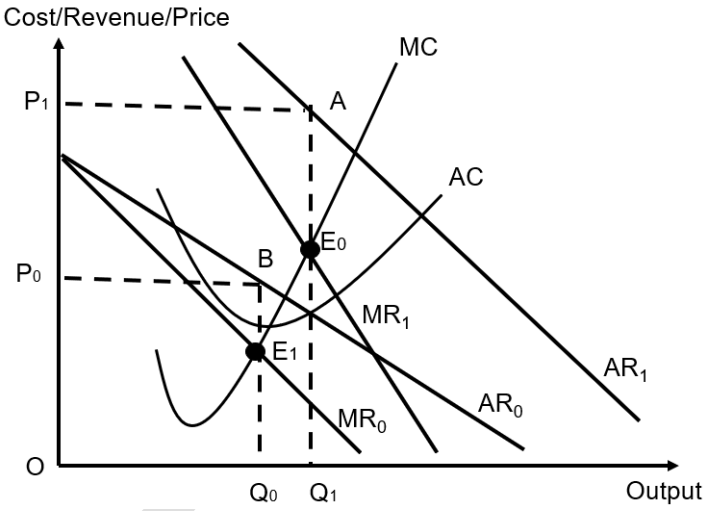
SLS Lesson: "*Non-price Strategies to Raise Revenue*"

- The aim of non-price strategies:
  - increase demand for firm's goods;
  - make demand for firm's goods to be more price inelastic;
  - reduce positive cross price elasticity of demand between the firm's goods and its competitors (aim to have a positive cross price inelastic demand)
- Firms adopt mainly product differentiation and marketing strategies to raise its revenue.

A. Product Differentiation

- Product differentiation can either be in terms of **real differentiation**, where there are actual differences in the products, or the creation of salience bias for their product, i.e. **imaginary differentiation**, where there might be a preference for a certain product due to perception even though there is no actual difference in products.

Figure 12: Product differentiation



- By engaging in product differentiation, firms can change the tastes and preferences for their products favourably, increasing the demand for their products. With the increase in demand (figure 12), AR (since AR=DD) and MR will increase and shift right from AR_0 to AR_1 and MR_0 to MR_1 respectively. Given that MR has increased, at the old output Q_0, MR will be higher that MC and producers are not maximising the profit. Thus, firms will have a new profit maximising out at Q_1, where MR_1=MC, assuming no change in costs. Given this new profit maximisation output Q_1, there will be a new price, P_1, as reflected on the new AR curve. This allows firms to sell more goods at a higher price. Thus, there is an increase in price and quantity, increasing their total revenue (TR).
- Product differentiation also makes the good of a firm more unique and less substitutable (reducing the positive cross price elasticity of demand for the firm's good with competitors' goods). This makes the demand for the good more price inelastic. This allows the firms to increase the price leading to a less than proportionate fall in quantity

demand. The increase in price will increase the TR which is more than the decrease in TR due to the fall in quantity demanded. Thus, firms earn higher TR.

- Thus, with product differentiation, the demand and hence AR will increase and become more price inelastic, increasing the TR from OP_0BQ_0 to OP_1AQ_1.
- Furthermore, the demand for the good (e.g. good A) will be more positive cross inelastic. This means that when competitors decrease the price of their goods, quantity demanded for good A will decrease by less than proportionate at every given prices. Thus, when demand for good A decrease by a smaller extent, the equilibrium price and quantity will decrease by a smaller extent, causing TR to fall minimally. This will minimise the impact on the firm should competitors seek to engage in price competition.
- Example: SIA adopts various non-price strategies such as branding, advertising, providing better services and wider leg space to make its flights an edge above its competitors so that it can maintain higher fares to increase its revenue.
- There are two important types of product differentiation: product development and innovation, and creation of salience bias for the product.

A1 Product Development and Innovation

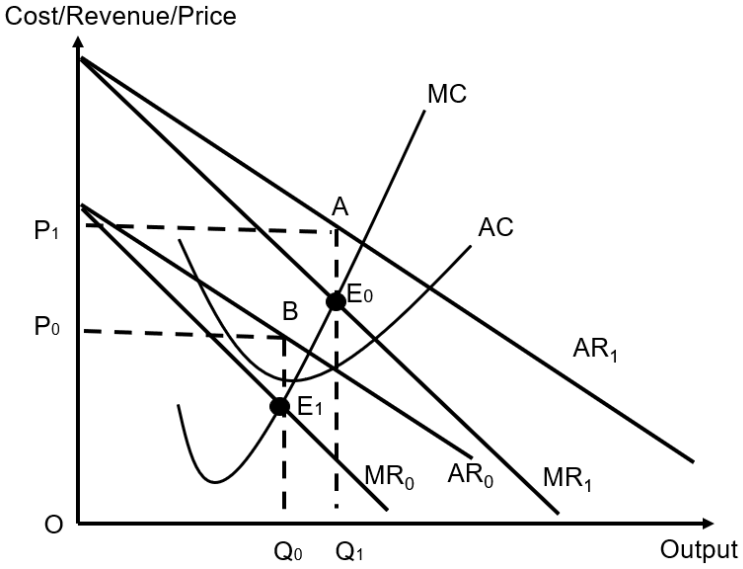
- To survive and grow, firms seek to develop new or better products in order to create a competitive edge (even if only temporarily). This increases the demand for its product leading to higher revenue and hence profitability. Eventually new or other firms may compete away the economic profit, encouraging firms to again innovate and develop new or better products.
    - Example: other bakeries quickly imitated the “pork floss” bun by BreadTalk and so BreadTalk has been continuously developing a new range of breads/buns.
    - The introduction of the convenience store for the petrol station represents an innovation that is not only copied by competitors, but improved on. For instance, supermarket chain NTUC FairPrice teaming up with ExxonMobil to create "FairPrice Express", a supermarket within the petrol station.
- However, sometimes such “innovation” amounts to little more than changing the appearance of a product in terms of packaging which creates imaginary differences rather than real differences in products.
- The level of competition in the market that a firm operates in affects its ability to undertake product development and innovation. Firms operating in low competition markets (oligopoly and monopoly) will have more accumulated supernormal profits to fund such projects compared to normal profits earned by firms operating in highly competitive (perfect and monopolistic) markets.

A2 Marketing Strategies

B1 Based on Loss Aversion bias.

- There is a tendency for people to experience losses as more painful than the pleasures that result from gains of the same magnitude.
- Loss aversion leads to consumers making decisions that avoid losses over achieving equivalent gains. This prompted consumers to increase the demand for their product from AR_0 (since AR=DD) to AR_1, with reference to Figure 13 below. With an increase in AR and MR, the MR will be greater than the MC at the original output Q_0, assuming that the cost remains unchanged. This means that firms are not maximising profit. Thus, with new MR, firms will maximise their profit at Q_1, where MR_1=MC. Given this new profit maximisation output, the price will be P_1, reflected by the AR_1 curve. Thus, this marketing strategy will increase TR from OP_0BQ_0 to OP_1AQ_1.

Figure 13



- Use of 'Limited-time' or 'Limited Edition' to create a sense of scarcity that encourages consumers to hurry to commit to a purchase so they would not lose out on the sales offer.
- Lazada – Once a month 'only one day' sales 1-1 (1st Jan), 2-2 (2nd Feb), 3-3 (3rd March)…
- Use of countdown timer: 'You have two days left to End of Sales', to create a sense of urgency to purchase so as not to lose the opportunity to benefit from the offer.

B2 Based on Sunk Cost bias

- Consumers will continue an action because of their past decisions (such as usage of time, money or resources) rather than choose something else that will maximise their utility.
- Membership programmes:
- When a customer enrols in a membership program, he/she usually pays a fee, to earn special discounts and offers. Having paid this

fee a customer in order to make full use of the membership may end up taking offers he/she otherwise would not. The customer wants to make full "use" of the membership fee. Thus, increasing demand for their product from AR_0 (since AR=DD) to AR_1, with reference to figure 13 above. With an increase in AR and MR, the MR will be greater than the MC at the original output Q_0, assuming that the cost remains unchanged. This means that firms are not maximising profit. Thus, with new MR, firms will maximise their profit at Q_1, where MR_1=MC. Given this new profit maximisation output, the price will be P_1, reflected by the AR_1 curve. Thus, this marketing strategy will increase TR from OP_0BQ_0 to OP_1AQ_1.

- Leverage sunk cost to boost upselling
    - Once consumers have paid a hefty sum for a firm's product (sunk cost), they can often be persuaded to pay a little more for an upgrade or make additional purchases.
    - Consumer electronic brands – purchase extended warranty Product Care by Harvey Norman), purchase insurance for the product (Apple Care)
    - Airlines industry – pay an extra for priority boarding, more legroom seats, choosing seats or extra baggage weight.
- Set users up for sunk cost bias
    - Products that require consumers to invest time and money make it difficult for them to switch brands hence creating a price inelastic demand for their products. With a price inelastic demand, firms will be able to increase the price of their products, causing quantity demanded to decrease by less than proportionately. Thus, the increase in price will increase TR which is more than the decrease in TR due to the decrease in quantity demanded. Overall, the TR will increase.
    - Digital ecosystem
        - These ecosystems offer customers a unified and easy to use system that delivers value through a variety of services, products, and insights.
        - Apple ecosystem - seamless integration of Apple products make it difficult for consumers to switch brand after they have invested in a few Apple products. This helps Apple create a price inelastic demand for its product.
        - Other digital ecosystems: Samsung, Microsoft, Facebook, Google, Amazon

B3 Creation of salience bias for their product (brand salience)

- Salience bias is tendency to focus on items that are more prominent or emotionally striking and ignore those that are unremarkable, even though this difference is often irrelevant by objective standards.
- The most common way to achieve brand salience is by making use of distinctive brand assets that promote attention or create positive memories of a brand to their potential consumers.

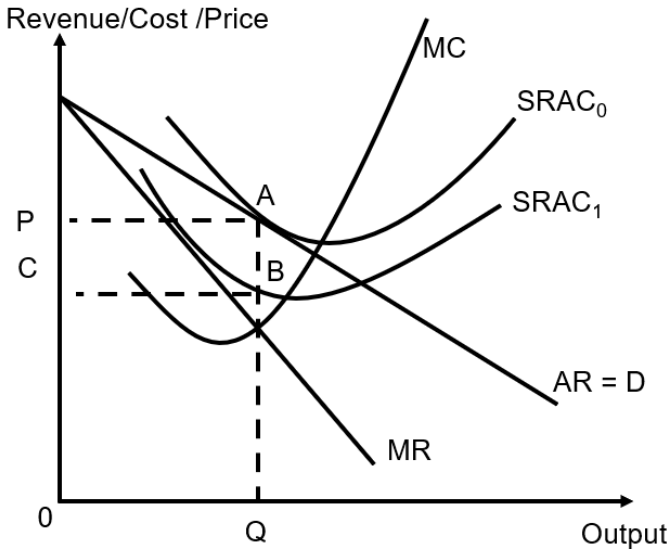
- Powerful and aggressive advertisement campaigns can promote attention and create strong awareness and visibility of product to create brand salience (the product is saliently etched in the minds of potential consumers)
- Examples of aggressive advertising campaigns:
  - McDonald's - create a family feeling about dining at its restaurants.
  - Singapore Airlines (SIA) advertised itself as the first to offer direct flights from Singapore to New York without a need for a stopover, as SIA purchased Airbus 380, an airplane that is in the forefront of flight technology.
  - Netflix's personalised content is salient to consumers, where suggestions are automatically made on shows the consumer may be interested in watching. They also use top-ten lists to grab consumers' attention to help them choose what to watch, amidst all the programmes available.

4.2 STRATEGIES TO REDUCE COSTS

SLS Lesson: *"Strategies to Reduce Cost"*

- Through cost-cutting and greater cost-effective strategies, firms can price more competitively and thus strengthen their survival and growth in the industry.
- There are many cost reducing strategies firms can use, and most strategies aim to reduce fixed and / or variable costs.
- A reduction in fixed costs would reduce only the firm's average cost (AC) to AC_1 (Figure 14). If total revenue remains constant at PAQO, a fall in the total cost from PAQO to CBQO will increases the profit of firms such that the firm is earning a supernormal profit, Area PABC. This contrasts with previous situation where the firm is earning a normal profit where total cost (PAQO) equals total revenue (PAQO).

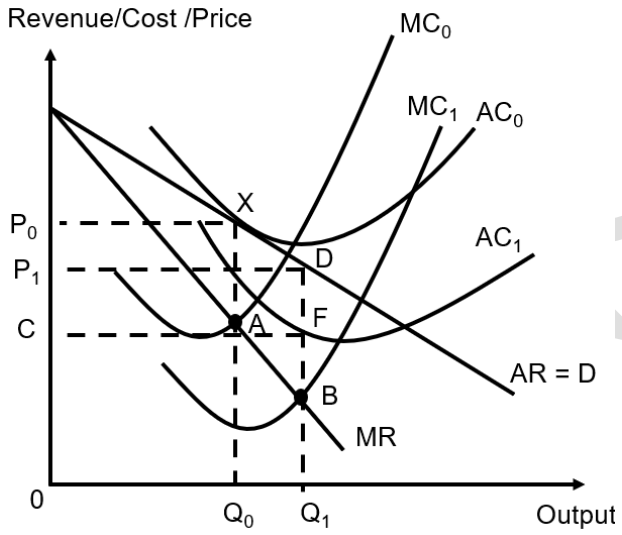
Figure 14: Reduction in fixed cost



- A reduction in variable cost would reduce both the firm's marginal (MC) and average cost (AC) to MC_1 and AC_1 (Figure 15). At the new profit maximisation point (point B), the output is higher at Q_1. At the higher

output level, the price is now lower at P_1. This occurs as the firms pass on the lower cost of production to the consumers. The total revenue is P_1DQ_1O which is larger than the total cost CFQ_1O. This means the firm is making supernormal profit of area P_1DFC. This is in contrast with previous situation where the firm is earning a normal profit where total cost (P_0XQ_0O) equals to total revenue (P_0XQ_0O).

Figure 15: Reduction in variable cost



- Examples:
  - Budget airlines lower cost by doing away with printed tickets and meals, having more seats available per plane, and lease planes from airplane manufacturers instead of buying them (this helps to reduce maintenance costs). These measures lower the variable and hence average and marginal cost of production.
  - Some other strategies to reduce average and marginal cost of production may include the reducing inefficiencies and wastage in operations, investing in proprietary technology, getting preferential access to raw materials, etc.
  - Innovations such as new processes in business operations or finding ways to use cheaper factor inputs to produce products may also reduce the cost of production.
  - Depending on the strategies, it could either reduce the fixed cost or variable cost, leading to an overall fall in total cost and increase in profit, assuming no change in total revenue.

While details of the above-mentioned cost strategies have been covered previously in *"Firms and Decisions (1) – Production & Cost"*, below are some cost-reducing strategies that firms undertake in an increasingly integrated and globalised world.

4.2.1 Innovation and improved efficiency

- As mentioned in section 4.1, innovation in terms of product development and quality helps increase the demand and hence revenue for firms. Meanwhile, innovation in terms of processes or methods of production could help firms reduce the cost of production.
- If firms manage to develop a method of production to reduce or eliminate certain fixed factors of production while still maintaining the same product quality and output, the fixed costs will fall. This will cause the AC to fall from AC_0 to AC_1 (fig. 14 above). Assuming total revenue and variable costs remain constant, profits would increase.
- If firms can find a way to produce the product with fewer materials, using cheaper materials, or having less wastage, this could reduce their variable costs. A fall in variable cost would also cause marginal cost and average costs to fall to MC_1 and AC_1 respectively (fig. 15 above). Assuming the demand for the good remains constant, the profit maximising output where MC = MR would be higher. If AC falls to a larger extent than price, there would be increase in profits.

4.2.2 Outsourcing

Outsourcing is a contractual relationship where a **third party or external organisation** takes responsibility of performing all or part of a business/ production function previously done by the firm itself. This external organisation can be in the home country or overseas. Examples include component manufacturing, corporate health services, data processing, call centres, cleaning, machinery maintenance, product development, etc.

Benefits for Outsourcing

- To reduce costs, firms can outsource parts of their final good or a factor input required to produce their final good to vendors who are specialists in their respective areas. Vendors specialising in a particular good are usually able to produce the good or factor input cheaper than if the firm produced it itself.
- Depending on what is being outsourced, firms can lower their fixed and/or variable cost in the short run. If outsourcing allows firms to reduce their fixed cost, it will cause the average cost to fall from AC_0 to AC_1 (fig. 9 above). If outsourcing leads to a fall in variable cost, the marginal and average costs will fall to MC1 and AC1 (fig. 15 above) respectively.
- Vendors, specialising in their respective areas, may produce a good at lower cost due to one or more of the following reasons:
    - Vendors may produce a large output of the goods they specialise in, and in doing so are able to reap internal economies of scale for that particular good or factor input.
    - Vendors may own specialised machinery and equipment, or methods of producing the goods they specialise in. This increases their productivity and lower the marginal and average costs required to produce the good or factor input.
- Outsourcing allows firms the flexibility to source out work during peak periods. For example, during peak periods, demand for the goods will increase. Firms with limited spare capacity may have to expand their

factory size by acquiring more land to build a larger factory. This will increase their fixed cost. However, if the firm can outsource part of the production process to a third party and pay the third party base on the output, the fixed cost becomes a variable cost. This leads to cost savings and frees up resources for other purposes such as research on core business.

- Outsourcing allows firms to avoid certain agreements with trade unions, especially in sectors with high wages. Trade unions may fight for higher wages or additional benefits, such as better medical coverage, for workers. This will increase firm's variable cost. Thus, when firms outsource the specific sector where majority of the workers belonging to trade union, the firm will see a reduction in their variable cost.
- Besides a reduction in cost, outsourcing may indirectly help firms to increase their total revenue (TR). Firms outsource an operational section to an external agent so that they can focus on improving their core business to earn higher revenue. For example, SIA outsource the airplane food production to an airline food catering firm. This allows SIA to channel their funds to improve their core business such as airline flight services. With better flight services, demand for their SIA flights may increase and become more price inelastic at the same time. An increase in demand and AR will increase the TR. At the same time, a more price inelastic demand will allow SIA to increase the price, further increasing their TR.

4.2.3 Offshoring

Offshoring is when a firm's production is carried out in **another country**.

Firms tend to offshore certain work production processes to enjoy lower labour and business costs in the other countries. For example, many firms choose to offshore their customer service call centres to other countries which have lower labour cost. Off-shoring can reduce the firms' fixed and/or variable cost.

- Lowering the variable cost will decrease the marginal and average costs to MC_1 and AC_1 (fig. 15 above) respectively.
- On the other hand, lowering the fixed cost will decrease the average costs AC_1 (fig. 14 above).

Assuming that revenue remains unchanged, such decrease in cost will lead to increase in profit.

4.2.4 Online Trading (e-commerce) and Costs

This consists primarily of distributing, buying, selling, marketing and servicing of products or services through the internet. E-commerce or online trading saves tremendous costs of production. More specifically, it helps firms cut down on fixed costs such as rental cost e.g. retail space/office space. Lowering the fixed cost will decrease the average costs to AC_1 (fig. 14 above). Assuming that revenue remains unchanged, such decrease in cost will lead to increase in profit.

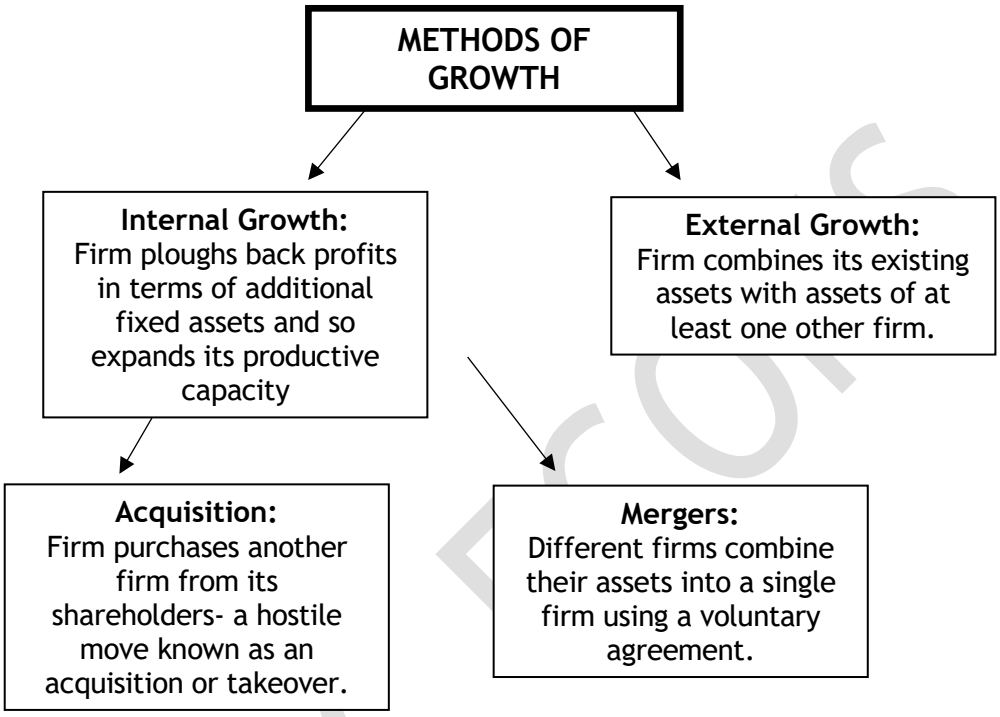
4.3 GROWTH STRATEGIES

SLS

SLS Lesson: "*Growth Strategies*"

Size is a relative term. The size of a firm can be measured in terms of market share, number of outlets, profit level and number of workers. Firms aim to expand, through internal and/or external growth, to enjoy revenue and cost benefits. This helps firms to achieve aims such as increased profits or market dominance etc.

4.3.1 Methods of Growth



Types of Mergers and Acquisitions

(Note: This is not within the H2 A-level syllabus but included here for you to better understand and appreciate actual happenings in the real world.)

- **Horizontal Integration**
  - This occurs when a firm takes over another firm(s) that is producing the same product and is also at the same stage of production.
  - Example: Disney and 21st Century Fox
- **Vertical Integration**
  - This occurs when firms in the same industry but at different stages of the production process of a good amalgamate (combining of 2 or more firms).
  - Can be either backward or forward integration, i.e. with earlier or later stages of production.
  - For instance, Netflix made two content acquisitions in recent years: Millarword, an independent comic publishing company (like Marvel's comics) and StoryBots, a children's media brand to create 'the next generation of Seasame Street'. Netflix also acquired ABQ Studios, a production studio in New Mexico, to ramp up the production of original series.

- **Lateral Integration and Conglomeration**
  - Combination of vertical and horizontal integration.
  - Sometimes, concentration on one product may make a firm vulnerable to a change in tastes and preferences, a switch in government policy or a recession. Thus, the firm diversifies, often by taking over other firms producing completely different products. When a firm increases the range of related products at the same level of production, it is called lateral integration.
  - Large firms that have grown through lateral integration into highly diversified companies are known as conglomerates.
  - The new era of conglomerates – Digital Conglomerates
    - For instance, Alphabet-owned Google, which over the years has bought the likes of Android, YouTube, DoubleClick, Waze and Nest Labs. Moving forward, Alphabet's experimental businesses span life sciences, self-driving cars, internet services provided via fibre or balloons, and more.

4.3.2 Reasons for Mergers & Acquisitions (M&A)

Firms may prefer external growth for a variety of reasons. A firm's aim is usually profit maximisation, so M&A is one strategy to reduce its costs and/or increase its revenue, thereby increasing its profits.

- **Acquiring existing brand loyalty**
  - External growth can mean the immediate transfer of existing brand loyalty and goodwill from the other firm. Loyalty and goodwill usually take time to build and is not immediately available when a firm grows internally. Such strategy is also useful for a firm with resources and want to enter a new market. Thus, merger/acquisition is a quicker strategy for a firm to grow in the market than creating a new firm or build an existing firm.
  - In other words, consumer loyalty is also acquired during mergers and acquisitions.
  - This results in less advertising needed and hence lower advertising costs and fixed cost. Lowering the fixed cost will decrease the average costs to AC_1 (fig. 14 above).
  - At the same time, merger will lead to an immediate increase in demand due to the transfer of existing brand loyalty and hence pool of customers.
  - Thus, merger and acquisition will lead to an increase in the demand and hence AR from AR_0 (since AR=DD) to AR_1 (figure 13 above). With an increase in AR and MR, the MR will be greater than the MC at the original output Q_0, assuming that the cost remains unchanged. This means that firms are not maximising profit. Thus, with new MR, firms will maximise their profit at Q_1, where MR_1=MC. Given this new profit maximisation output, the price will be P_1, reflected by the AR_1 curve. Thus, this marketing strategy will increase TR from OP_0BQ_0 to OP_1AQ_1.
  - A fall in cost and increase in TR will increase the profit of the firm.

- **Diversification**
  - External growth is sometimes used as a means of diversifying.
  - Diversification of products
    - Diversification provides a firm with a new source of revenue and allows it to spread its risks as losses incurred by one product can be offset by profits earned from another. Should the demand for one product fall, the price and quantity of the product will decrease. This will cause the revenue and thus profit to fall, assuming cost remains unchanged. However, when there is diversification, the firm will have another source of revenue, offsetting the fall in revenue from the first product. Thus, ensuring that the firm remains profitable.
    - Diversification allows a firm to enjoy economies of scope as costs spent on promoting a firm's brand can be spread over more output if it has a wider range of products e.g. Apple, Samsung, Google and Nestle produce a wide range of products. Thus, the cost of advertising is spread across a wide range of products, allowing these firms to enjoy economies of scope, lowering their average cost.
    - Note: Economies of Scope refers to the decrease in unit cost (long run average cost) of production as the firm produces a variety of products using similar resources. For example, iPhone, iPad and MacBook are produced using similar resources such as chips, CPU and Neural engine. Thus, Apple enjoys economies of scope when their cost of producing these products is spread over large output.
  - Diversification in production process – vertical integration
    - A firm merging with or acquiring another firm in the same industry but at a different stage of production allows for the firm to secure access to retail markets or production input. Such action ensures that total revenue (TR) remains high while cost remains low.
    - Netflix mostly leases studio space around the globe, but it opted to purchase Albuquerque Studios to create Netflix original content. Such action will ensure that Netflix will always have a venue or studio that they can use to produce Netflix content. The stable supply of factor input ensure that cost of production remains stable. Netflix is less likely to experience a shortage of studio space to film their content which may push up the rental cost and hence cost of producing Netflix content. This ensures that cost remains stable and low.
    - Netflix has diversified into leasing production studios for independent films, TV or other content producers and also lower its own cost of creating Netflix original content to stream over its platform.
    - With the ability to create original content, it also reduces the risk securing content for streaming over its platform. This ensures that there will always be a stable and constant supply of content, ensuring that consumers are less likely to switch to alternative streaming platform. Hence, demand for Netflix's

content remains stable and high leading to stable prices and quantity. This means that Netflix's TR will remain high and stable.

- Such diversification reduces production risks and costs and provides new sources of revenue and greater economies of scope.

- **Cost-sharing**
  - M&A might be a means of pooling expertise and sharing the costs of R & D expenditure especially in the case of electronics firms where such expenses are high.
  - This is particularly appealing to an existing producer when there is a threat of increased competition from abroad.
  - Depending on the type of cost-sharing, it could lead to a fall in fixed and/or variable cost (refer to section 4.2).
  - When POSB merged with DBS, the number of ATM machines needed around Singapore is reduced as the same ATM can be used to serve both POSB and DBS customers. Thus, in the short run, there could be a decrease in variable cost (refer to section 4.2 & fig 15).
  - In the long run, the cost of technology is spread over a larger output as the merged firm have a larger consumer base. This leads to a lower long run average cost.

- **Reaping economies of scale**
  - *(refer to "Firms and Decision 1: Production and Cost")*

- **Market domination**
  - Market dominance is one of the frequent motives for merger.
  - When firms merge or acquire another firm, there would be an immediate increase in demand, causing an increase in total revenue.
  - When firms merge, the merged firm will have a much larger market share and should the market share be significant enough, the merged firm could reap monopoly power. Furthermore, merger will lead to fewer competitors in the market and thus, fewer substitutes.
  - With strong market power and fewer substitutes, demand will be more price inelastic. Thus, the dominant firm will be able to increase the price, which will lead to a less than proportionate decrease in quantity demanded of their goods. The increase in price will increase the total revenue (TR) which will be more than decrease in TR due to the decrease in quantity demanded. Hence, overall, the TR will increase.

In summary, while firms in imperfect markets do rely on price, cost and non-price strategies, the extent of the use of different strategies depends on the type of market structure, firm's objectives, rival firm's behaviour, the level of business risks & uncertainty and even government's policies.

- With oligopoly firm's cost and revenue advantages and high barriers to entry, oligopolists are likely to earn supernormal profit in the long run. Thus, they have a greater ability to adopt both price and non-price strategies, engaging in wider range of product innovation & differentiation and large-scale advertising.
- But for monopolistic competition firms, they earn normal profit in the long run, non-price competition is of a more superficial nature e.g. small-scale changes on their packaging or advertising.
- As for monopoly, the possibility of potential rivals entering the industry (if the market is contestable) will incentivise the monopolist to undertake both price and non-price competitive strategies.

Whether a given strategy will successfully increase profits depends on:

1. The relative increases between revenue and cost
2. How fast the firm's rivals will react / retaliate.

Important Note: ★

The key ideas of explaining how a firm's strategy could affect its profits are as follows:

1. Explain how the strategy affects the firm's demand, variable or fixed cost.

- Changes in demand shifts the AR and MR curves. If the strategy also affects PED, the gradient of the AR and MR would also change.
- Changes in variable costs shifts the AC and MC curves.
- Changes in fixed costs only shifts the AC curve.

2. Explain why output would change.

- At the original profit maximising Q0, MR > MC or MR < MC after the shift. This implies the firm can increase profit by increase Q or reducing Q, respectively. The firm will now produce at an output (Q1) where the new MR = new MC.

3. Explain why price would change.

- At the new output, firms will charge consumers what they are willing and able to pay, reflected along the demand curve at Q1. This results in P1 being charged. (Note that P1 is determined along the **AR curve at Q1**, not along MR or MC curve.)

4. Link to profits or the respective end point of the question.

- The new profits earned by the firm would be area (P1 – AC1) x Q1. Compare this with the old profits and conclude whether profits rise or fall.

Key ideas from Section 4

1 As Monopolistically Competitive firms tend to have price elastic demand, price competition may work in their favour. However, their higher AC, due to their small scale of production, will limit their ability to do so.

2 Oligopolistic firms have the scale and cost advantage to adopt price competition but due to their mutual interdependence, they tend to

avoid doing so to prevent price wars which may hurt firms' profit margin.

3 Price discrimination (PD) is a commonly adopted pricing practice in the real world. It is made possible where firms have the market power and the ability to differentiate their pricing based on units, consumers and markets, although there is no cost basis to explain the discrimination.

4 The main non-price competition strategies for firms are Product differentiation, real or imaginary (brand salience) and marketing strategies based on loss aversion bias and sunk cost bias.

5. PERFORMANCE AND EVALUATION OF MARKET STRUCTURES

SLS

SLS Lesson: "*Performance and Evaluation of Market Structures*"

The performance of firms is compared and evaluated based on firms' level of profits and their impact on society's welfare. The types of profit firms can earn across different market structure has been covered in section 3.1.2 – 3.1.3. In this section, we will focus on firms' impact on society's welfare.

5.1 KEY CONCEPTS AND CRITERIA

Below are some concepts that will be used to measure the impact of firms on society's welfare.

Note: The firms' impact on society's welfare explains how market dominance can result in market failure. Revisit **Section 2.6** of **"Market Failure and Government Intervention"** after you complete this section.

Allocative efficiency

- A situation where the current level of goods produced and sold maximises society's welfare.
- Condition for Allocative Efficiency: Price = Marginal Cost (P=MC)
- The price (P) that the consumer pays for the good (which reflects his valuation of the good) is equal to the firm's opportunity cost in producing an additional unit of the good, also known as the marginal cost (MC).
- Hence, consumer and producer surplus are maximised when P=MC.

Productive efficiency

- Occurs when the firm produces at lowest average cost of production for a chosen output; refers to the optimal combination of inputs to produce maximum output at the minimum cost.
- As the LRAC indicates the lowest average cost of production at every level of output, all firms are productively efficient in the long run as long as their average cost is at a point on their LRAC curve.

Scope of EOS reaped

- Economies of scale are cost savings a firm enjoys when there is an expansion of the scale of production with larger output.

- A firm with a larger scale of production and output would be able to reap a larger scope of EOS.

Dynamic efficiency

- This is associated with technological advancement and innovation to reduce average cost of production and meeting the changing needs of consumers over time.
- There are two ways in which dynamic efficiency can be of benefit:
  - ***Process innovation*** occurs when new production techniques are applied to an existing product. For example, this is common in the production of motor vehicles with firms constantly looking to develop new methods and production processes to lower average cost of production. In the short run, product innovation may lead to better and more productive machine or production line causing the average fixed cost to be lowered, hence reducing the AC from AC_0 to AC_1 (figure 14).
  - ***Product innovation*** occurs when firms generate new or improved products. Thus, this will lead to better quality product and more variety for the consumers. For example, there is constant product innovation in the smartphone industry where consumers see a greater variety and better quality smartphones. Apple constantly improve the quality of their smartphones from iPhone 8 to iPhone 15.

Consumer welfare: price, quality and variety

- Firms with market power have the ability to lower the quantity produced in order to charge a higher price, taking away some of the consumer surplus.
- This loss of consumer surplus will be even greater if the firm practices price discrimination.
- Variety of products also matter for consumers' welfare as this affects the choices and range they are able to choose from, finding products that better suit their own tastes and preferences.
- Marketing strategies that leverage on cognitive bias prevent consumers from making rational decisions that maximises their welfare. The more prevalent the use of such marketing strategies, the lower the consumers' welfare.

Impact on other firms

- Strategies taken by existing firms may have negative impact on other firms. For Example:
  - Predatory pricing adopted by an incumbent firm will cause other firms to make losses and leave the market.
  - Limit pricing adopted by an incumbent firm will cause potential new firms to charge at a price where they will make losses hence preventing any new firms from entering the market.
  - Diversification in products (when successful) will cause other firms to experience a fall in the demand for their product, decreasing their revenue and hence profits or even to the extent of making losses.
    - E.g. The introduction of Apple iPhone caused a large decrease in demand for Nokia's phones causing the company to suffer extensive decrease in sales revenue hence large losses.

- Successful strategies to increase a firm's demand may also benefit other firms in the following ways:
  - Providing complementary goods or services to it, for example:
    - Addition of a music player to the phone via Bluetooth technology benefitted the headphone and earphone industries.
    - Newer versions of mobile devices benefit firms providing accessories for the mobile devices e.g. phone/ tablet covers, screen protectors.
  - Firms in the supply-chain for the product will also benefit with higher demand for their products as input for the final product.

Equity

- Firms with some market power are able to exercise market dominance, restricting output to charge a higher price.
- This is inequitable especially if the firm produces essential goods and services, as higher price reduces accessibility for those less wealthy.
- Also, the high level of supernormal profits earned by the owners of dominant firm means that they will earn a much higher income than fixed wage earners (labour) and small firm owners.

5.2 IMPACT ON SOCIETY'S WELFARE ACROSS MARKET STRUCTURES

<table>
<tr><th></th><th>Perfect Market</th><th colspan="3">Imperfect Markets</th></tr>
<tr><th></th><th>Perfect competition</th><th>Monopolistic competition</th><th>Oligopoly</th><th>Monopoly</th></tr>
<tr><td>Allocative efficiency</td><td>Allocative efficient

Demand and supply will determine the market price. As firms are price taker, they have a perfectly price elastic demand.

With profit maximisation, MR = MC, its equilibrium price (P) is also equal to its MC.

(i.e. P = MC)

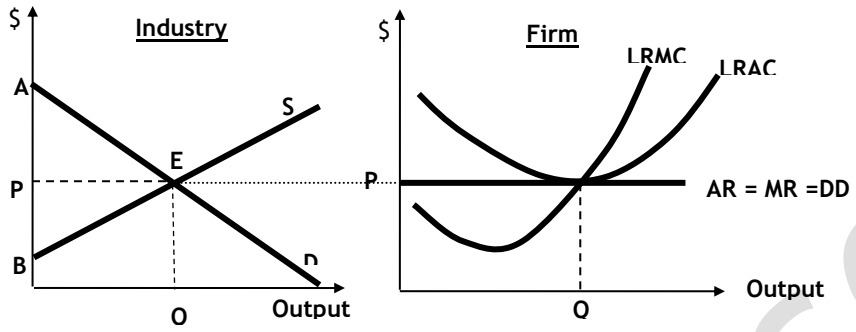
The price (P) that the consumer pays for the good (which reflects his valuation of the good) is equal to the firm's opportunity cost in producing an additional unit of the good, also known as the marginal cost (MC).

Refer to diagrams below (Fig. 16)</td><td colspan="3">More allocative Inefficient

Allocative inefficiency of a firm in imperfect markets
• At firm's equilibrium output Q_M, where the firm maximises its profit at MC=MR, firms in imperfect competition charge a price greater than marginal cost (P > MC). Refer to diagrams below (Fig. 17).
○ This means the consumers' valuation of the good (i.e. price) is greater than the additional cost producer incurs in producing an additional unit of the good (i.e. MC). Thus, consumer surplus and hence society welfare are not maximised. There will be deadweight loss BE_SE_M (figure 17).
○ Output produced is lower than the allocative efficient level. Thus, the firm is under-producing. This means that consumer and societal welfare can be improved with increased production to the allocative efficient level.

• Degree of allocative inefficiency differs based on the firms' market power and ability to set price above Marginal Cost (P>MC).
○ For the same MC curve: The more price inelastic the demand, the higher the price, the larger the difference between P and MC and thus the more allocative inefficient is the firm.
○ Monopolistic competitive firms have the least market power as there are many available substitutes. Hence, the demand is more price elastic and the difference between price and marginal cost is not likely to be significant.
○ Monopoly firm have the strongest market power. Hence, the demand is very price inelastic and the difference between the price and marginal cost is the most significant.
○ Monopolistic competitive firms tend to be least allocative inefficient and monopoly the most.</td></tr>
</table>

Figure 16: Allocative efficiency of PC firm producing at MES

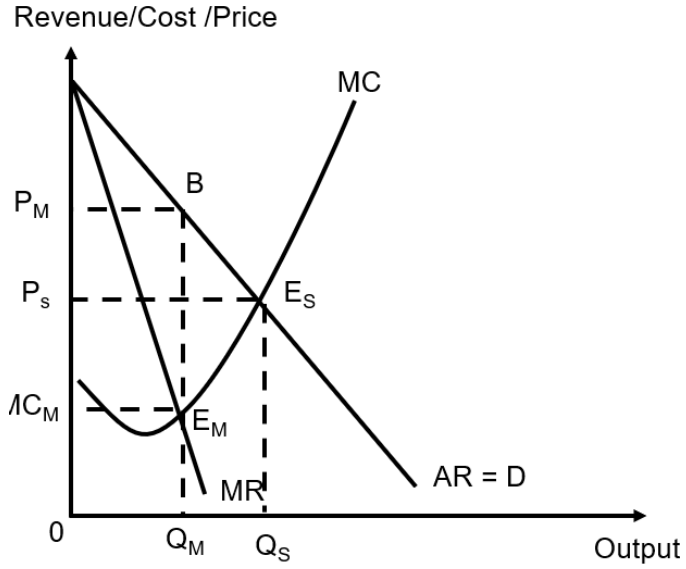


At the market equilibrium where DD = SS:

When firms are allocative efficient, consumers and producers enjoy the **maximum consumer** (area AEP) **and producer surpluses** (Area BEP) respectively.

Thus, society's welfare is maximised.

Figure 17: Allocative inefficiency of a firm in imperfect markets



- Recall: Allocative efficient outcome is achieved at the output level Q_S where P=MC. Thus, consumers should be charged P_S, where consumers' valuation (i.e. price) is equal to the additional cost producer incurs in producing an additional unit of the good. The firm should produce at Q_S.
- When firms maximise profit, MC=MR, they would produce at Q_M. Because firms in imperfect market have market power, this allows them to influence price through reducing output to Q_M. Based on the output Q_M, the firm will charge P_M as reflected on the demand curve.
- At the output Q_M, price (P_M) is higher than MC (MC_M). This means that consumers valuation is greater than the additional cost producer incurs in producing an additional unit of the good. Consumer surplus and thus societal welfare are not maximised.
- Output (Q_M) in the imperfect market is lower than the allocative efficient output (Q_S).
- From Q_M to Q_S, price is always higher than MC (P > MC) leading to deadweight loss of area BE_SE_M.
- Due to the presence of market power, the firm is under producing at Q_M leading to deadweight loss of area BE_SE_M. Firms in imperfect market are thus, allocative inefficient.
- Given the monopoly has a strongest market power to set the price above marginal cost (P> MC) among firms in other imperfect market, it is thus the most allocative inefficient compared to firms in monopolistic competitive & oligopolistic firms.

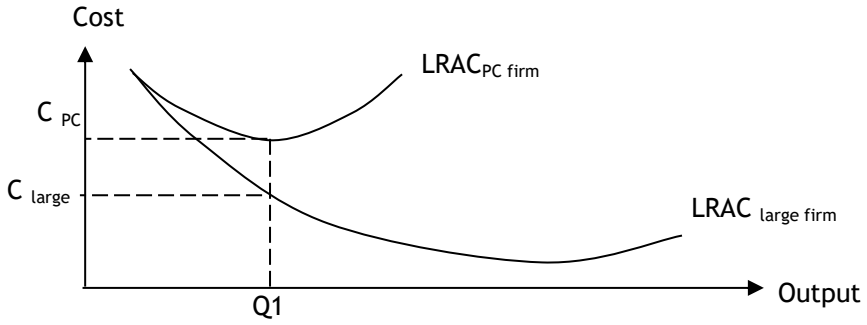
<table>
<tr><th></th><th>Perfect competition</th><th>Monopolistic competition</th><th>Oligopoly</th><th>Monopoly</th></tr>
<tr><td rowspan="2">Dynamic efficiency</td><td rowspan="2">Dynamically inefficient
- Assume perfect knowledge in PC market, other firms can easily copy any new products or processes. Thus, no incentive for firms to innovate.
- Earn only normal profits in long run. Thus, PC firms also do not have funds to finance innovation.</td><td rowspan="2">Dynamically inefficient
- Earn normal profits in long run.
- MC firms do not have the funds hence inability to finance innovation.
- Any improvements made tend to be superficial & small scale</td><td colspan="2">Dynamically efficient
- Oligopoly & monopoly firms earn long run supernormal profit.
- Large funds available to undertake innovations. Firms engage in innovations to sustain market power and deter any threat of competition → dynamically efficient.
- Especially for monopoly, <u>if market is contestable</u> (e.g. threat from imports or potential new market players), monopoly tend to innovate to ward off potential competition.</td></tr>
<tr><td>- Innovations are necessary for oligopolies to differentiate their products and sustain market share. Thus, firms tend to remain dynamically efficient.
- Oligopolies have both the ability and incentive to be dynamically efficient.</td><td>- <u>Absence of competition</u> may cause monopolies to be complacent and lack the innovation drive → dynamic inefficient.
- Monopolies have the ability but may lack the incentive to be dynamically efficient.</td></tr>
</table>

	Perfect competition	Monopolistic competition	Oligopoly	Monopoly
Consumer welfare: Price, consumer surplus, product quality & variety (Figure 16 & 17).	- PC firms produce at Q_S and charge P_S (Fig. 16), which are allocative efficient levels. - Maximum consumer surplus (area AEP) is possible as firms produces at P=MC. - Assume perfect knowledge in PC market, PC firms produces homogenous products. Thus, there is no variety for consumer choices. - Perfect knowledge and long run normal profit in the PC market would mean that PC firms have no incentive and ability to innovate and improve the quality of the product.	- MC firms have stronger market power and less price elastic demand than PC firms. Thus, MC firms produce lower output and charge a higher price than PC firms. - **As P > MC, there is loss of some consumer surplus.** The higher price charged by MC firms means that there is lower consumer surplus compared to PC market structure. - But MC firms' market power is weaker than oligopolies and monopolies. Thus, price is lower than these markets, causing consumer surplus to be higher. - Some variety present due to slight product differentiation (cosmetic differences and limited to packaging and services). Thus, consumer wants are better met leading to higher consumer satisfaction. Thus, variety leads to increase consumer welfare. - Some degree of imperfect information means that there is incentive for firms to improve their quality of product.	- Oligopolistic firms having stronger market power leading to **lower output and charge a higher price (compared to PC & MC firms)**. - **As price is much higher than MC, there is larger loss of consumer surplus** (amount of consumer surplus is much lower compared to MC & PC firms)**.** - **Good variety & extensive product differentiation** (if nature of product allows for it). Thus, consumer wants are better met leading to higher consumer satisfaction. Thus, good variety & extensive product differentiation leads to large improvement of consumer welfare. - In the case of differentiated products, firms tend to be innovative & encompass product development (compared to industries in other market structures) to improve the quality and variety of products.	- Monopolies have strong market power leading to them producing at much **lower output Q_M & charge a much higher price, P_M (Fig. 17)**. - As price is much higher than MC, the loss of consumer surplus is large (amount of consumer surplus is the lowest among all market structure). - No variety for consumers in the absence of competition. Thus, consumer wants are not met leading to low consumer satisfaction. Thus, the lack of variety leads to low consumer welfare. - However, <u>if market is contestable</u>, monopoly may engage in innovation to prevent potential firms from entering. Thus, offer some new and better products. This would improve the quality and variety of the product.

	Perfect competition	Monopolistic competition	Oligopoly	Monopoly
Productive efficiency	**Productive efficiency is attainable and achieved.** - Given the assumption that firms choose to maximise profit, all firms' long run production can be assumed to be productively efficient. - Since perfectly competitive and monopolistic competitive firms earn normal profits in the long run, they are more likely to produce at the lowest cost possible to remain profitable. - Thus, they are more likely to achieve productive efficiency.		**Productive efficiency is attainable but may not be achieved.** - Given the assumption that firms choose to maximise profit, all firms' long run production can be assumed to be productively efficient. - However, oligopolies and monopolies have a tendency to earn supernormal profits in the long run. If profit levels are high enough, the firms may become complacent and may not try to produce at the lowest cost possible. Thus, such firms may not achieve productive efficiency, even though it is attainable.	
Scope of EOS enjoyed. (Figure 18 below)	**Limited internal EOS** - The extremely small size of the PC firm does not allow it to enjoy much internal EOS. - Thus, although it produces at MES (minimum point of AC), its cost function is far higher than that of larger firms such as oligopolistic or monopolistic firm.	**Limited internal EOS** - Monopolistic competitive firms do not produce at MES point but enjoy slightly larger EOS (compared to PC firms). The LRAC will be lower than that for PC firms for a given output. - Lower LRAC curve means lower marginal cost (MC curve), hence higher output.	**Large internal EOS** - Oligopolies and monopolies have a greater market share and produce at larger output → enjoy greater internal EOS. - With higher profits earned, they are also better able to invest and expand their production further. - Consumers able to enjoy lower price and higher output *(if cost savings are passed to consumers)* - Extent of EOS depends on how large the firm is.	

Figure 18: AC curves of the small PC firm and a larger firm enjoying different economies of scale

At same output Q1, the average cost of the PC firm is higher than that of the larger firm, C_{pc} as compared to C_{large}.



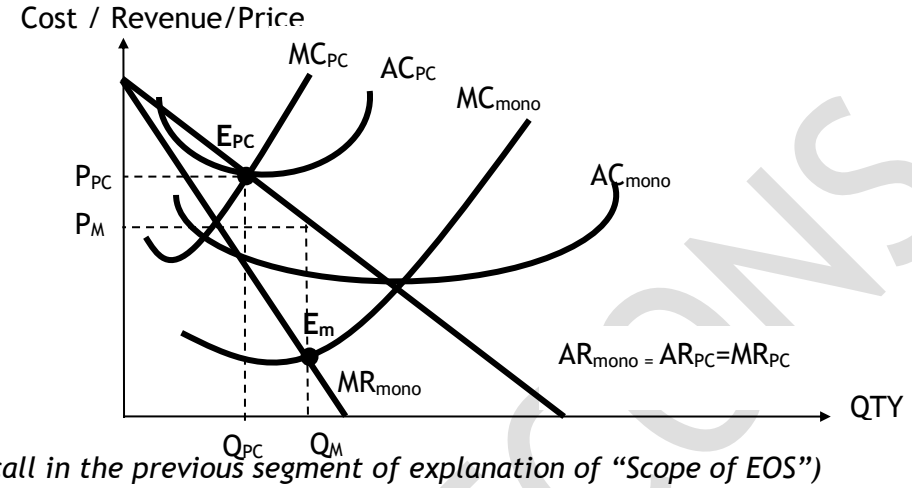
Key ideas from Section 5.2 (comparison of types of market structure)

- Monopolistic competition & oligopoly are two market structures that rely heavily on both price and non-price competition strategies to achieve their goals.
  - However, with their size and cost advantages, oligopolists have greater ability (resources) to adopt both strategies.
  - Non-price competition in monopolistic competition tends to be of superficial nature, like changing their packaging or small-scale advertising. On the other hand, oligopolistic firms will be engaged in a wider range of differentiation and large-scale advertising.
- Oligopolistic and monopolistic firms have large market power/market dominance. Such large market power can lead to complacency and economic inefficiencies, leading to reduced consumer welfare.
- In short, oligopolistic firms (as compared to monopolistic and monopolistically competitive firms) are the most willing and able to engage in activities that would lead to meaningful and significant product differentiation.

Think about it: Is a Monopoly always undesirable for consumers?

Figure 19: Monopoly vs PC Industry

(Lower Price, Larger Quantity and Larger Consumer Surplus)



(Recall in the previous segment of explanation of "Scope of EOS")

- In the case where the monopoly firm enjoys much larger economies of scale than PC firms, its MC and LRAC curves are much lower than the perfectly competitive (PC) firm.
- Thus, the monopolist's equilibrium output (Q_m) is higher than the equilibrium output of the perfectly competitive market (Q_{PC}), assuming the same demand condition (i.e. AR and MR for both markets are the same).
- The monopolist's price (P_m) may be lower than the perfectly competitive market (P_{PC}). All in all, the consumer surplus may be larger than in the case of monopoly.
- Note however, that this is dependent on how substantial the monopoly's cost advantage is. Only a substantial cost advantage can cause the monopolist's price to be below that of the perfectly competitive industry.
- In addition, we are assuming here that the monopolist is willing to pass on its cost savings to the consumers in the form of reduced prices. In reality, this may not be the case.

6. GOVERNMENT INTERVENTION FOR MARKET DOMINANCE

SLS Lesson: "*Government Intervention for Market Dominance*"

In the previous topic of market failure, we learnt that the government intervenes when the market fails to maximise social welfare. As covered in Section 5, we can see that market dominance can lead to market failure, where firms with market power fail to achieve allocative efficiency.

There are various forms of government intervention meant to monitor and regulate firms' behaviour and business practices for the interest of consumers and the society as a whole.

The followings are some possible ways the government can intervene with the intent to regulate a dominant firm's behaviour to ensure/increase consumer and society welfare:

1. **Regulation:**
   a) **Price Regulation:** allow private monopolies to exist still but with government's regulated prices (examples: privately-owned public utilities; electricity, water) or even use taxes to reduce monopolist's profit.
   b) **Non-price Regulation:** regulation of monopolies by implementing legislations, anti-trust policies, increase market contestability etc.
2. **Nationalisation/State ownership:** Transfer monopoly power to government (government-owned monopolies)

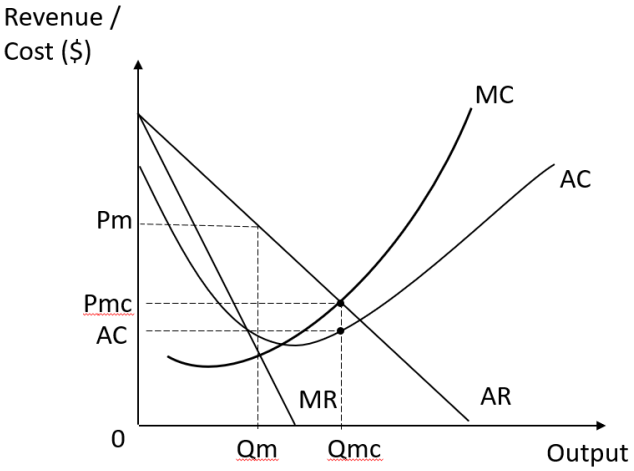
(Note: The methods of government intervention covered in this section are also used to overcome market failure due to market dominance - Section 2.6 of "Market Failure and Government Intervention")

6.1 GOVERNMENT REGULATION

6.1.1 Price Regulations

In previous topics, we learnt about how governments use price controls in the form of price ceiling and price floors. Governments can also regulate a firm's pricing by requiring them to set prices at marginal cost or at average cost.

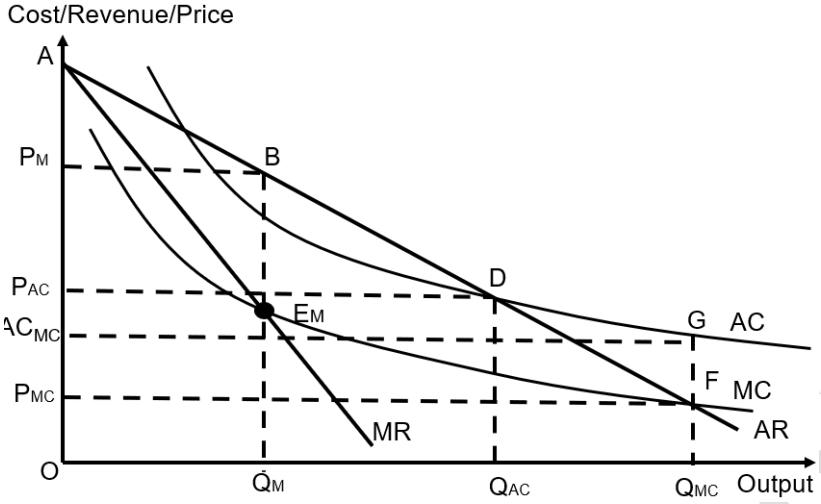
Governments can enforce **MC pricing** to cause the firm to be allocative efficient.



- MC-pricing works by requiring firms to charge P=MC. The price and output of the firm will be where the AR curve intercepts the MC curve, P_{MC} and Q_{MC}, respectively.
- Thus MC-pricing lowers price from P_M to P_{MC} and increases quantity from Q_M to Q_{MC}.
- Social optimum is achieved at Q_{MC}, because consumers' marginal benefit from the last unit sold (P) is equal to the marginal cost of producing the last unit (MC).
- Outcomes of such regulation:
  - Correct market failure by ensuring that that the firm produces at the allocative efficient output level.
  - Price is lowered, increasing consumer surplus.
- While the profit maximizing output is at Q_M, a firm with MC pricing can still make supernormal profits (albeit smaller) if at Q_{MC}, P_{MC} is above AC. Hence, while MC pricing reduces the firm's profit, the existence of supernormal profits imply firms will still be incentivized to continue production.
- MC pricing is the best policy to use if it is still possible for firms to remain profitable.
- In the case of a **natural monopoly**, however, MC pricing will cause the firm to make **subnormal profits** and exit the industry in the long run.

The following diagram illustrates a **natural monopoly**. Such firms have a very high MES, and only the downward sloping portion of the AC and MC are illustrated in the diagram.

Figure 20: Alternative output & price levels of a regulated natural monopoly



Refer to Section 2.1 (A1) to recap the concept of natural monopoly.

If the profit maximising natural monopolist is unregulated, it will produce at output level of Q_M and charge a price of P_M (Figure 20). Under the profit maximisation natural monopolist, the consumer surplus is area AP_MB.

To regulate the natural monopolist, the government has a few options of pricing policies to impose on the monopolist.

A. Marginal cost (MC) pricing

- At MC-pricing, the monopolist will have to charge P=MC where price is P_{MC} and produce at output level of Q_{MC}.
- Social optimum is achieved at Q_{MC}, because consumers' marginal benefit from the last unit sold (P) is equal to the marginal cost of producing the last unit (MC).
- Furthermore, with MC pricing, there will be a decrease in price from P_M to P_{MC}. This means that there will be an increase in consumer surplus from area AP_MB to $AP_{MC}F$
- Outcomes of such regulation:
  - Correct market failure by ensuring that that the firm produces at the allocative efficient output level.
  - Price is lowered, increasing consumer surplus.
- Limitations: However, at Q_{MC}, **the AR is lower than the AC and** the firm is making a subnormal profit. The TR, represented by area $OP_{MC}FQ_{MC}$, is less than the total cost (TC), represented by the area $OAC_{MC}GQ_{MC}$.
- The loss has to be covered by government subsidy. Government may have to provide a lump-sum subsidy so that firms are earning at least normal profit. The amount of subsidy for Q_{MC} output is represented by area $AC_{MC}GFP_{MC}$.
  - The government will have to subsidise the firm for this loss.

In the case of a **natural monopoly**, if the government does not want to complement the MC pricing with a subsidy, it can use **AC pricing** instead.

B. Average cost (AC) pricing

- At AC-pricing, the monopolist will have to charge P=AC where price is P_{AC} and produce at output level of Q_{AC} (Figure 20).
- Output is higher and price lower compared to unregulated case *(where profit maximisation occurs at MR=MC)*.
- A lower price means that there will be an increase in consumer surplus from area AP_MB to $AP_{AC}D$
- Outcomes of the regulation:
  - Reduce allocative inefficiency and the extent of market failure by increasing output to Q_{AC}, such that the output is closer to the allocative efficient output level, Q_{MC}.
  - Price is lowered increasing consumer surplus.
  - Firm is allowed to earn normal profit, ensuring firm may still be able to remain in business in the long run. This means that unlike MC pricing, government need not intervene and provide subsidy to the firm.
- Limitations: However, the output, Q_{AC}, is still less than the allocative efficient output, Q_{MC}, and price higher than the MC pricing. From Q_{AC} to Q_{MC}, the MC is always higher that the price of the goods. This means that consumers' marginal benefit from the last unit sold (P) is more than the marginal cost of producing the last unit (MC). This means that society is still under producing the good and the market is still allocative inefficient.
- As P > MC from Q_{AC} to Q_{MC}, there is still a deadweight loss, although smaller than without regulation.

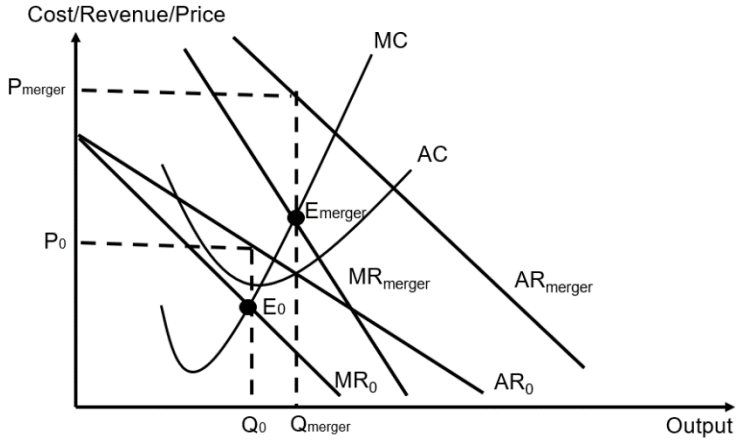
6.1.2 Non-Price Regulation

A. Antitrust and merger regulations

- Most countries in the world have a competition authority to prevent any single firm from dominating a market. This prevents the creation of monopolies and minimises the chance of a firm exploiting market power that is too strong.
- These policies include denying merger between firms that are deemed to lessen competition significantly, and breaking up firms that are deemed too large.
- If firms merge, they would enjoy larger market share and face less competition. Thus, the merged firm faces a more price inelastic demand curve AR_{merger} (Figure 21). At profit maximisation, $MC=MR_{merger}$, the merged firm will produce at Q_{merger} and charge the price, P_{merger}, reflected on the AR curve at the given output.
- However, when the two firms are denied merger, they retain their original market share and hence are unable to consolidate their market share. Without merger, each firm would face a more price elastic demand curve AR_0. At profit maximisation, $MC=MR_0$, the merged firm will produce at Q_0 and charge the price, P_0, reflected on the AR curve at the given output, assuming same cost of production.

- Thus, when firms are denied merger, the prices will be lower. A lower price may also lead to higher consumer surplus for the consumers.
- In addition, the price, P0, is lowered and closer to MC compared to the price, P_{merger}, when firms are allowed to merge. Even though the price, P_0, is still higher than MC, the gap between this price and MC is lesser compare to the higher price. P_{merger}. This means that the firm is less allocative inefficiency.

Figure 21: Antitrust and merger regulation



- Furthermore, when firms are denied merger, the two firms remain as competitors, competing for the same pool of consumers. Thus, there will be more incentives to conduct product and process innovation.
- Firms are more likely to develop new methods and production processes to lower average cost of production. If the process innovation allows the firms to find better and more productive machine or production line, it will reduce the average fixed cost and hence SRAC (figure 14).
- At the same time, they may also carry out product innovation to generate new or improved products to compete for the same group of consumers. This will provide consumers with greater variety and quality of products.
- Outcome of the regulation:
  - Firm is less allocative inefficient.
  - Ensure prices are kept low so as to prevent fall of consumer surplus.
  - Greater variety and better quality of products.
  - Ensure dynamic efficiency.
- In Singapore, the Competition and Consumer Commission of Singapore (CCCS) is the branch of the government regulating the competition level of markets. Read the articles below to learn more.

Singapore's Market Regulatory Authority: The Competition Commission of Singapore

The Competition Commission of Singapore (CCS) is a statutory body established under the Competition Act on 1 January 2005 to administer and enforce competition in Singapore.

Subject to the provisions of the Act, the functions and duties of the Commission shall be to:

- maintain and enhance efficient market conduct and promote overall productivity, innovation and competitiveness of markets in Singapore;
- eliminate or control practices having adverse effect on competition in Singapore;
- promote and sustain competition in markets in Singapore;
- promote a strong competitive culture and environment throughout the economy in Singapore;
- act internationally as the national body representative of Singapore in respect of competition matters; and
- advise the Government or other public authority on national needs and policies in respect of competition matters generally.

The Commission will have powers to investigate and adjudicate anti-competitive activities. It will also have the powers to impose sanctions.

Adapted from: https://www.cccs.gov.sg/legislation/competition-act

Article: UK Competition Watchdog Blocks Asda- Sainsbury's Merger

The Britain's Competition and Markets Authority (CMA) has blocked the merger of supermarket giant Sainsbury's Walmart-owned Asda after finding it would lead to increased prices in stores, online and at many petrol stations across the United Kingdom, as well as reductions in the quality and range of products available, or a poorer overall shopping experience.

In reaction, Asda and Sainsbury's announced that they have "mutually agreed to terminate the transaction".

However, Sainsbury's chief executive Mike Coupe argued in a statement that the merger sought to "lower prices for consumers", adding that the CMA has ignored "the dynamic and highly competitive nature of the UK grocery market". The merger would have created a supermarket titan bigger than Tesco, with a network of some 2,800 Sainsbury's, Asda and Argos stores.

The deal has fallen through one year after Sainsbury's and Asda unveiled their merger plans, which sought to create a retail king to leapfrog British No. 1 supermarket group Tesco. The CMA said the transaction - which was effectively a takeover bid, with Sainsbury's acquiring a majority 58 per cent stake in the combined group and Walmart the rest - would have resulted in a "substantial lessening of competition" at the national and local levels.

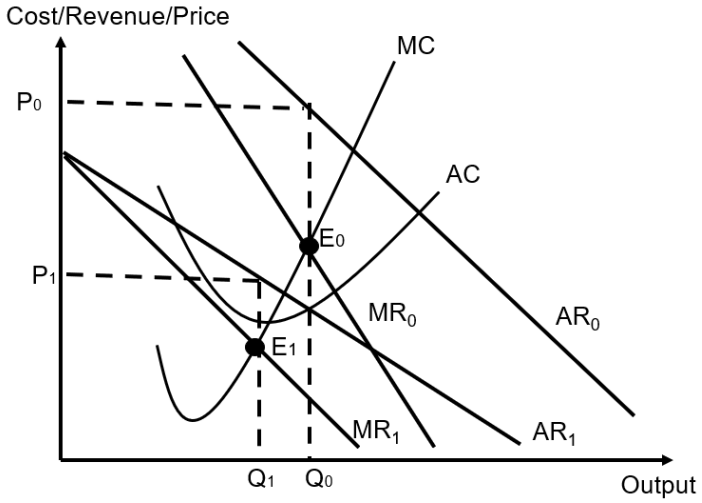
Adapted from: The Straits Times, 26 April 2019

B. Privatisation, Liberalisation and Deregulation of markets

Market liberalisation involves bringing down barriers to entry into industries, making it easier for new firms to enter the market. This makes markets more contestable.

- With an increased threat of competition, firms may also be more likely to engage in behaviour that would benefit consumers. The existing firms may adopt limit pricing and charge lower prices to deter potential new firms from entering. This lower price will benefit the consumers by increasing the consumer surplus.
- Existing firms may be more inclined to engage in product innovation to retain their consumers and deter new firms from entering. This will increase the variety and quality of goods in the industry.
- Furthermore, if market liberalisation leads to new firms entering the market, there would be greater variety of goods, improving the consumer welfare.
- With more firms competing for the same pool of consumers, the existing firms could see a lower and more price elastic demand curve. Thus, at the new profit maximisation point where MC=MR_1, the new output will be Q_1 (Figure 22). Given the output, the price reflected on the AR curve will be lower at P_1. This leads to consumers having a higher consumer surplus.
- In addition, the price, P_1, is lowered and closer to MC compared to the price, P_0, prior to market liberalisation. Even though the price, P_1, is still higher than MC, the gap between this price and MC is less compared to the higher price. P_0. This means that the firm is less allocative inefficient.

Figure 22: Market liberalisation



- <u>Outcome of liberalisation</u>:
  - Greater variety and better quality of products.
  - Encourage dynamic efficiency.
  - Lower price and higher consumer surplus.
  - Reduce allocative inefficiency.

On the other hand, **deregulation** reduces the red tapes that existing firms must adhere to and enable firms to respond quickly to changes in market conditions in the economy.

- With more flexibility, firms may be quicker to innovate to improve their products or create new products to meet the changing market conditions.
- Outcomes of deregulation:
  - Greater variety and better quality of products.
  - Encourage dynamic efficiency.

Privatisation of state-owned enterprises may mean a change in the objective of the firm. Privatisation of a firm means that the firm is transferred from public or government ownership to private ownership and control. This means that government will no longer have control of the firm which is now owned by a private business owner.

- The aim of the state-owned firm is not profit maxmisation. Instead, the state-owned firm may aim to provide goods to the consumers at an affordable price, ensuring equity. Thus, the firm may lack of profit to improve the quality or provide greater variety of products for the consumers.
- Furthermore, the affordable pricing may lead to the state-owned firm earning subnormal profit, the firm may try to reduce the cost of production to minimise losses. This can come in the form of cutting down the manpower needed to provide the service or source for cheaper input for production, resulting in poor quality of services or goods for the consumers.
- The state-owned firm is also the sole producer in the market and lacks competition. Thus, even if the firm is earning normal or supernormal profit, they may lack the incentive to conduct product innovation.
- Furthermore, the lack of competition would mean that the state-owned firm will be less incentive to find the optimal combination of inputs to produce maximum output at the minimum cost. For example, firms may employ more labour relative to capital goods (e.g. machine), such that the firm is not using the optimal combination of input. This leads to firm incurring a higher AC than necessary and the firm will be producing at a point above the LRAC curve. Even if the state-owned firm is earning subnormal profit, government could cover the losses using government fund. This further reduce the incentive of the firm to find the optimal combination of inputs to produce maximum output at the minimum cost. Thus, the state-owned firm is unlikely to be productive efficient.
- Thus, with privatisation of enterprises, the private firm may be profit motivated and adopt innovation to reduce average cost of production. Furthermore, the profit motivated firm will be forced to ensure the quality of the product in order to retain the consumer base.
- Outcomes of deregulation:
  - Ensure quality of products.
  - Encourage dynamic efficiency.
  - Ensure productive efficiency.

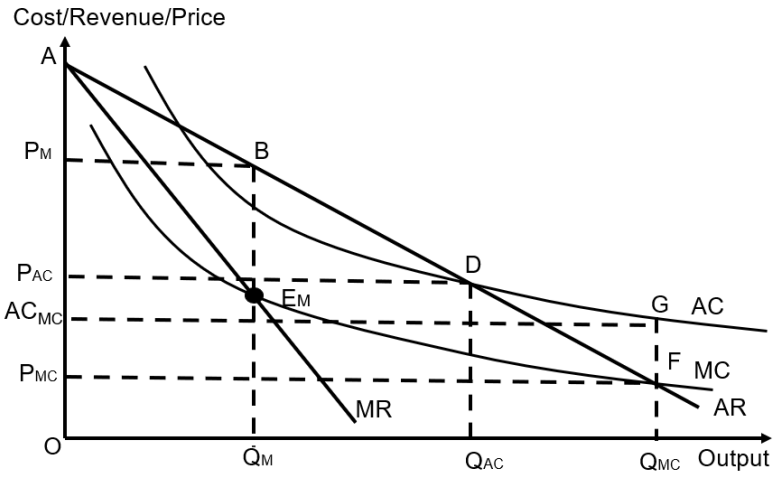
C. Regulating the quality of service

- Governments often also monitor and require a certain quality of service to be provided by firms. Such regulation on the quality of service will ensure that that consumer welfare remains high.
- For example, rail operators are required to conduct regular maintenance of rail lines and trains. They are also required to keep a record of maintenance schedules. These ensure a minimum safety level and reliability for the railway services. Utility firms are also required to provide gas and electricity reliably throughout the year, and for all households in their region.
- Outcome: Ensure high quality of products.

6.2 NATIONALISATION/STATE OWNERSHIP

- In extreme case, a government may decide to take over (nationalise) an industry. Usually, in the case of a **natural monopoly** where the **government considers it to be an essential industry**.
  - When government nationalise an industry, there will only be one firm in the industry. As the only firm, it could better exploit internal economies of scale, spreading the high cost over a larger output. This allows the firm to enjoy lower average cost of production.
  - With reference to Figure 23, prior to nationalisation, a private-owned monopoly aims to maximise profit. Thus, it would produce at Q_M while charging a price of P_M. The consumer surplus would be AP_MB.
  - However, as a state-owned firm, it may charge any prices lower than P_M, the price charged by a privatised firm. Thus, there could be higher consumer surplus when the price is lowered.
  - Rather than any lower prices, a state-owned firm may instead choose AC or MC pricing (section 6.1.1). With reference to the diagram below, under AC pricing, the price charged would be P_{AC} while under MC pricing, the price charged would be P_{MC}.
  - Under AC pricing, the consumer surplus will be $AP_{AC}D$ while under MC pricing, the price charged would be $AP_{MC}F$. Both types of pricing would lead to higher consumer surplus compared to a private-owned monopoly.
  - Outcome:
    - Lower price and higher consumer surplus.
    - Depending on the prices decided by the state-owned firm, the firm could either reduce the extent of allocative inefficiency or achieve allocative efficiency. With MC pricing, the firm produces at allocative efficient out level and thus, correct market failure. On the other hand, with AC pricing, the firm increases output closer to the allocative efficient output level, reducing the extent of market failure.

Figure 23: Possible output & price levels of a state-owned natural monopoly



- However, empirical evidence shows that state-run monopolies have suffered from inefficiencies and wastage of resources due to bureaucracy and the lack of incentive to innovate.
    - Due to nationalisation, the state-owned firm will be the sole producers in the market. Thus, there is a lack of competition which means that the state-owned firm will be less incentive to find the optimal combination of inputs to produce maximum output at the minimum cost. For example, firms may employ more labour relative to capital goods (e.g. machine), such that the firm is not using the optimal combination of input. This leads to firm incurring a higher AC than necessary and the firm will be producing at a point above the LRAC curve.
    - Even if the state-owned firm is earning subnormal profit, government could cover the losses using government fund. This further reduce the incentive of the firm to find the optimal combination of inputs to produce maximum output at the minimum cost. Thus, the state-owned firm is unlikely to be productive efficient.
- Welfare-oriented pricing also leads to losses and poor quality of service.
    - The aim of the state-owned firm is not profit maxmisation. Instead, the state-owned firm may aim to provide goods to the consumers at an affordable price, ensuring equity. Thus, the firm may lack profit to improve the quality or provide greater variety of products for the consumers.
    - Furthermore, the affordable pricing may lead to the state-owned firm earning subnormal profit, the firm may try to reduce the cost of production to minimise losses. This can come in the form of cutting down the manpower needed to provide the service or source for cheaper input for production, resulting in poor quality of services or goods for the consumers.
    - The state-owned firm is also the sole producer in the market and lacks competition. Thus, even if the firm is earning normal or supernormal profit, they may lack the incentive to conduct product innovation.

- Hence, many governments may be inclined towards privatisation and liberalisation of state-owned monopolies. The pace of privatisation in developed countries has been faster than that in developing countries.

Learning Reflection

Congratulations! You have finished this lecture topic.
However, how much have you understood?

Below are the areas of focus in this topic and a checklist that you may use to know how much you have understood:

	Areas of Focus	What you should be able to do	Check -list
1.	**Characteristics of market structures**	• Explain and distinguish the characteristics of each market structure. • Explain the different types of barriers to entry. • Explain the difference between price takers and price setters.	
2.	**Behaviour of firms 1:** • **Price and output determination** • **Types of profit**	• Explain why the profit maximizing equilibrium price and quantity for firms is MR = MC. • Represent the profit maximizing equilibrium price and quantity for firms graphically, both for price takers and price setters.	
		• Explain the types of profit price takers can make in the short run and long run. • Explain the types of profit price setters can make in the short run and long run. • Represent the types of profits firms can make graphically. • Explain the shut-down condition for firms in the short run. • Explain the condition for firms to enter or exit in the long run.	
		• Explain non-collusive and collusive behaviour for oligopolies, and how they affect oligopolies' strategies to increase profit. • Define market contestability and explain how it affects firms' strategies to increase profit.	
3.	**Behaviour of firms 2:** • **Strategies to raise revenue** • **Strategies to lower cost** • **Growth strategies**	• Explain how strategies adopted by firms can increase firms' profits. • Define price discrimination. • Explain the first-degree price discrimination. • Explain the conditions required for firms to price discriminate. • Explain the methods of growth for firms.	
4.	**Performance and evaluation of market structures**	• Explain how firms with different market power impact society. • Evaluate the desirability of different market structures.	
5.	**Government Intervention for market dominance**	• Explain how government can use price/non-price regulations or nationalisation to correct market failure due to market dominance. • Explain the limitations of each policy.	

ANNEX 1: First and Second Degree Price Discrimination

Aside from third degree price discrimination, firms can also practice first and second degree price discrimination:

First degree price discrimination

- This is also known as perfect price discrimination.
- This type of price discrimination is highly theoretical as it assumes that the **firm has perfect knowledge of every consumer's willingness to pay for every subsequent unit of the good.**
- The firm separates the whole market into each individual consumer and charges them the **maximum price they are willing and able to pay**. *(Recall: points on the demand curve indicate the maximum prices that consumers are willing to pay for each different quantity)*
- Since the price that the consumer pays is the full amount that he is willing to pay, **consumer surplus is zero**. It is fully absorbed by firm as part of its revenue.
- Example: how auction prices are determined, such as at property or art auctions.
- The equilibrium output sold is where demand = supply, i.e. at P = MC (SS curve) as beyond that, P < MC and thus it is not profitable to produce.
- In this case, the monopolistic firm can produce at the allocative efficient output.

Second degree price discrimination / block pricing

- Also termed as **block pricing** where firm charges different prices for different blocks of quantity.
- Products are sold in packages or blocks. A higher price is charged for the first few units, a lower price for next block of units.
- For instance, $10 for the first block of 10 units, $7 for the next block of 10 units. Firm absorbs different amount of consumer surplus at different blocks of quantity and earns higher revenue than if it were to set a flat price for all quantities.
    - Examples: Public utility firms such as those providing electricity or water use block pricing.
- Another type of second degree price discrimination is a **two-part tariff**. This is a pricing scheme where a fixed charge is imposed in addition to a per-unit charge.
    - Examples: telcos that charge a fixed fee monthly on top of the price per unit, and taxis where there is a flag down rate followed by a per km fare.
    - Since the cost of the fixed charge is spread over the quantity consumed, the overall price per unit thus decreases as quantity increases.