Firms and Decisions

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Year One H2 Economics 2022
Chapter #4: Microeconomics II – Markets: Firms and Decisions

A LEVEL QUESTIONS IN RECENT YEARS

ESSAYS

N2021 Q3
Singapore's telecommunications (telco) market is dominated by four firms - SingTel (32%), StarHub (25%), M1 (22%) and new entrant MyRepublic (15%). Commentators argue that Singapore's telco market might be considered to be an oligopoly.

(a) Explain why Singapore's telco market might be considered to be an oligopoly and how economic theory suggests this market structure would affect the firms' pricing and output decisions. [10]
(b) Discuss how government intervention in Singapore's telco market could protect consumers, and consider the extent to which such intervention will be successful. [15]

N2020 Q3
Expectations of quick service restaurants 9QSRs) or fast food chains are changing. Innovation is required to keep abreast of changing consumer taste and to maintain a competitive advantage in Singapore, a market known for its discernment of food.
(c) Explain how the market structure in which fast food chains operate is likely to influence how prices are determined. [10]
(d) Discuss whether innovation is the best strategy for fast food chains seeking to increase their profits. [15]

N2019 Q1
According to the Competition and Consumer Commission of Singapore (CCCS), the takeover of Uber by Grab in Singapore has led to 'a substantial lessening of competition.' This has made it harder for new competitors to enter the ride-hailing market.

Source: Adapted from *Channel NewsAsia*, 5 July 2018

(a) Explain one reason why consumers might be better off and one reason why consumers might be worse off from Grab's takeover of Uber. [10]
(b) Discuss the potential benefits and problems that are likely to be experienced by new competitors considering entering the ride-hailing market dominated by Grab. [15]

N2018 Q2
Competition amongst airlines within the air passenger market is high and demand is rising but many airports are at or near capacity. Both variable and fixed costs of production of passenger airlines continue to change over time. For example, airline jet fuel prices fell by 20.4% over the year ended 22 July 2016 while the price of passenger jet aircraft increased by around 1.1% between 2015 and 2016.

Source: International Air Transport Association, accessed 3 August 2016

Using economic analysis, discuss how airlines would likely respond to these changes. [25]

N2016 Q3
In Australia, small and remote communities face high and stable prices for petrol. The petrol is supplied by one or two small petrol stations owned by small independent retailers. Prices are lower and more volatile in the large cities, where there are a large number of big petrol stations owned by a small number of big oil companies. *Source: Australian Institute of Petroleum*
(a) Explain why less market competition might lead to higher and more stable prices. [10]
(b) Assess whether differences in the level of competition are likely to be the main reason for differences in the retail prices of petrol in rural and urban areas of Australia. [15]

N2015 Q3
'Market dominance is the main factor determining the profitability of firms.'
(a) Explain how market dominance can influence a firm's price and output decisions. [10]
(b) Discuss whether government intervention is always needed when a firm dominates the market. [15]

N2013 Q3
'Recession put weak firms out of business whilst strong firms use a recession to become more efficient.'

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(a) Explain the relevance of different types of cost in the decision of a firm to close when faced by a fall in demand for its products. [10]
(b) Discuss the extent to which firms faced by high levels of competition are more vulnerable to closure in a recession than firms in less competitive industries. [15]

N2012 Q3
Internet or online shopping has grown rapidly in recent years. Low barriers to entry have allowed a wide range of small specialised retail firms to market their products on the internet. At the same time economies of scale have led to a small number of large internet retail companies dominating the market for other products.
(a) Explain the existence of these two different types of online retailers and which market structure best explains the market behaviour of each of them. [10]
(b) Increased specialisation and low barriers to entry have an impact on consumers and existing producers. Discuss how far the traditional analysis of these economic effects applies to the growth of online shopping. [15]

N2011 Q3
(a) Explain how the different features of monopolistic competition and oligopoly affect price and output determination in these market structures. [10]
(b) Recession will affect firms in different ways depending, for example, on what they produce and the market structure in which they operate. Discuss the likely effects of a recession on different firms. [15]

TYS N2010 Q2
Retailers in Singapore supply a wide range of services and products in a variety of market structures
(a) Explain the key differences between oligopolistic competition and monopolistic competition. [10]
(b) Consider different retailers in Singapore and discuss which of these two market structures best explains their market behaviour. [15]

N2009 Q2
A very popular band is due to play one concert at a 5000 capacity venue. The plan is to charge different prices according to the area in which the seat is located.
(a) Explain whether this pricing policy could be considered to be an example of price discrimination. [10]
(b) Discuss the problems that are likely to be faced in determining the prices to be charged for the seats. [15]

CASE STUDY QUESTIONS
N2021 Q1c & d, N2020 Q1, N2018 Q1c, N2015 Q1c, N2014 Q1b&c, N2013 Q1e, N2012 Q1f

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HWA CHONG INSTITUTION
Year One H2 Economics 2022
Chapter #4: Microeconomics II – Markets: Firms and Decisions

PART 1: OBJECTIVES OF FIRMS

PART 1 OUTLINE

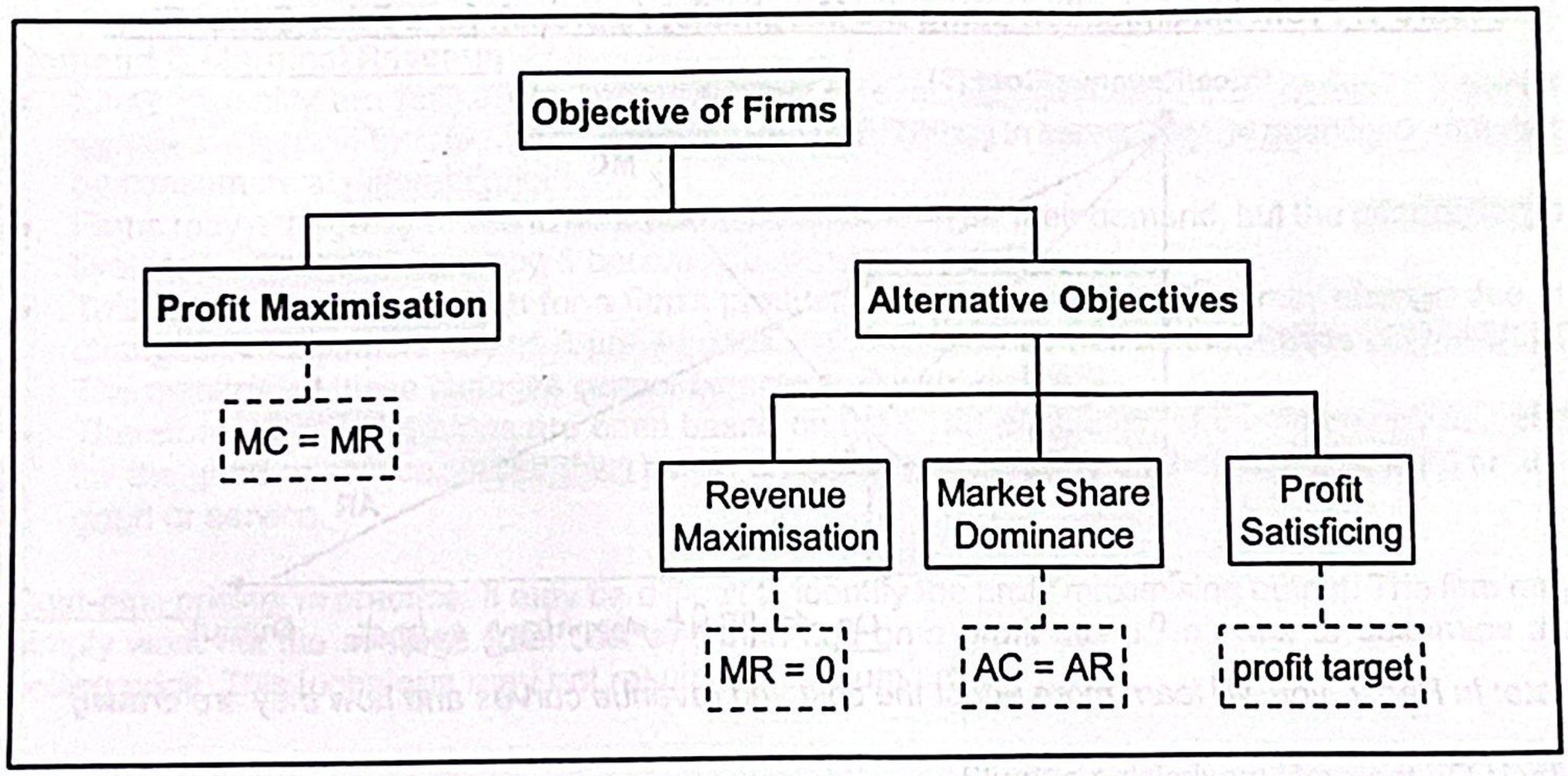
1.0 INTRODUCTION TO FIRM BEHAVIOUR: STRATEGIES & DECISIONS

1.1 PROFIT MAXIMISATION OBJECTIVE

1.2 ALTERNATIVE OBJECTIVES OTHER THAN PROFIT MAXIMISATION
- **1.2.1 Sales Revenue Maximisation**
- **1.2.2 Market Share Dominance: Sales Volume Maximisation**
- **1.2.3 Profit Satisficing**

1.3 CONCLUSION

CONCEPT MAP



1.0 INTRODUCTION TO FIRM BEHAVIOUR: STRATEGIES & DECISIONS

From Chapter 2, we note that market supply refers to the aggregation of all supplies put up by firms in the market. In this chapter, in turn, we shall focus on the firm, to study firm behaviour in the areas of strategies and decisions in more detail.

A firm is a production unit which transforms resources into goods and services. Firms need to make many decisions, such as which consumers to target, how to price their product, which combinations of production factors to employ and what types of price and non-price strategies to use. The decisions and strategies taken vary from firm to firm as demand and cost conditions, as well as the extent of competition differ in different markets.

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The analysis of firm behaviour begins with the objectives of firms, which serve to motivate and drive how the firms behave. Part 1 looks into the objectives of firms. Part 2 looks at the various cost and revenue curves of a firm, how profit maximisation output and price are determined and the various types of profits that a firm could reap. Part 3 examines the strategies and decisions taken by the firm and Part 4 the impact of such strategies and decisions on consumers, other firms and in resource allocation in the society.

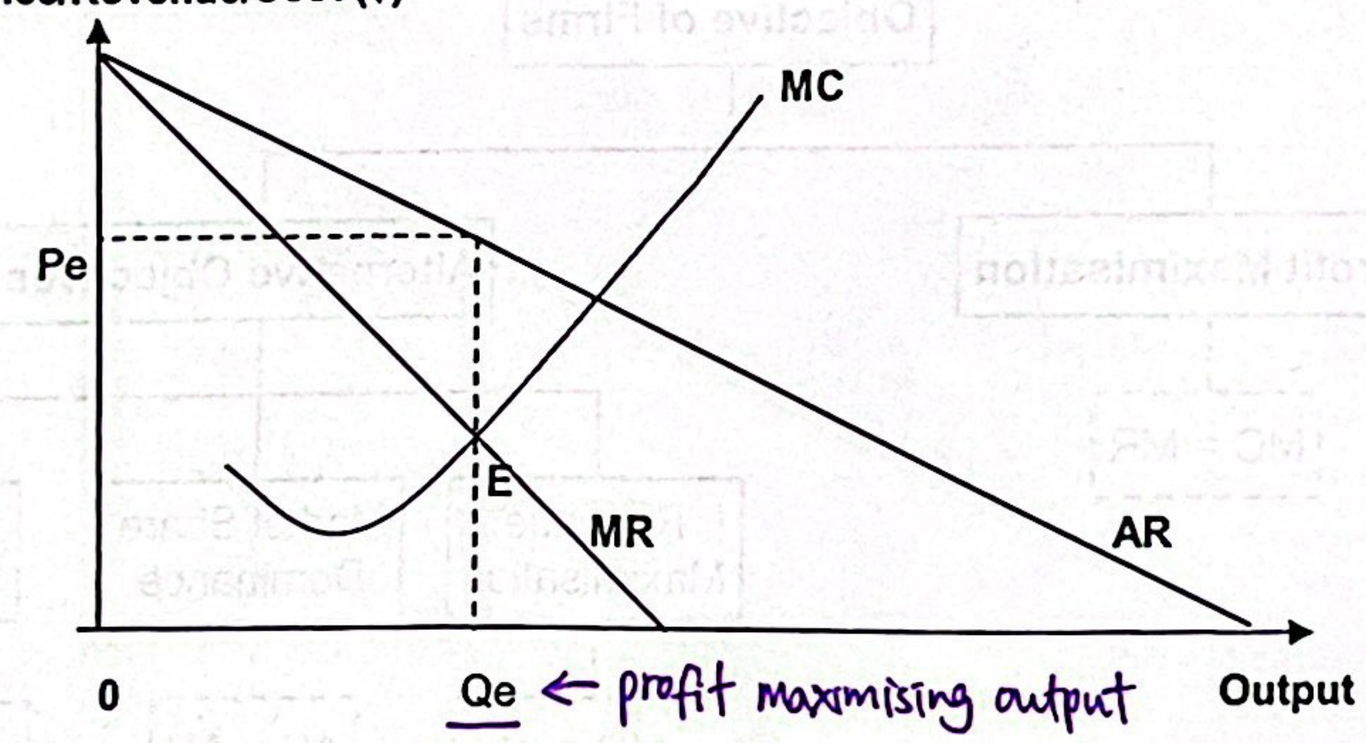
1.1 PROFIT MAXIMISATION OBJECTIVE

The conventional assumption is that profit maximisation is the main objective of firms. Profit maximisation occurs when a firm's total revenue (TR) exceeds total costs (TC) by the greatest amount. We can illustrate the profit maximising output of a firm using the ***Marginalist Approach,*** ie, using Marginal Revenue and Marginal Cost as illustrated below.

Profit maximisation is achieved at the level of output where the addition to the total revenue from the sale of the last unit is equal to the addition to total cost of producing it. That is MR = MC.

Diagrammatically, the profit maximising diagram for a price-setter firm (downward sloping demand) can be illustrated as follows:

Figure 1: Profit Maximisation using the Marginalist Approach for a Price-Setter Firm



[Note: In Part 2, you will learn more about the cost and revenue curves and how they are drawn]

Why is Qe the profit maximising output?

Referring to Figure 1:

- For output less than 0Qe, profits will not be maximised as the additional cost involved in increasing an additional unit of output (MC) is less than additional revenue (MR) such that each additional unit produced will bring about higher profits for the firm. The firm will have the incentive to continue increasing its production level as long as its marginal revenue is greater than its marginal cost. Thus the firm will expand production until output at point 0Qe, where MR=MC.
- At output levels above 0Qe, the production of an additional unit of output will add more to total cost than to total revenue (MC > MR). This means that expansion of production beyond 0Qe will reduce the firm's profits.
- Thus, profits are maximised at 0Qe when MR = MC, and MC cuts MR from below, ie, MC is rising.

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To sum up, profit-maximising output and price level for a price-setter firm occurs when

MC = MR, where MC is rising

However, not all firms operate at the profit maximising (MC=MR) output.
Reasons:

(1) LACK OF INFORMATION AND KNOWLEDGE

Cost

- Costs of production comprises of economic cost, which includes both explicit & implicit cost (refer to page 2 of Part 2: Cost & Revenue + Profit Maximisation Price & Output + Profits in *Firms and Decisions* Notes).
- Under profit-maximisation, firms should consider the sum of both explicit & implicit costs. However, in reality, they are only concerned with explicit costs because it is easier to compute.
- Hence a firm would not be able to maximise economic profit except by chance because it would not be aware of its true marginal cost.
- In short, implicit costs are hard to compute, hence actual cost conditions are also difficult to estimate.

Demand & Marginal Revenue

- Firms in reality are unlikely to know precisely or even approximately their demand & hence unable to compute their marginal revenue given the difficulty in estimating the quantity demanded by consumers at different prices.
- Firms may engage agencies to conduct market research for their demand, but the information is likely to be limited in accuracy & become obsolete very quickly.
- This is because the demand for a firm's product does not remain static. It may change due to changes in consumers' tastes & preferences, income levels as well as the actions of rival firms. The outcome of these changes cannot be predicted with accuracy.
- Therefore, pricing decisions are often based on the firms' evaluation of the estimated demand for the good or service, rather than based on precise information on the actual demand for the good or service.

Cost-plus pricing: In practice, it may be difficult to identify the profit maximising output. The firm may simply work out the average total cost and then add on a profit margin in order to determine the selling price. This technique may not result in maximum profit.

(2) SHORT TERM PROFIT MAXIMISATION MAY NOT BE IN THE LONG TERM INTEREST OF THE FIRM

- Firms with large market shares may wish to avoid the attention of government watchdog bodies like the Competition and Consumer Commission of Singapore (CCCS) and Competition and Markets Authority in the UK and the US Justice Department.
- Large supernormal profits may attract new entrants into the industry.
- Profit maximisation may not appeal to the management, who may have different objectives – high profits might trigger action by the firm's rivals and it could become a target for a takeover bid.

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1.2 ALTERNATIVE OBJECTIVES OTHER THAN PROFIT MAXIMISATION

Profit maximisation looks like an entirely sensible assumption to make about the objective of most firms, but there might be reasons why firms may choose to pursue alternative objectives instead of profit maximisation (ie, why a firm may not be producing at profit maximising output where MC=MR).

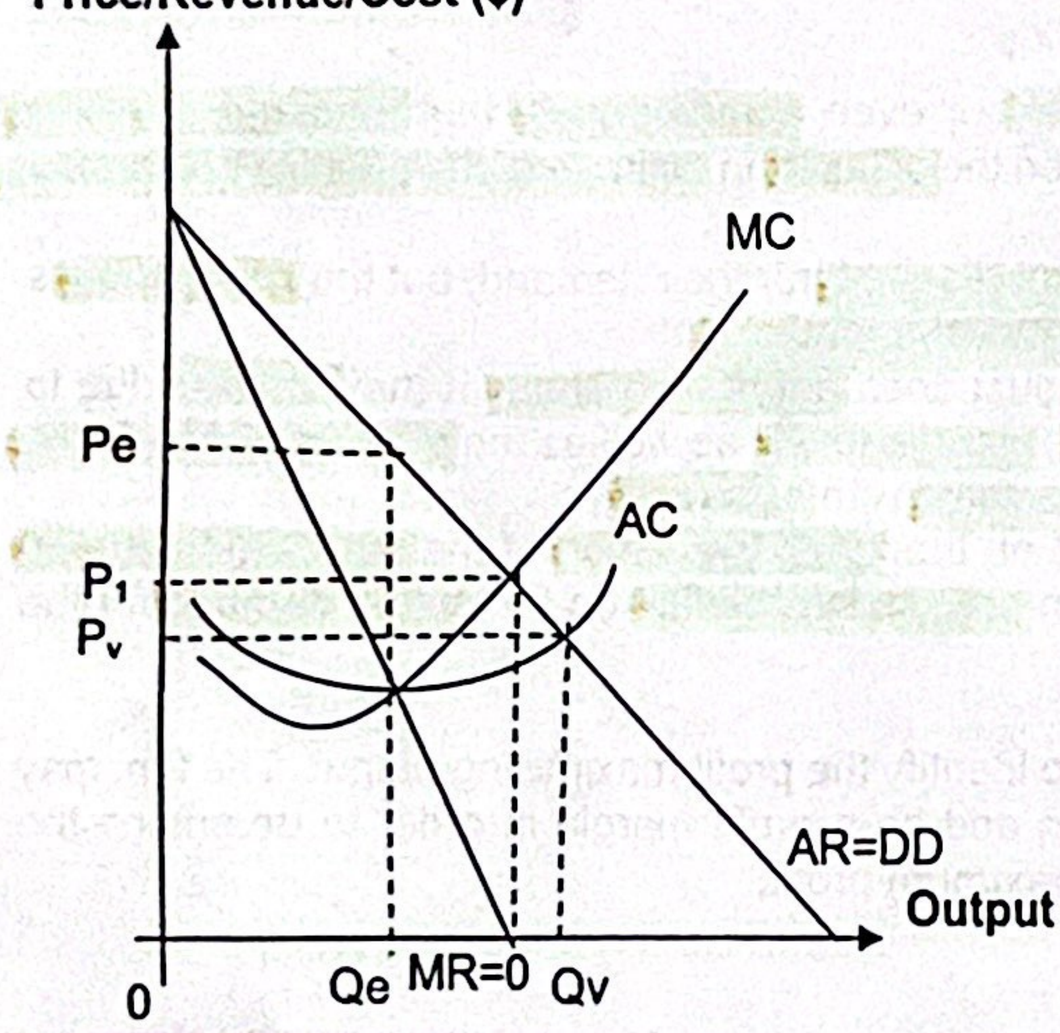
In smaller firms, the owners are often the same people who run the business on a daily basis. In larger firms, the owners as shareholders who are separate from the day-to day running of the business, having bought shares in various businesses on the stock market as a form of financial investment. The businesses are run by a board of directors who may not hold any shares.

The alternative objectives of managers, who run the firm on a day-to-day basis may include:

- Sales Revenue Maximisation
- Market Share Dominance
- Profit Satisficing

1.2.1 Sales Revenue Maximisation

Figure 2: Demand (AR) and Cost curves of firm



Note: The relationships between AR, MR and TR of a firm are illustrated in Figure 4 of Chapter 4 Part 2.

To maximise sales revenue, a firm may choose to produce at the output where MR is zero and charge a price P_1 (refer to Figure 2) which is a reasonable objective for a firm to have. However, this is not at the same as the profit maximising equilibrium. The firm may be prepared to accept a lower price and produce above the profit maximising output in order to increase its market share in a growing market. A firm choosing to maximise sales revenue would raise output beyond MC=MR until MR reaches zero. Extra sales beyond this output would not contribute to increasing total revenue as revenue is at its maximum when MR=0.

The reason why sales revenue maximisation might be chosen in a large firm is that management salaries might be linked to the value of sales.

To maximise revenue, the managers might make decisions to increase the level of production to the point where marginal revenue is zero and set a price (based on the firm's demand curve) that is lower than what is required for profit-maximising.

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1.2.2 Market Share Dominance: Sales Volume Maximisation*

*Market share dominance can be measured in terms of output as well as sales revenue or turnover.

This option maximises the volume of sales (output) rather than the sales revenue. A firm may be selling a new product that is not so well known in the market, hence it aims to raise its demand to increase its market share. Such firm might engage in extensive product development to differentiate its good, but this could result in higher costs and thus lower profits for the firm.

A firm would not go beyond the breakeven output (in Figure 2, at the output Qv with price Pv) in order to expand sales unless it is part of a diversified grouping where cross subsidisation is being practised. If it did, then it would be making fewer profits.

However, firm maximising sales volume may be doing so in the short run with the intention that once it captures a higher market share and the demand of its product becomes more price inelastic, it may in the long run, set higher prices to earn higher profits.

1.2.3 Profit Satisficing

When the firm's shareholders are divorced from control of the firm, there may be a conflict of interests. The shareholders are keen on profits, whilst the management may be concerned with growth rather than profits. Hence a profit satisficing behaviour may be negotiated where the firm seeks to make a reasonable level of profits, sufficient to satisfy the shareholders and a target for the management to achieve.

Profit satisficing can be a feature of firms that have enjoyed a high market share over a long period of time. Complacency may lead to firms placing emphasis on a particular profit target to achieve based on past precedence, which may not be profit maximising.

1.3 CONCLUSION

The objectives of a firm at different times, are influenced by different groups of people. A firm has many stake holders, such as the shareholders, the managers, the employees and unions, the suppliers, the consumers, the environmentalists and the government.

Shareholders insist that the firm makes a satisfactory level of profits. The workers demand a minimum level of pay and work satisfaction. Consumers would want a minimum level of quality for the price they pay for goods purchased. Local environmentalists may be able to exert enough moral pressure on the company to prevent over pollution. The government would want laws to be obeyed and taxes paid.

The overall objective of an organization will be the result of discussion, negotiation and bargaining with all these groups. The end result is likely to be a compromise which reaches a satisfactory conclusion but does not maximize anything.

Nonetheless, there is much evidence to suggest that large firms whose shares are freely traded on stock exchanges, are subject to scrutiny, and thus place the making of profit very high so as to garner support of the investors. Therefore, it is not unreasonable to make an assumption that, in general, firms, based on self-interest, do aim to maximise profit especially in the long-run.

For the rest of the chapter, we shall be analysing a firm's behaviour assuming that the goal of the firm is to maximise profit.

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PART 2: COST & REVENUE + PROFIT MAXIMISATION

PART 2 OUTLINE

2.0 INTRODUCTION

2.1 COSTS OF PRODUCTION
- **2.1.1 Economic Cost of Production**
- **2.1.2 Short-Run Cost of Production**
  - 2.1.2.1 Total Cost (TC = TFC + TVC)
  - 2.1.2.2 Marginal Cost (MC) and Average Cost (AC = AFC + AVC)
- **2.1.3 Long-Run Cost of Production**
  - 2.1.3.1 Meaning of Long Run
  - **2.1.3.2 Long-Run Average Cost Curve (LRAC)**
  - **2.1.3.3 Economies of Scale and Diseconomies of Scale**
    - 2.1.3.3.1 Internal Economies of Scale and Internal Diseconomies of Scale
    - 2.1.3.3.2 External Economies of Scale and External Diseconomies of Scale

2.2 REVENUE OF FIRMS
- **2.2.1 Revenue Curves For A Price-setter Firm**

2.3 TYPES OF ECONOMIC PROFIT
- **2.3.1 Profit Maximisation based on the Marginalist Principle**

2.4 FACTORS THAT CAUSE PROFITS, PRICE & OUTPUT TO CHANGE
- **2.4.1 Changes in Demand**
- **2.4.2 Changes in Costs**

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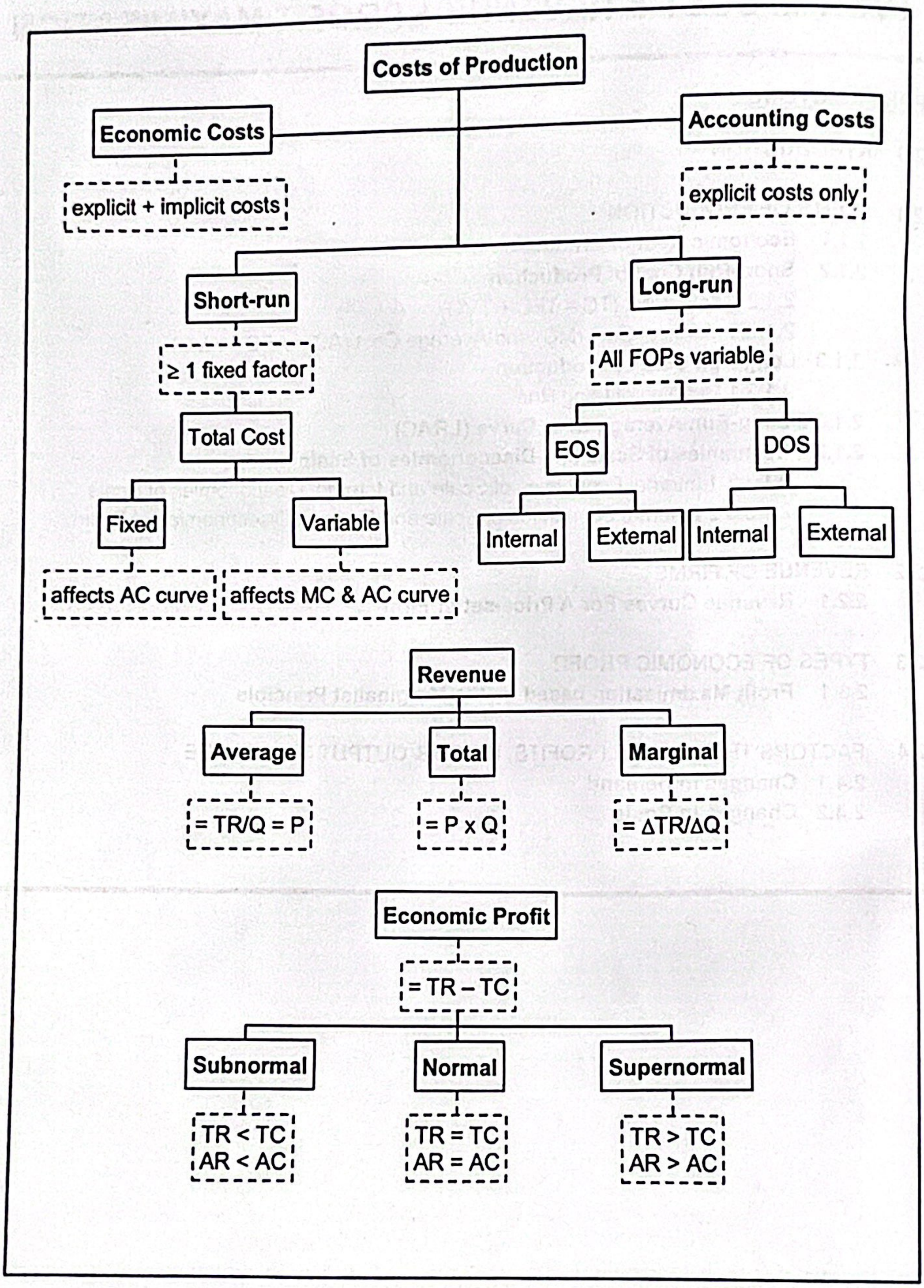
CONCEPT MAP



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2.0 INTRODUCTION

To understand the pricing and output decision of a profit maximising firm, we need to examine the costs and demand the firm faces. The total amount that the firm pays to buy its inputs is known as its total cost. The amount that the firm receives for the sale of its output is called its total revenue. Profit is a firm's total revenue minus its total cost.

2.1 COSTS OF PRODUCTION

2.1.1 Economic Cost of Production

The total cost that the firm incurs includes both implicit and explicit costs, this is termed as economic cost.

1. **Explicit costs** are costs incurred when an actual monetary payment is made. For example, salaries paid to workers and cost of raw materials paid to suppliers. These are direct payment to factors of production that are originally not owned by the firm.

2. **Implicit costs** are those that do not involve a direct payment of money to a third party, but nonetheless still involve an opportunity cost, in terms of the next best alternative foregone of using scarce resources to produce one particular commodity. They usually refer to costs of factors of production which are already owned by the firm itself.

   Examples of implicit costs:
   - A firm owns some buildings. The opportunity cost of using them is the rent it could have received by leasing them out to another firm.
   - The owner of the firm could have earned $50,000 per annum by working for someone else. By setting up a firm, the opportunity cost a year to the entrepreneur is the $50,000 annual salary he has forgone.
   - A firm draws $100,000 from the bank out of its savings in order to invest in new plants and equipment. The cost of this investment is not just the $100,000 (an explicit cost) but also the interest return it has forgone (an implicit cost).

Accounting cost = explicit costs of production
Economic cost = explicit + implicit costs of production

In economics, we use economic cost and NOT accounting cost to reflect the total opportunity cost in the firm's decision-making process.

2.1.2 Short-Run Cost of Production

The **short run** is a production period during which there is **at least one fixed factor**. Thus output can only be adjusted by **changing the quantities of variable factors**.

Fixed Factor / Input

- Suppose a new computer factory has just started operations and business is booming far beyond expectations. The entrepreneur responds to the unexpected demand by quickly hiring more workers. In this case, labour is considered as a variable factor, as the increase in the output of the computers is directly related to the number of workers employed over a period of time. The factory itself is a fixed factor as the entrepreneur is unable to increase the floor space in a short period of time. He may of course, build a new factory but that would take some time.
- This is a factor of production whose **quantities cannot be changed** within the time period to change output. Examples of fixed factors include buildings and heavy-duty machines.

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Variable Factor / Input:
This is a factor of production whose **quantities can be changed** within the **time period** to change output.
Examples of variable factors include **labour** & **raw materials**.

2.1.2.1 Total Cost (TC = TFC + TVC)

Suppose a firm uses two factors, capital and labour, to produce its output. Usually, **capital** such as **heavy-duty machinery** is taken to be the **fixed factor** while **labour** is the **variable factor.** Thus the firm will incur both fixed and variable costs which are the cost of the capital and the wages of labour respectively.

Types of Total Costs

Total Fixed Cost (TFC)	• These are **costs** that **do not vary** with **output.** • Examples of fixed costs include **lease payments**, **rentals** and **equipment.** • Such costs **exist even** when **output is zero**.
Total Variable Cost (TVC)	• These are **costs** that **vary positively** with **output.** • Examples of variable costs are **wages** for **hiring workers** and **cost of raw materials.** • Such costs will be **zero** if **output is zero**. In other words, if the owner does not employ a single worker or produce a unit of the good, his TVC is zero.
Total Cost (TC)	It is the **sum** of total fixed cost and total variable cost i.e. TC = TFC + TVC.

2.1.2.2 Marginal Cost (MC) and Average Cost (AC = AFC + AVC)

Definition & Formula of Marginal Cost and Average Cost

Types of Cost	Definition	Formula
Marginal Cost (MC)	It is the additional cost arising from an additional output. ***Note:*** *The marginal cost is the change in total variable costs as a result of producing one more unit of output. Since fixed costs do not vary with output level, it does not contribute to additional cost from an additional output.*	• $MC_n = TC_n - TC_{n-1}$ or • MC $\Delta TC/\Delta Q$ or • MC = $\Delta TVC/\Delta Q$
Average Fixed Cost (AFC)	It is the fixed cost per unit of output.	AFC = TFC/Q
Average Variable Cost (AVC)	It is the variable cost per unit of output.	AVC = TVC/Q
Average Cost (AC)	It is the cost per unit of output. It is also the sum of AFC and AVC.	AC = AFC + AVC

Shape of Marginal and Average Cost Curves

A numerical example:

Qty of Goods	TFC ($)	TVC ($)	TC ($)	AFC ($)	AVC ($)	AC ($)	MC ($)
0	10	0	10	-	-	-	-
1	10	10	20	10	10	20	10
2	10	17	27	5	8.5	13.50	7
3	10	25	35	3.33	8.33	11.66	8
4	10	40	50	2.50	10	12.50	15
5	10	60	70	2	12	14	20
6	10	110	120	1.67	18.33	20	50

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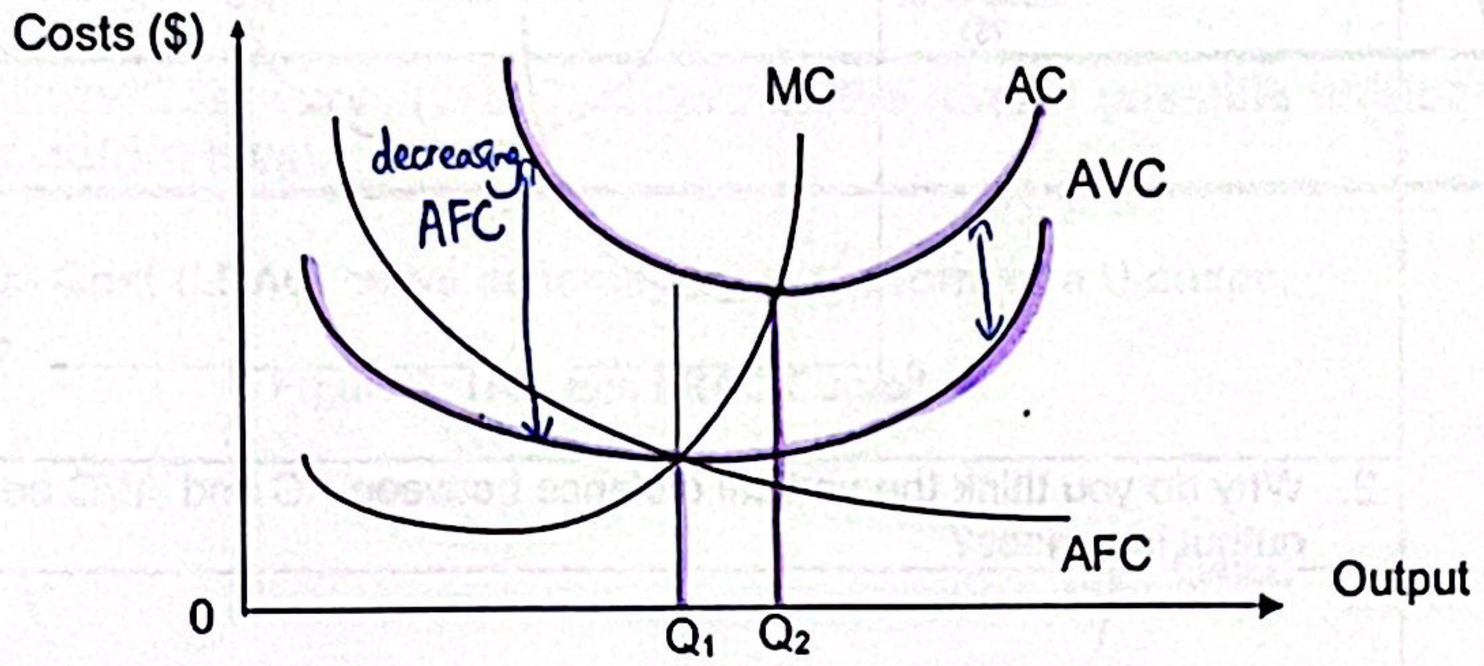
Figure 1: Short-run Cost Curves



- AFC falls continuously as output increases since TFC are being spread over greater and greater output. Hence, AFC curve takes on the shape of a rectangular hyperbola.
- Both AVC and MC first decrease and then increase due to the Law of Diminishing Marginal Returns.
- The shape of AC curve is influenced by the shapes of AFC and AVC curves since it is the sum of AFC and AVC. When both AFC and AVC fall, AC will indeed fall. But when AVC starts to rise, AC still falls as long as the fall in AFC outweighs the rise in AVC. And AC starts to rise when the rise in AVC outweighs the fall in AFC.
- **MC cuts both AVC and AC** at their **minimum points** at Q_1 and Q_2 respectively while Q_1 is smaller than Q_2.

Note: *For diagram drawing in this topic, the focus is on AC and MC.*

Frequently Asked Question: Why does MC curve cut AC and AVC curves at the minimum?

In simple terms, think of it this way:

- If MC<AC, AC falls: Analogy: For Promo, if the marks for the 3rd essay you attempted is lower than the average marks of your first two essays, your overall average Promo marks will fall.
- If MC>AC, AC rises: Analogy: If the marks for your 3rd essay is greater than the average marks of the 1st two essays, your overall average Promo mark will rise.
- If MC = AC, AC remains the same: Analogy: If the marks of your 3rd essay is the same as the average marks of your first two essays, then your overall average Promo mark will remain the same.
- Hence MC cuts AC at the minimum. The same applies for AVC too.

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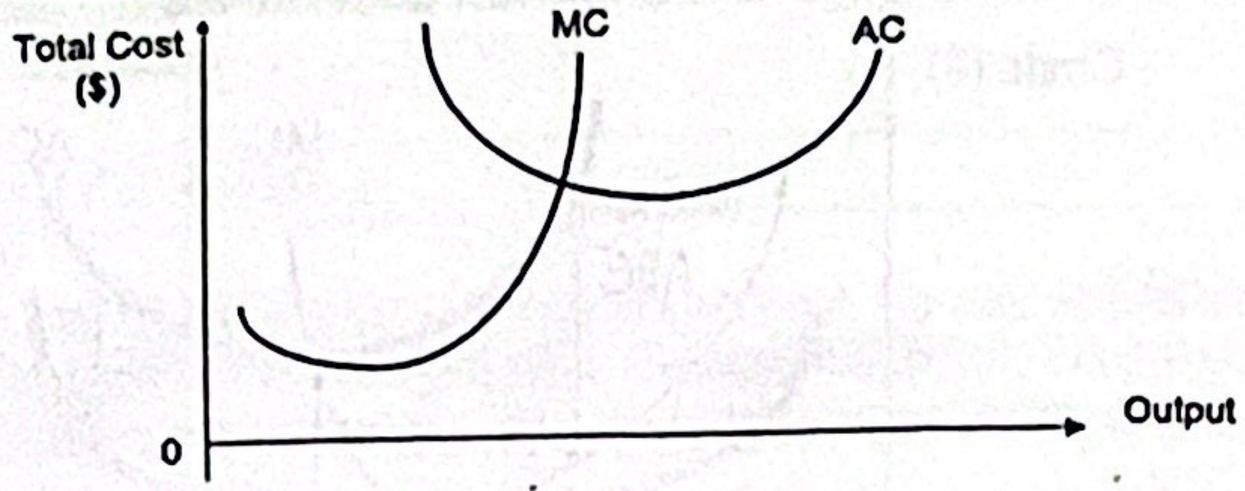
1. Spot the errors and make corrections.



2. Why do you think the vertical distance between AC and AVC becomes smaller as output increases?

2.1.3 Long-Run Cost of Production

2.1.3.1 Meaning of Long-Run

The long-run is a production period which all factors of production are variable.

- The expansion of output in the short run is only possible by increasing the amount of variable factors. For example, the manager of a McDonald's restaurant attempts to serve a larger customer base by hiring more workers.
- In another instance, in a strawberry farm, to produce more strawberries, a farmer needs to employ more labour to work in the plantation.
- However, one cannot solve the problem by simply employing more labour as this is only a temporary solution. Soon the long queue resumes and the McDonald's restaurant is fully packed again.
- Likewise, the strawberry farm may not be able to meet the orders from clients. If fixed factors such as size of the restaurant or farm is unchanged, this will lead to a faster increase in cost. This is because they will be fighting for the limited amount of space and machines and as a result of it, higher cost will be incurred.
- As an entrepreneur, one would start to plan to have a bigger space and more heavy-duty machines. This planning is done for the benefit of a firm in the long term. By planning to change the fixed factor(s), the size of land and amount of capital, one is moving from a short run to a long run situation.
- Thus, for a profit maximising firm, since the long run is a planning phase, the firm will make the decision to produce at the lowest possible average cost for any level of output.

Another way to understand the long run is to consider it as the time period for which firms <u>PLAN</u> ahead to build the most appropriate scale of plant to produce the future anticipated level of output.

<u>Note:</u> Once the plant has been built, completed and becomes operational, the firm is back in the short run.

For long-run production cost analysis, it is important to say that when firms grow in size, it is not merely a layman understanding of expansion but an increase in **SCALE OF PRODUCTION**.

Scale of Production: When all factors are increased in the same proportions we say that there is an increase in the scale of production. E.g. Both capital and labour increase by 10%.

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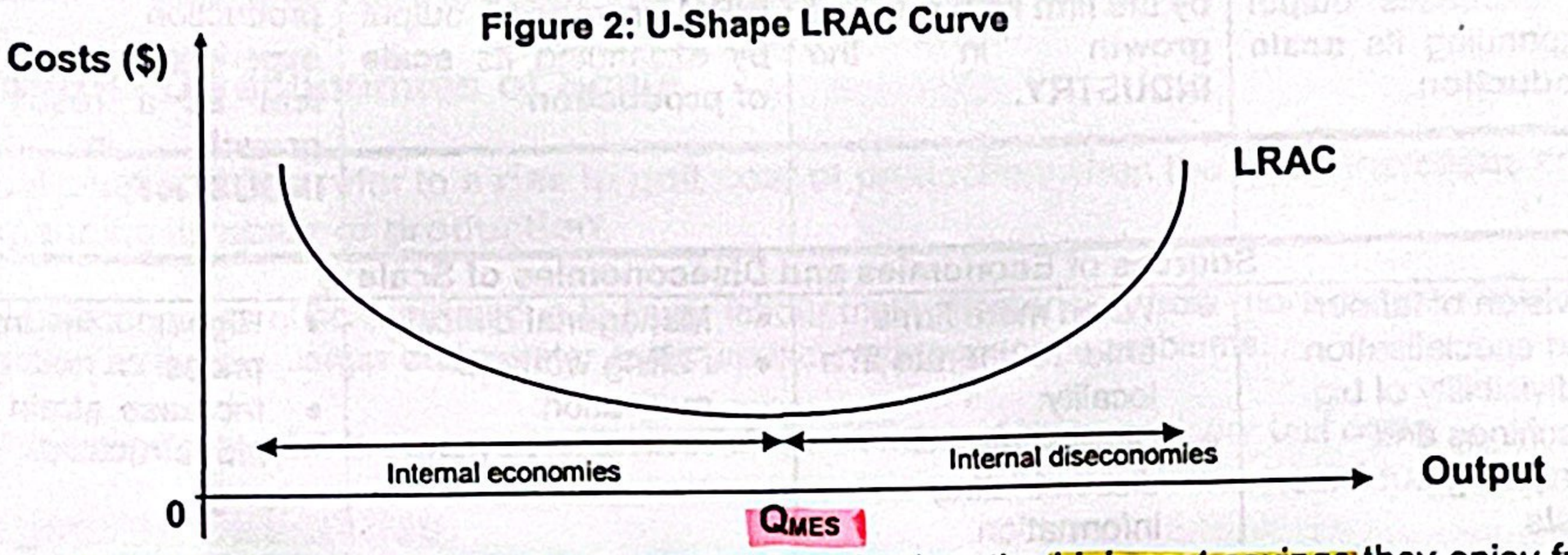
2.1.3.2 Long-Run Average Cost Curve (LRAC)

The Long Run Average Cost curve (LRAC) shows all the lowest possible unit cost for the production of each output level.

The Long Run Average Cost (LRAC) curve generally takes the form of a U-shape.

Figure 2: U-Shape LRAC Curve



- As the firm gets bigger by increasing its scale of production, the high cost savings they enjoy from the internal economies of scale resulted in fall in unit cost and gives rise to the falling portion of LRAC.
- However, when the firm gets too huge, expands beyond the **Minimum Efficient Scale (MES) output, Q_{MES}**, as shown in Figure 3, the unit cost will rise as the firm will experience managerial and administrative diseconomies of scale and this leads to a large rise in unit cost and thus offsets the cost savings enjoyed from the various internal economies of scale earlier. This explains the rising portion of LRAC.
- As a result, firm should not expand beyond MES, or should try to downsize if it is too big and find ways to minimise diseconomies of scale.
- The LRAC is also considered as a planning curve for the firm.

Minimum Efficient Scale (MES) occurs at the output level where LRAC first stops falling. It corresponds to the lowest point on the LRAC.

Frequently Asked Question: Why is LRAC considered a planning curve?

Before a business is set up, the entrepreneur will need to think about how the business will be run in the long run. All factors of production are variable as the firm is not in operation yet. Hence the entrepreneur can decide how to allocate these factors of production depending on the output level – costs are variable. However, once the business is up and running, it means the plans are being put to action so the business is no longer in the planning phase. In fact, with the business in operation, factors of production cannot be easily changed with output and so fixed costs are incurred. This occurs in the short run.

3 **Identify whether the following reflect short-run or long run adjustment by firms.**

(a) Wendy's plans to build a new restaurant.	SR / (LR)
(b) Toyota adds a third shift of workers.	(SR) / LR
(c) Acme Steel Corporation hires 200 more production workers.	(SR) / LR
(d) A farmer increases the amount of fertilizer used on his corn crop.	(SR) / LR

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2.1.3.3 Economies of Scale and Diseconomies of Scale

Economies of scale		Diseconomies of scale	
Internal	**External**	**Internal**	**External**
Internal economies refer to a **fall in unit cost** (or average cost) of production when the **FIRM** increases output by expanding its **scale of production.**	External economies refer to the **fall in unit cost** (or average cost) of production experienced by the firm as a result of **growth** in the **INDUSTRY.**	Internal diseconomies refer to a **rise in unit cost** (or average cost) of production when the **FIRM** increases output by expanding its **scale of production.**	External diseconomies refer to the **rise in unit cost** (or average cost) of production experienced by the firm as a result of **growth** in the **INDUSTRY.**
Sources of Economies and Diseconomies of Scale			
• Division of labour and specialisation. • Indivisibility of big machines and spreading out fixed costs. • Bulk purchases.	• When more firms enter to operate at a locality. • Sharing and disseminating information.	• Managerial difficulty. • Falling workers' motivation.	• Higher input prices. • Increase strain on infrastructure.

2.1.3.3.1 Internal Economies of Scale and Internal Diseconomies of Scale

(a) Internal Economies of Scale

Internal economies refer to a **fall in unit cost** of production when the **FIRM** increases output by expanding its **scale of production.**

Internal economies of scale typically arise from the (1) **division of labour and specialisation,** (2) **spreading out fixed costs** and (3) **bulk purchases,** when the scale of production of a firm expands. The following are some specific examples of iEOS.

1. **Division of Labour and Specialisation**
   - As the scale of production expands, there is greater scope for specialization of labour & machines.
   - Specialization allows the production processes to be broken down into simpler and repetitive processes. With specialisation and division of labour, productivity improves and more goods can be produced using the same amount of resources. Moreover, less training is needed (more time can be spent on production) and also workers can be more productive in their particular task and there is less time loss in workers switching from one operation to another and thus **lowering unit costs.**
   - For example, some workers on the assembly lines specialise in the installations of bonnet while others in engine and wheels, allowing workers to concentrate in simple and repetitive processes which increases efficiency.

2. **Spreading out fixed cost eg R&D costs**
   - A large firm will have the resources to support research leading to the development of better products & cheaper techniques of production and with the large scale of production, it is able to spread the huge R&D costs over a large output, thereby **lowering unit costs.** For example, a supermarket chain such as NTUC Fairprice and Sheng Siong can invest in technology that improves stock control which is not viable or cost-efficient for a small grocery shop to buy this technology.

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3. **Bulk Purchase**
   - Large firms have bargaining advantage and are given preferential treatment by their suppliers because they buy in bulk.
   - Bulk buying of raw materials enables a large firm to obtain the goods at lower costs & better terms, thereby **lowering unit costs.**
   - A good example would be the ability of the electricity generators to negotiate lower cost when negotiating coal and gas supply contracts. The major food retailers eg. NTUC also has buying power when purchasing supplies from farmers and other suppliers. Similarly, the giant Internet retailer Amazon is also able to obtain lower prices for the books which it purchases from publishers.

(b) Internal Diseconomies of Scale

Internal diseconomies refer to a **rise in unit cost** of production when the **FIRM** increases output by expanding its **scale of production.**

Internal diseconomies of scale arise due to lower labour motivation arising from more complexity in the organisation as it grows larger and greater costs are incurred to manage problems.

Note: *It is important to link the analysis of internal diseconomies of scale to higher unit costs.*

Management Difficulties

Problems in Coordination & Communication

- As firms expand in the scale of production, the number of departments & sub-departments increases and the task of coordinating their activities become increasingly difficult. This leads to inefficiency & **higher unit cost of production**.
- Effective communication is a 2-way process, requiring horizontal & vertical transfer of information. The larger the firm, the greater the likelihood of communication breakdown & misinterpretation of information. All these can cause delays in production which can be costly to the firm.

Low Morale

A large firm employing a large number of workers will face difficulties ensuring everyone is happy & equally well treated. It is common to see people at the lower end of the hierarchy feeling dissatisfied or even hostile leading to high absenteeism & low productivity leading to **higher unit costs.**

2.1.3.3.2 External Economies of Scale and External Diseconomies of Scale

External economies refer to the **fall in unit cost** of production experienced by the firm as a result of **growth in the INDUSTRY.**

(a) External Economies of Scale

When more firms enter to operate at a locality

When many firms carrying out similar activities are located very close to one another, i.e. concentrated together. For example, many chemical firms are located in Jurong Island in Singapore.

- **Trained workforce:** As the industry expands, the demand for labour with the necessary skills increases. Training schools may be set up, which means that a pool of skilled workers is readily available and thus reduce total and hence unit costs that are originally incurred by firms to train their employees.

- **Better Infrastructure:** Due to the concentration of industry in the region, facilities such as better transport, banking & telecommunication systems may be set up to serve the needs of the industry, thereby lowering operating costs.

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Sharing and disseminating information
These economies take the form of common information services provided by trade associations or central research centres through journals and newsletters. The firms can obtain information cheaply.

(a) External Diseconomies of Scale

External diseconomies refer to the **rise in unit cost** of production experienced by the firm as a result of **growth** in the **INDUSTRY**.

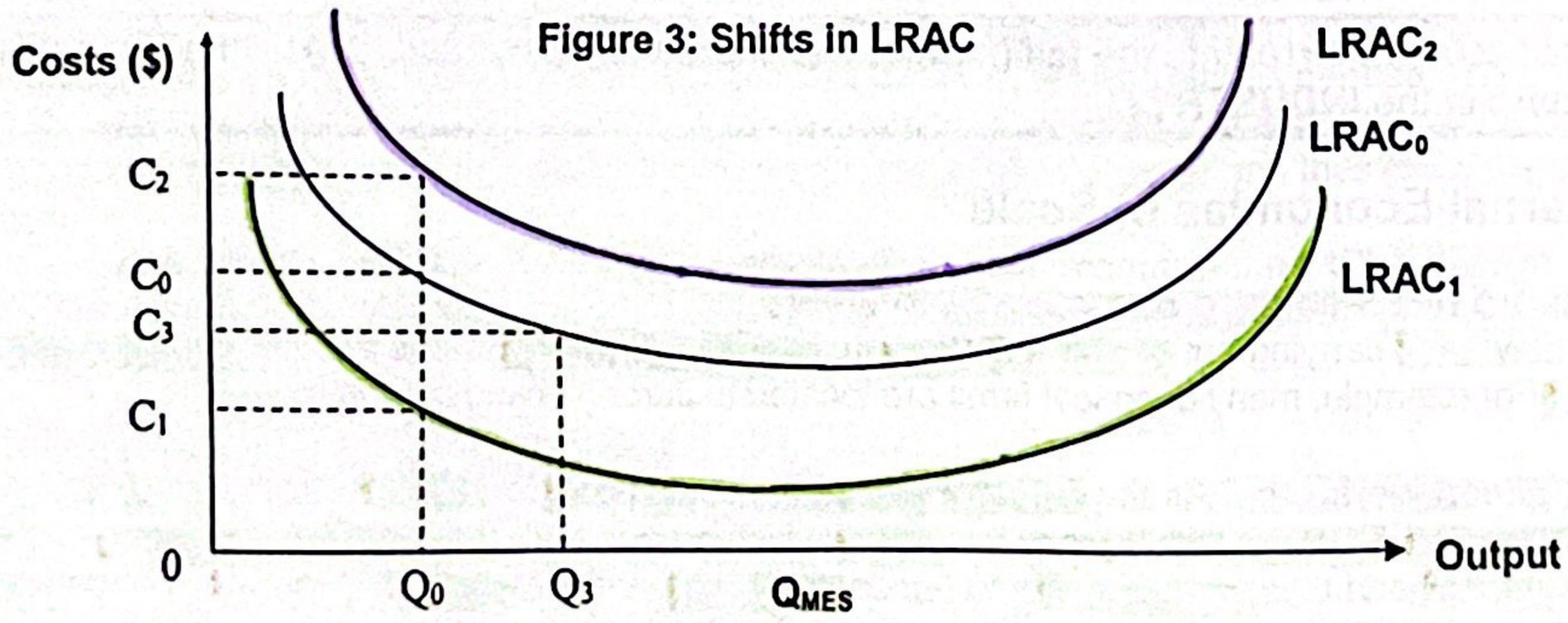
Higher Input Prices
As the industry expands, the demand for factors of production rises resulting in higher input prices (e.g. price of raw materials, wages, rent). This is especially so if supply of factors of production are price-inelastic.

Increased Strain on Infrastructure
With the concentration and expansion of production, the infrastructure will be stretched to its limit giving rise to congestion, overcrowding, pollution and other problems, thereby leading to higher unit costs.

2.1.3.3.3 Movement vs Shifts in Long Run Average Cost Curve (LRAC)

- With reference to Figure 4 below, we can see that as the firm increases its scale of production, a movement along $LRAC_0$ from Q_0 to Q_3, its unit cost decreases from C_0 to C_3 when it experiences internal economies of scale. And if it produces beyond MES, the unit cost will rise.
- On the other hand, the shifts in LRAC can be explained by external economies of scale and diseconomies of scale.
- When external economies are experienced due to the growth in the industry, the whole LRAC will shift down from $LRAC_0$ to $LRAC_1$. The firm enjoys a lower unit cost at every level of output. For example, even though the firm's output remains unchanged at $0Q_0$, the unit cost decreases from C_0 to C_1.
- When external diseconomies are experienced, the whole LRAC will shift up as from $LRAC_0$ to $LRAC_2$. The firm experiences a higher unit cost at every level of output. For example, even though the firm's output remains unchanged at Q_0, the unit cost increases from C_0 to C_2.

Figure 3: Shifts in LRAC



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2.2 REVENUE OF FIRMS

Concept	Definition	Formula
Total Revenue (TR)	Total Revenue is the firm's total earnings per period of time from the sale of its output.	TR = Unit Price (P) x Quantity Sold (Q)
Average Revenue (AR)	Average Revenue is the amount the firm earns per unit sold. It is simply the price of the firm's product at each level of output. This being the case, the AR curve is also the firm's demand curve.	$AR = \frac{TR}{Q} = \frac{(P \times Q)}{Q} = P$
Marginal Revenue (MR)	Marginal Revenue is the additional revenue obtained when one more unit of output is sold (per unit time).	$MR = \Delta TR/\Delta Q$ or $MR_n = TR_n - TR_{n-1}$

How these three revenue concepts (TR, AR and MR) vary with output will depend on the market conditions under which a firm operates. A firm which is too small to be able to affect market price, will have revenue curves that look different from a firm which is able to choose the price it charges.

2.2.1 Revenue Curves for a Price-setter Firm

If a firm has market power and faces a downward-sloping demand curve for its product, it is called a **PRICE SETTER** because it would have some power to choose the price at which it sells.

A Numerical Example

Table 1: AR, MR and TR for a Price Setter

Quantity (units) Q	P = AR ($)	TR ($) = P*Q	MR_n ($) = $TR_n - TR_{n-1}$
0	-	0	
1	7	7	7
2	6	12	5
3	5	15	3
4	4	16	1
5	3	15	-1
6	2	12	-3

- From Table 1, the price per unit various inversely with quantity sold.
- Therefore, the firm faces a downward-sloping AR curve. This is also the firm's demand curve.
- As AR falls, MR will fall too (since price of an additional unit has to be lowered in order to be sold).
- The firm's TR increases at a decreasing rate till MR is zero. At this point TR is maximised.
- Further units sold would lead to TR falling (Table 1 column 4; Figure 4).
- At Q_{MAX} where MR = 0, it is exactly below the midpoint of AR.

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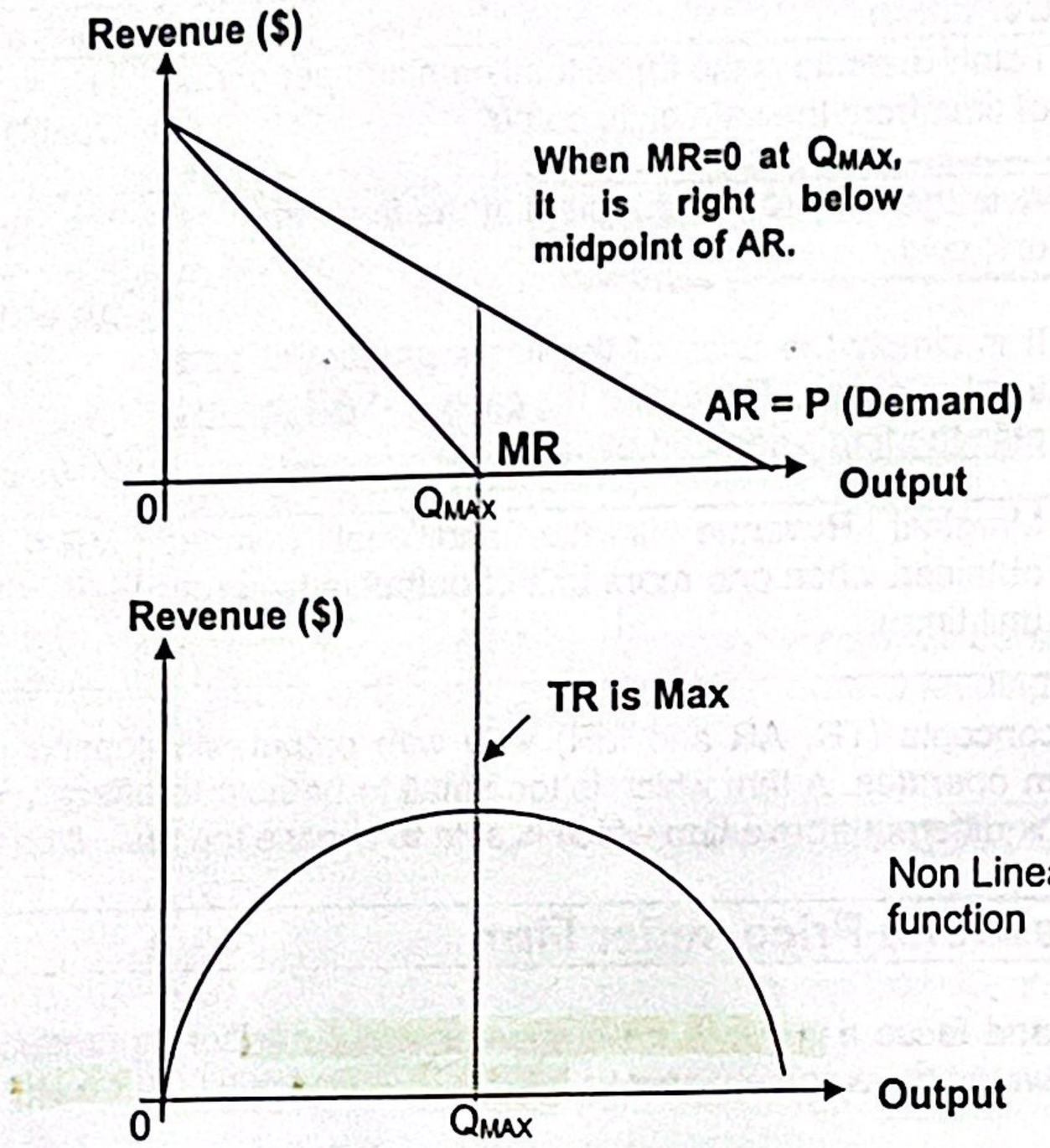
Figure 4: Revenue Curves for a price setter



2.3 TYPES OF ECONOMIC PROFIT

There are three types of profit: **Normal profit, Supernormal profit and Subnormal profit.**

Normal profit is the minimum amount of profit, which a firm must acquire in order to induce the firm to remain in operation. This is where all costs including opportunity costs are just covered by total revenue and where economic profit is zero, that is TR=TC. Normal profit is the level necessary to retain existing firms in the industry but is insufficient to attract new firms to enter the industry.

Supernormal profit is the level of profit above normal profit, which will attract new firms into the industry. This occurs when economic profit is positive, that is TR>TC. This means that the entrepreneur's earnings are in excess of what he could earn in the next best alternative.

Subnormal profit is the level of profit below normal profit, which will force the least efficient firms or the marginal firms to leave the industry. This occurs when economic profit is negative, that is TC>TR. This means that the entrepreneur is earning less than what he could earn in the next best alternative.

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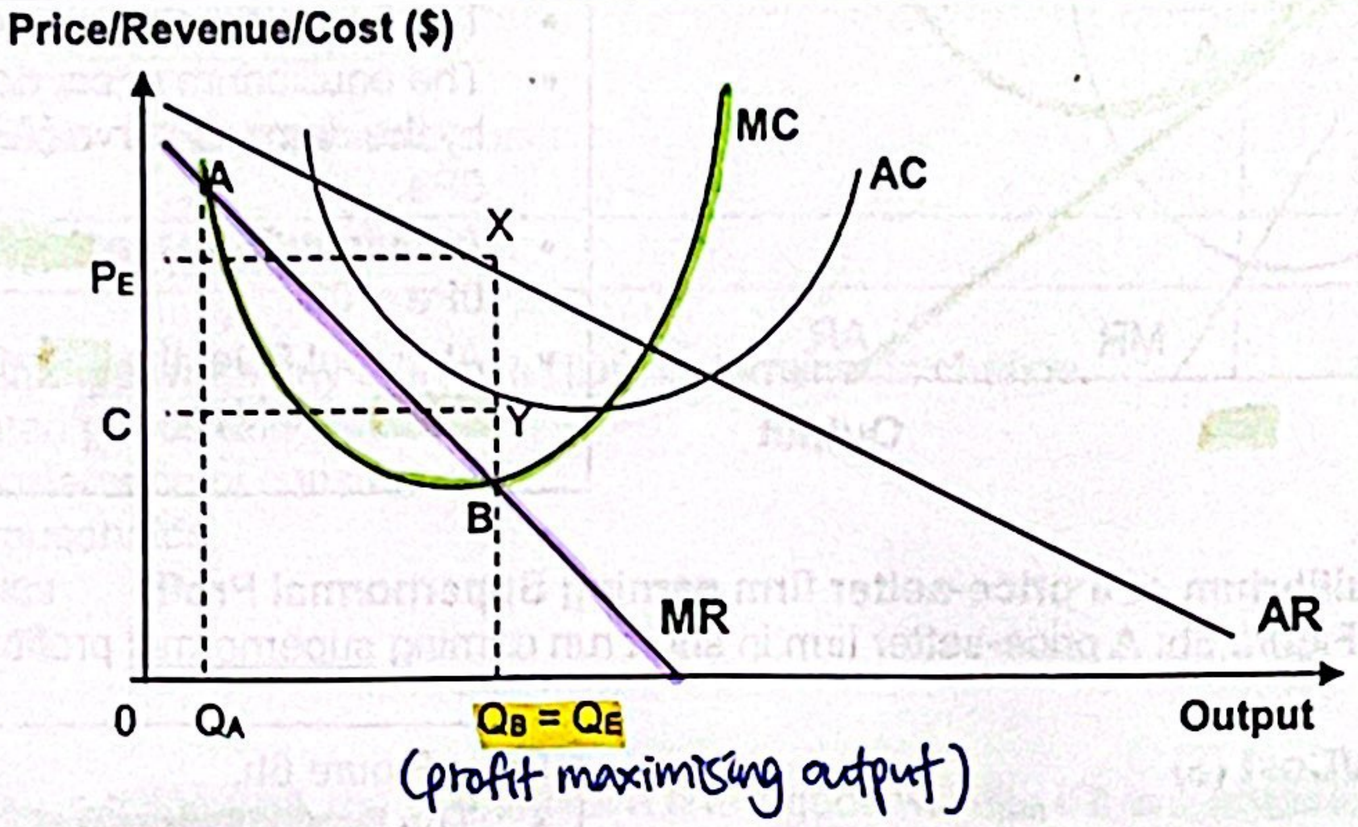
2.3.1 Profit Maximisation based on the Marginalist Principle

Recall how a profit maximising equilibrium is determined in Chapter 4 Part 1

Profit maximisation is achieved at the level of output where the addition to the total revenue by the sale of the last unit is equal to the addition to total cost of producing it. That is Marginal Revenue = Marginal Cost, i.e. MR = MC and where MC is rising.

Figure 5: Profit Maximisation using the Marginal Approach for a Price-Setter



Referring Figure 5, MR = MC at both points A and B. However, profits will not be maximised at point A because at output levels higher than Q_A, the additional cost involved in increasing the output is less than the additional revenue (MC < MR) such that each additional unit produced will bring about higher profits for the firm. The firm will continue increasing its production level as long as its marginal revenue is greater than its marginal cost. Thus, the firm will expand production until point B, where MR = MC where MC is rising.

At output levels beyond Q_B, the production of an additional unit of output will add more to cost than to revenue (MC > MR). This means that expansion of production beyond Q_B will deplete the firm's profits.

Thus, profits are maximised when MR = MC, and MC cuts MR from below i.e. MC is rising.

The equilibrium price and output will be P_E and Q_E respectively.

HIGHLY RECOMMENDED:

Scan the QR Code below to watch the video on how to draw the diagrams for different profit levels of a price-setter (4min 45s).

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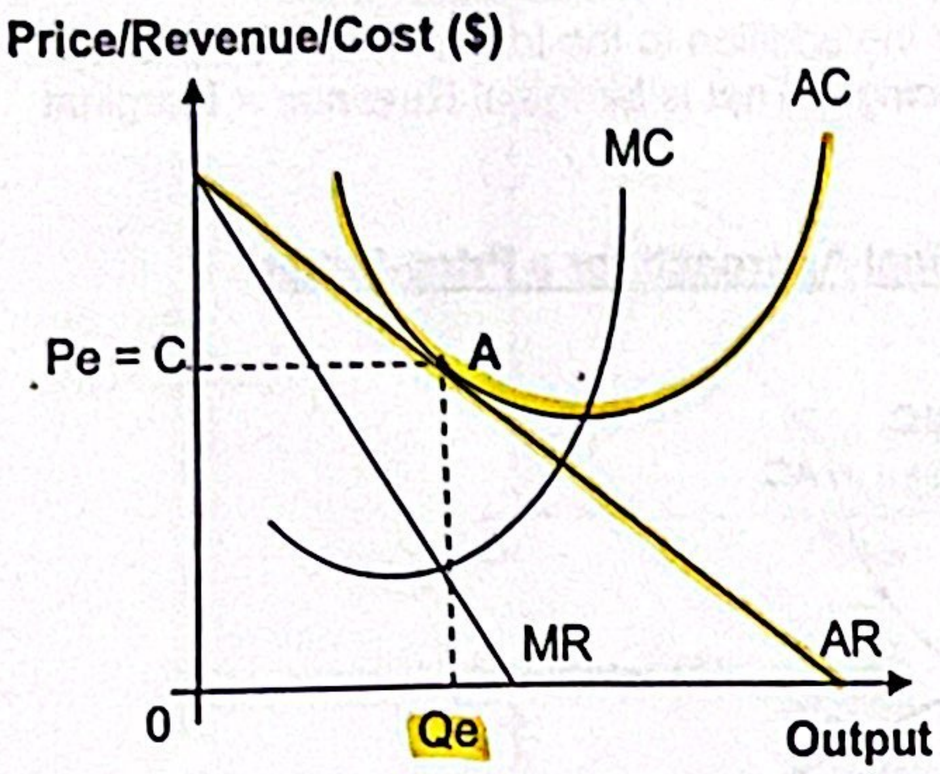
(a) Short run equilibrium of a price setter firm earning Normal profit

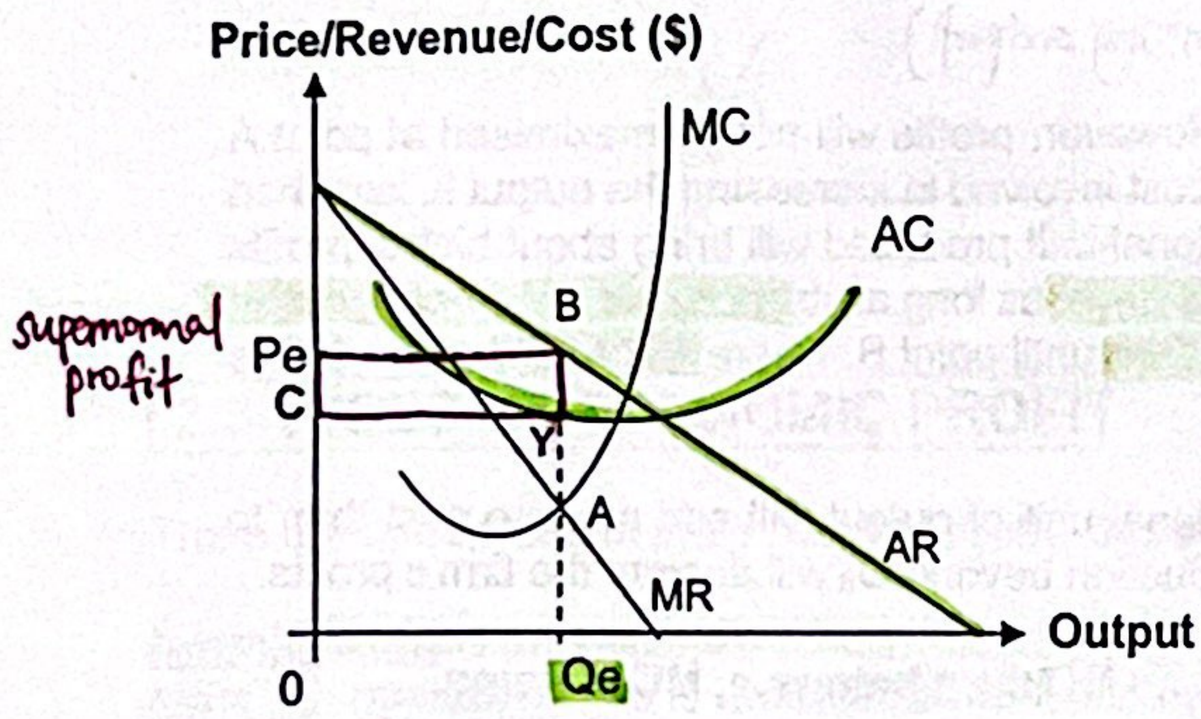
Figure 6a: A price setter firm in short run equilibrium earning Normal Profit



From Figure 6a,
- The profit maximising output will be at 0Qe where MR= MC and MC is rising.
- The firm is earning normal profit.
- The equilibrium price, determined by the demand curve (AR), will be 0Pe.
- At output 0Qe, the AR = AC, i.e. 0Pe = 0C.
- At output 0Qe, the TR =0PeAQe = TC = 0CAQe.

(b) Short-run equilibrium of a price-setter firm earning Supernormal Profit

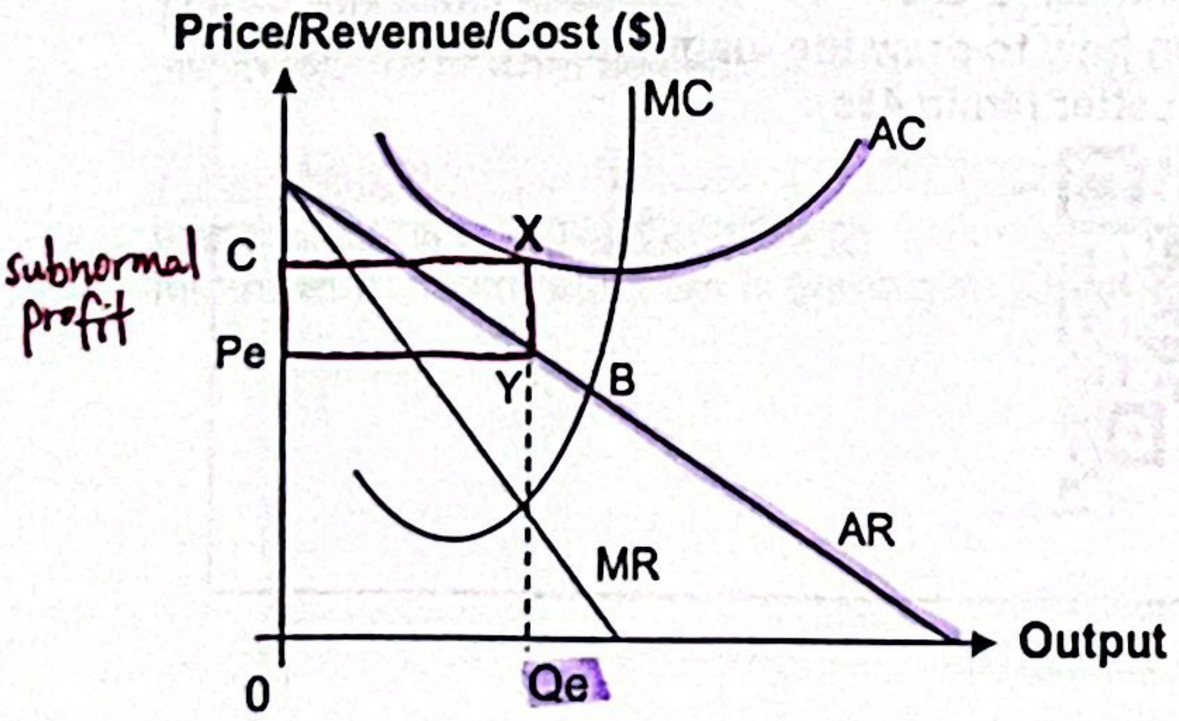
Figure 6b: A price-setter firm in short run earning supernormal profit



From Figure 6b,
- The profit maximising output will be at 0Qe where MR cuts MC at point A and MC is rising.
- The equilibrium price at 0Qe, determined by the demand curve (AR), will be 0Pe.
- At output 0Qe, the AR > AC, i.e. 0Pe > 0C.
- At output 0Qe, the TR (0PeBQe) > TC ($_0$CYQ$_e$) and the firm is making an economic profit of PeCYB.

(c) Short-run equilibrium of a price-setter firm earning Subnormal Profit

Figure 6c: A price-setter firm in short run earning subnormal profit



From Figure 6c,
- The profit maximising output will be at 0Qe where MR cuts MC at point B and MC is rising.
- The equilibrium price at 0Qe, determined by the demand curve (AR), will be 0Pe.
- At output 0Qe, the AR < AC, i.e. 0Pe < 0C.
  At output 0Qe, the TR (0PeYQ) < TC ($_0$CXQe) and the firm is making a subnormal profit or an economic loss of PeCXY

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2.4 FACTORS THAT CAUSE PROFITS, PRICE & OUTPUT TO CHANGE

From the above illustration, we can see that firms maximise profits at MC=MR, where MC is rising. They can be earning supernormal, normal or subnormal profits, depending on the extent to which the total revenue they earn can cover total cost.

In this section, we are interested to find out what will cause a firm's profit level to change.
Generally, there are two key factors:

1. Changes in demand
2. Changes in costs – fixed or variable costs

2.4.1 Changes in Demand

Recall: Demand will change when any of the 'P-TIDE' determinants change.

P – Price of related goods and services
T – Taste and preference of consumers
I – Income of households
D – Demographics
E – Expectations

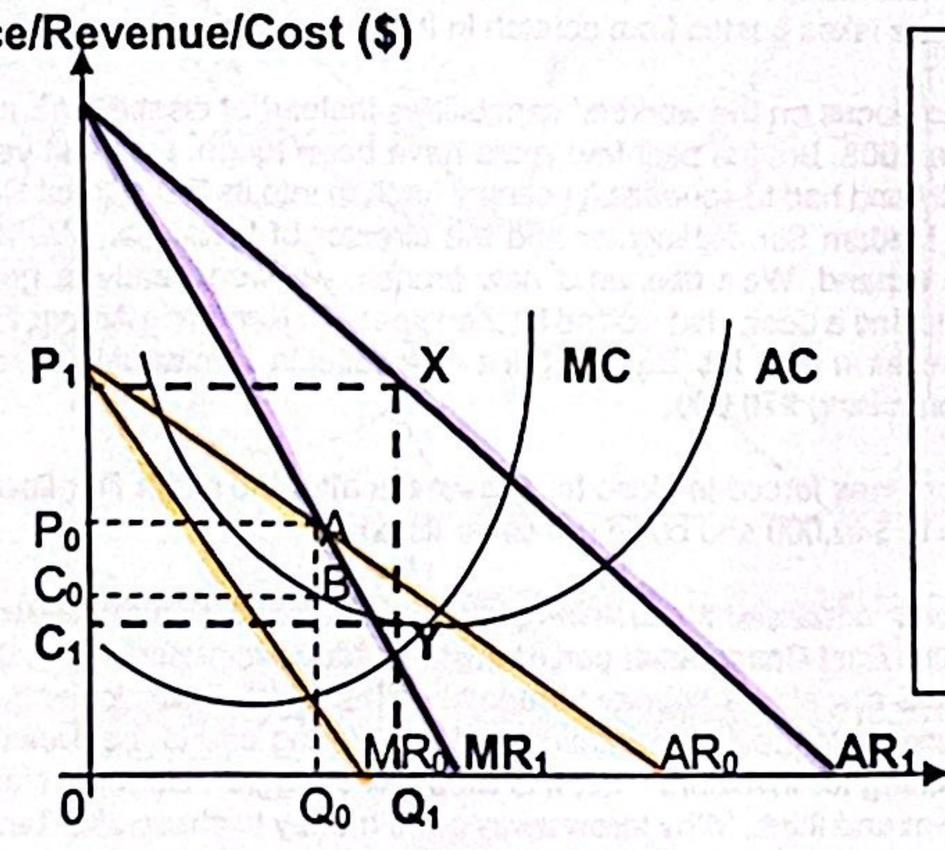
Examples:

- When the economy is doing well, the demand of a firm's good will rise if it is a normal good.
- Product development that leads to better quality and promotion such as advertisement that leads to better awareness of the goods, will alter the taste and preference of consumers and in turn increase demand.
- On the other hand, fierce competition from competitors that lead consumers to turn to more attractive substitutes or the anticipation of retrenchment and pay-cuts due to a recession, will cause demand to fall.

Situation 1: When Demand Increases

When demand increases, equilibrium output and price will increase, and assuming no change in costs, profits will increase.

Figure 7: An increase in supernormal profits when demand increases



HIGHLY RECOMMENDED
Scan to watch a video on shifting AR (4min 12s).

From Figure 7, a rise in demand will cause AR_0 and MR_0 to increase to AR_1 and MR_1 respectively. This will result in an increase in output from Q_0 to Q_1, an increase in price from P_0 to P_1 and a fall in unit cost from C_0 to C_1. Profit increases from P_0C_0BA to P_1C_1YX.

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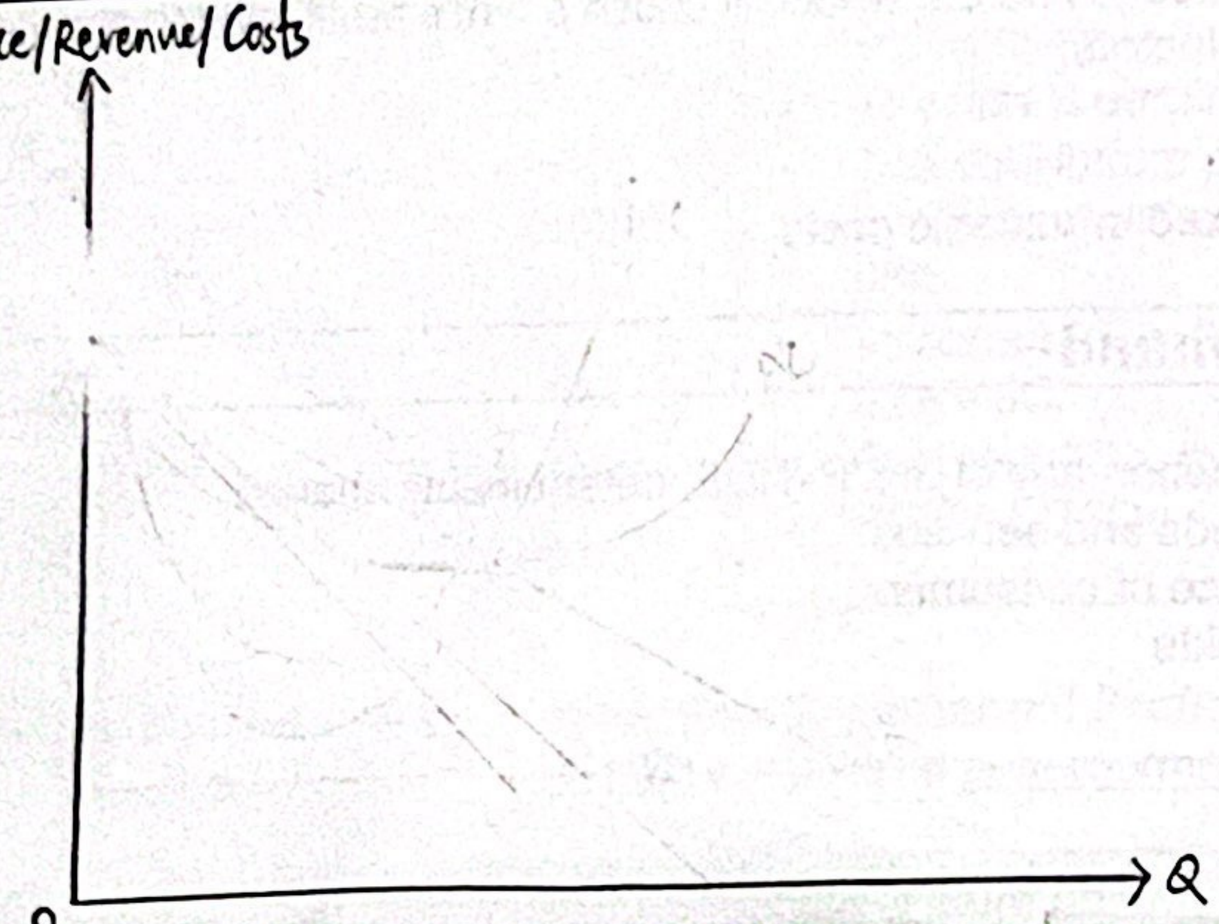
Situation 2: When Demand Decreases

When demand decreases, equilibrium price and output will fall, and assuming no change in costs, profits will shrink.

Explain and illustrate with a revenue-cost diagram how a price setting firm's supernormal profit shrinks but it still earns supernormal profits when demand falls.



Laksania's uphill struggle

THE STRAITS TIMES 23 Dec 2013

One of Singapore's first food and beverage social enterprises may have to shut its kitchens for good after facing a host of financial troubles recently.

Founder Sim Sin Sin has poured her life savings into Laksania. Now she fears that her staff - 60 per cent of whom have mental or physical disabilities - may soon be out of work. In March, she sold her family's landed property in Upper Thomson to keep the ailing business afloat, bringing the amount that has gone into keeping Laksania alive to over $2 million. The 52-year-old now lives in a rented house with her family. Madam Sim also stepped down as chief executive officer of cafe chain Secret Recipe earlier this year to focus on her social enterprise. Laksania started as a tiny kitchen in the Institute of Mental Health (IMH) in 2008, providing work therapy for outpatients keen to join the F&B industry upon recovery. Now it works with organisations such as the Movement for the Intellectually Disabled (Minds), hiring a wide spectrum of people with disabilities to help make laksa pastes from scratch in its central kitchen.

Madam Sim's mantra is to "focus on the workers' capabilities instead of disabilities", and Laksania has trained over 200 disabled employees since 2008. But the past few years have been tough. Late last year, it unexpectedly lost the tender for its kitchen space in IMH and had to squeeze its central kitchen into its East Coast Road cafe. "It was a big blow to us," recalled Ms Tay Su Yin, Madam Sim's daughter and the director of Laksania. "We lost our kitchen space at the point where we were about to expand. We'd opened a new branch, we were ready to grow, but problems started coming. "Laksania only managed to find a dedicated central kitchen space in Kampong Ampat this August but the rent was a steep increase from its old premises in IMH. Ms Tay thought a new outlet in Jem would help draw in crowds of shoppers. In the first month, it raked in a promising $70,000.

But in September, the store was forced to close for two weeks after the mall's first-floor ceiling collapsed. Since then, its monthly sales have fallen to $40,000 and could not cover its costs.

"Escalating rental and labour costs and the loss in revenue make this the hardest year yet," said Ms Tay. In yet another blow, it had to shut down its East Coast outlet earlier this month due to poor sales. If the situation does not improve, Ms Tay predicts the end could come in a couple of months. She is, however, looking into measures to help the social enterprise turn itself around by improving marketing and advertising efforts. Laksania has offered Groupon promotions this month and is now looking for investors - but it is an uphill struggle. "Our books are in such huge reds that anyone looking at them would frown and think, 'Why throw away good money to chase after bad money?'" lamented Ms Tay. "We need investors who believe in our cause and share our vision."

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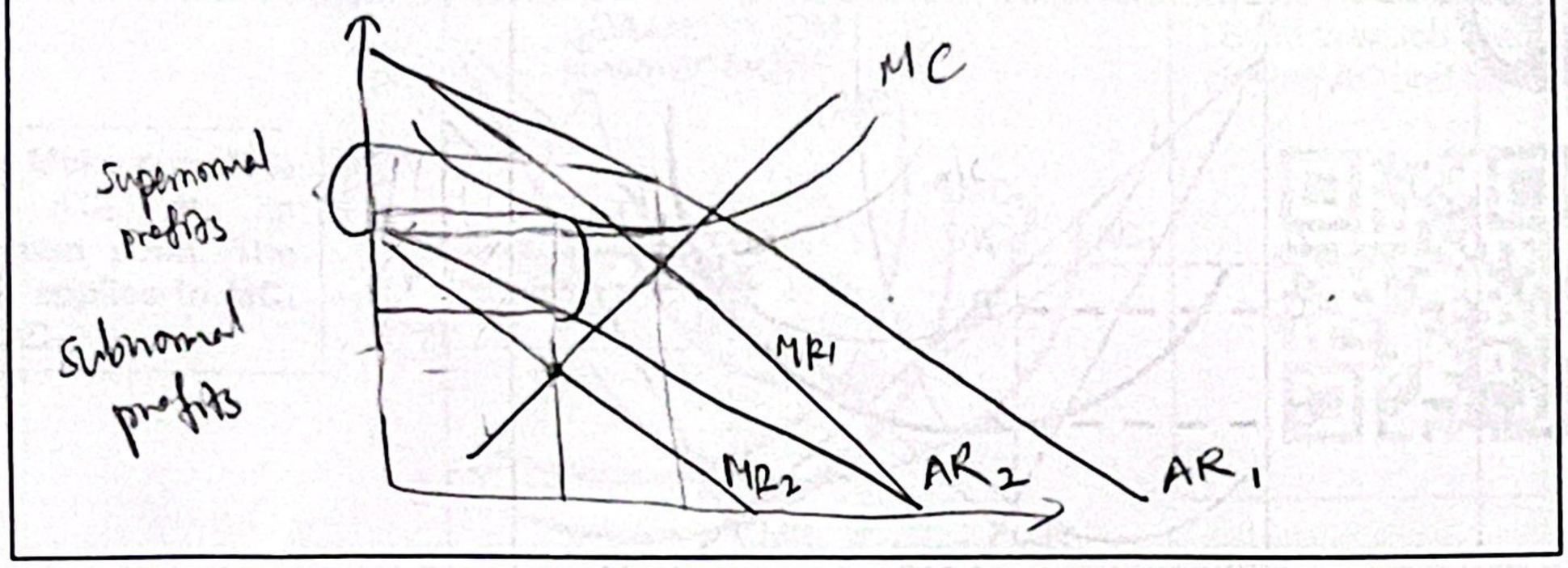
Laksania Jem Outlet was forced to close for 2 weeks in September after its ceiling collapsed. Explain and illustrate with a revenue-cost diagram how this incident has affected Laksania's profits.
Hint: Supernormal profit shrinks to a subnormal profit when demand falls.



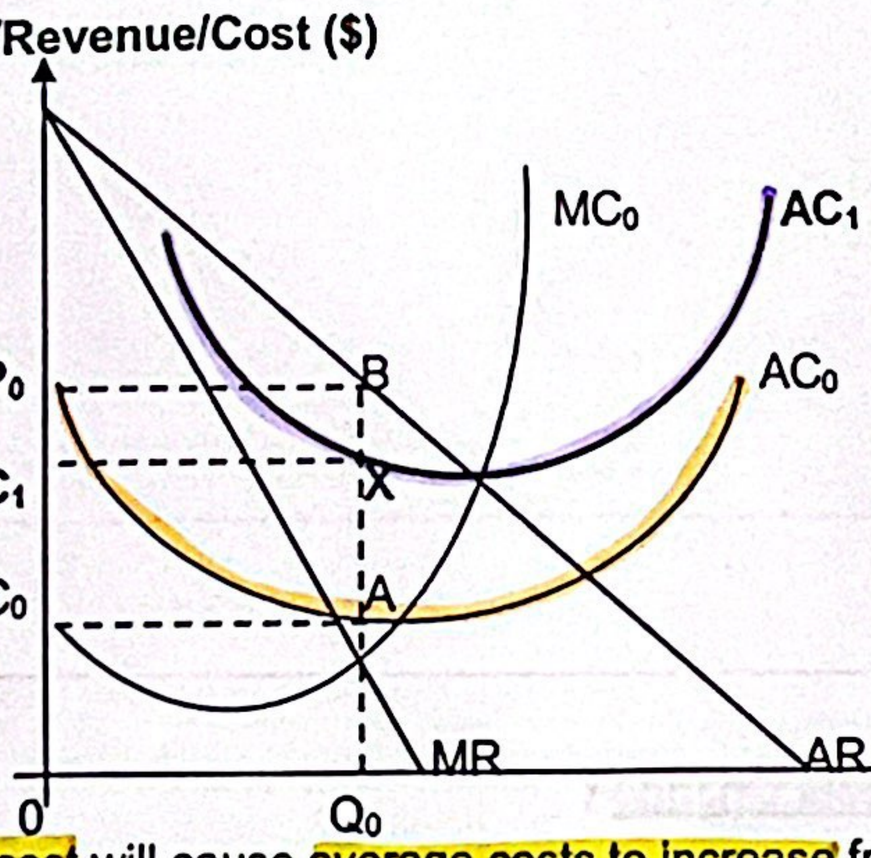
2.4.2 Changes in Costs

Situation 1: When Fixed Costs Change

Assuming there is no change in demand, when fixed costs such as rental and interest payment for bank loans of a firm change, the profits will change but not the equilibrium price and output.

Reason: When fixed costs change, the marginal cost (MC) does not change and together with no change in demand (AR and MR do not change), MC cuts at MR at the initial equilibrium so the price and output will not change. But profits will shrink if there is an increase in fixed costs. Conversely, profits will increase if there is a decrease in fixed costs.

Figure 8(a): A fall in supernormal profits when fixed cost increases



Note: *Make sure MC_0 cuts AC_0 and AC_1 at their minimum points.*

HIGHLY RECOMMENDED
Scan to watch a video on shifting AC (3min 30s).

From Figure 8(a), a rise in fixed cost will cause average costs to increase from AC_0 to AC_1. MC and MR do not change when only fixed costs change, MC cuts MR at the same point and equilibrium output and price remain the same at P_0 and Q_0 respectively. But profits have shrunk from P_0C_0AB to P_0C_1XB.

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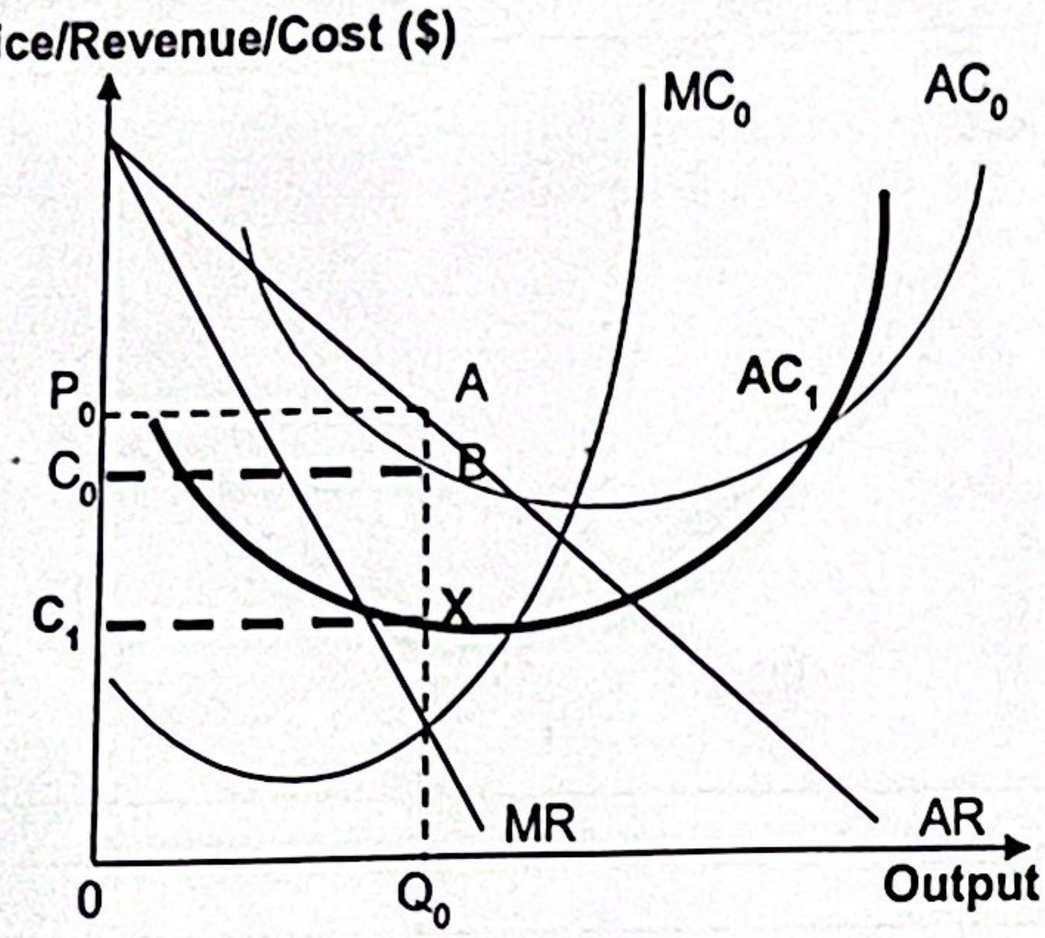
Spot an error in the following diagram when fixed cost falls and explain why it is an error.



7

Laksania's uphill struggle (continuation):
Escalating costs such as rental and wages have also put a toll on Laksania.

Explain and illustrate with a revenue-cost diagram the impact of a rising rental on Laksania's profits (assuming earning subnormal profits).

Situation 2: When Variable Costs Change

Assuming there is no change in demand, when variable costs such as wages and utility bills change, the firm's profits, equilibrium price and output will change. Examples, variable costs will fall with productivity and rise with increase in cost of raw materials.

Reason: When variable costs change, the marginal cost will be affected since it measures the change in total cost when additional unit(s) of variable factor(s) is/are used to produce an additional unit of output. When marginal cost changes, it means MC will shift and will result in a change in equilibrium price, output, and thus profits.

(a) When Variable Costs Decrease

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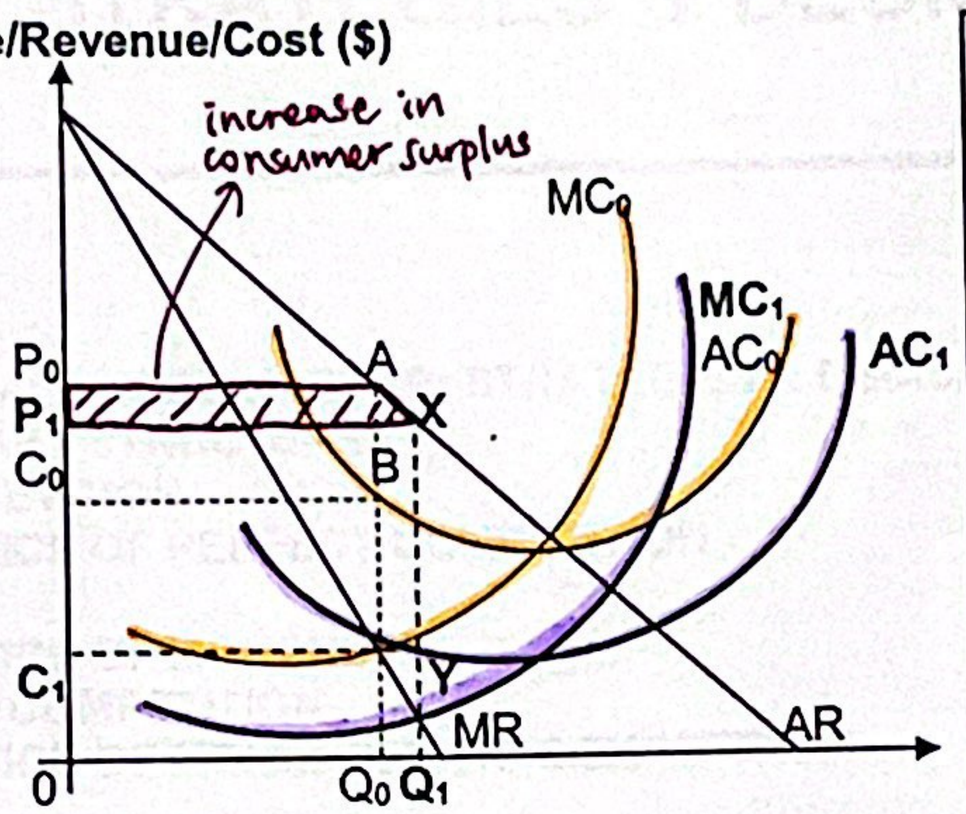
Figure 8(b): A rise in supernormal profit when variable cost decreases



Note: Make sure MC_0 cuts AC_0 at its minimum point. The same applies to MC_1 and AC_1

HIGHLY RECOMMENDED
Scan to watch a video on shifting AC and MC (3min).

From Figure 8(b), we can see that a **fall in variable costs** will **decrease average costs** from AC_0 to AC_1 and **marginal costs** from MC_0 to MC_1. These will result in an **increase in output** from Q_0 to Q_1, a **decrease in price** from P_0 to P_1 while **unit cost decreases** from C_0 to C_1. **Profit increases** from P_0C_0BA to P_1C_1YX. Due to the decrease in price and increase in output, **consumer surplus increases by P_0P_1XA.**

8 Explain and illustrate with a revenue-cost diagram the impact of rising wages on Laksania's profits (assuming still earning supernormal profits).

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PART 3: STRATEGIES & DECISIONS

PART 3 OUTLINE

3.0 INTRODUCTION – FIRM BEHAVIOUR: STRATEGIES & DECISIONS
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3.1.1.1 CHARACTERISTICS OF PERFECT COMPETITION
3.1.2 MONOPOLY
3.1.2.1 CHARACTERISTICS OF MONOPOLY
3.1.3 MONOPOLISTIC COMPETITION
3.1.3.1 CHARACTERISTICS OF MONOPOLISTIC COMPETITION
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3.1.4.1 CHARACTERISTICS OF OLIGOPOLY
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3.3 OTHER INFLUENCES ON FIRM BEHAVIOUR
3.3.1 BEHAVIOURAL ECONOMICS
3.3.2 TECHNOLOGICAL DISRUPTION
3.3.3 CORPORATE SOCIAL RESPONSIBILITY AFFECTING FIRM BEHAVIOUR

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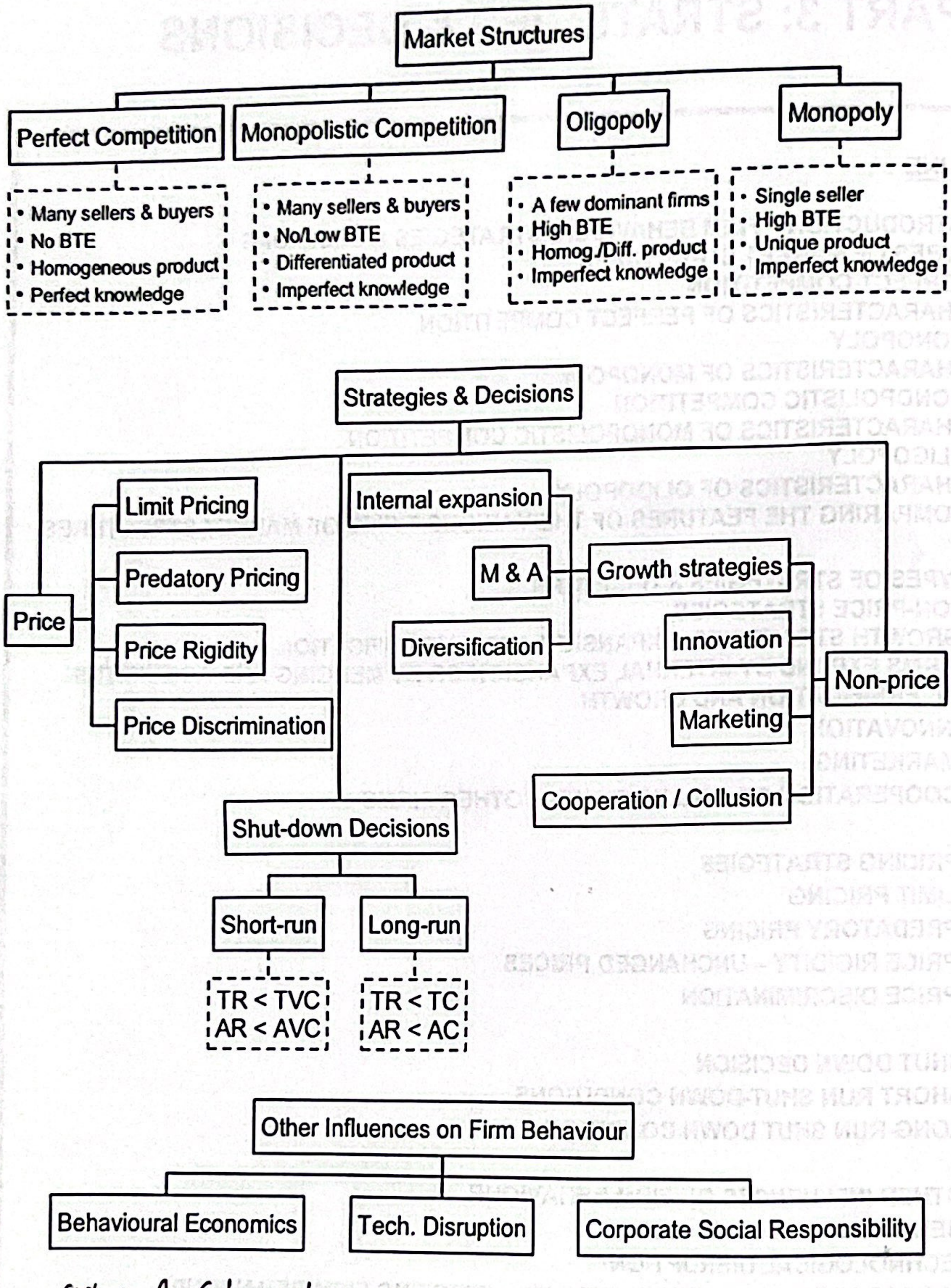
Concept Map



Criteria for Categorisation:

1. Number and size of firms
2. Firms' ease of entry into & exit from the market
3. Nature of product
4. Sellers' and buyers' knowledge of the market

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3.0 INTRODUCTION – FIRM BEHAVIOUR: STRATEGIES & DECISIONS

From Part 1 & 2, we understand that a firm's decision varies when demand and cost conditions, as well as level of competition changes. How a price-setter firm determines its price and output position at profit maximising equilibrium, has also been discussed in the previous chapter.

Going forward, we would be looking at the various competitive strategies that a firm would need to consider under different circumstances and what will be their decisions. We would also be making use of the knowledge in market structures such as characteristics like the number and size of firms in a market including the market concentration ratio, the concept of barriers to entry, access to inputs and markets and anti-competitive strategies of incumbent firms etc, to help us appreciate firm behaviour and decisions better.

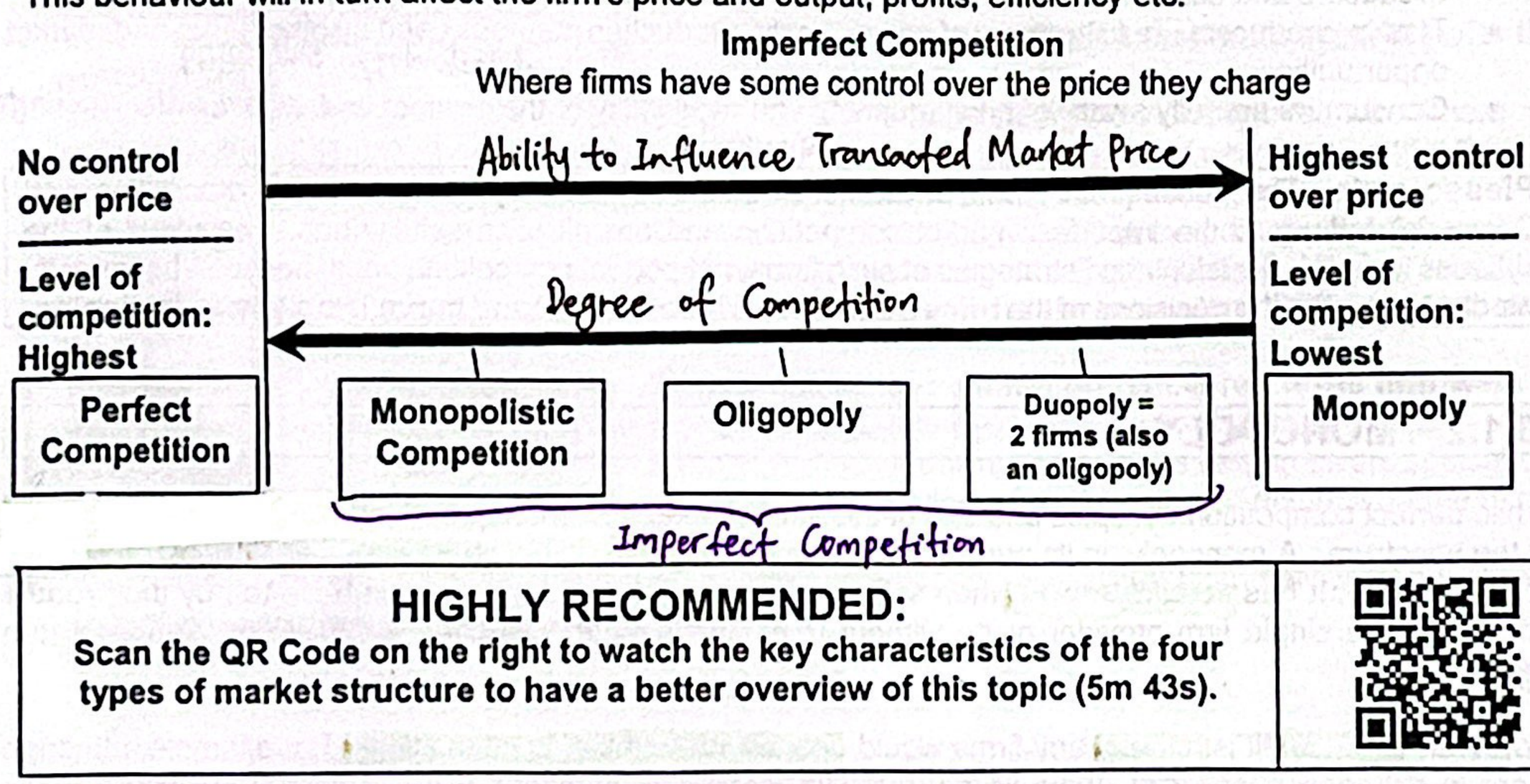
3.1 TYPES OF MARKET STRUCTURES

Market structure describes the important features of a market. Some considerations include:

- The number and the size of firms
- The nature of the product
- The freedom with which firms can enter the market (depending on the level of barriers to entry)
- The degree of interdependence among firms

Perfect competition and monopoly represent two extreme market structures in which the former has the highest level of free competition and the latter has no competition. Whereas monopolistic competition and oligopoly are two intermediate market structures or imperfect markets where there are restrictions to free competition.

Often, the market structure under which a firm operates will influence its **behaviour.** Firms under perfect competition will behave differently from monopolists, monopolistically competitive firms and oligopolists. This behaviour will in turn affect the firm's price and output, profits, efficiency etc.



HIGHLY RECOMMENDED:
Scan the QR Code on the right to watch the key characteristics of the four types of market structure to have a better overview of this topic (5m 43s).

3.1.1 PERFECT COMPETITION

Perfect competition is a theoretical extreme in the spectrum of competition and seldom seen in real life due to its restrictive assumptions. Few, if any industries in the real world meet the conditions for perfect competition. The stock market with the listing of tradeable shares and certain agricultural markets (fresh vegetables in the wet market) are perhaps the closest fit to perfect competition. The main purpose of studying this model is that it can act as a **benchmark** for real world competition as it provides us a standard to which

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other types of market structure can compare with and see how far they diverge from the ideal or optimal outcome.

3.1.1.1 CHARACTERISTICS OF PERFECT COMPETITION

The perfectly competitive market structure has the following characteristics.

(1) Many Small Firms (Sellers) and Many Consumers (Buyers)

- There are many firms and consumers in the market such that each firm produces insignificantly small portion of total industry supply and therefore will not affect price. (relative to whole market)
- The firm is thus a **price-taker and is faced by a horizontal demand curve.** (Individual firm or consumer)

(2) Complete Freedom of Entry and Exit

- In a perfect competitive industry, new firms are free to enter and leave an industry.
- There is freedom to entry usually due to the fact that there is low start-up cost, little need for (technological know-how) and no legal constraints. (technology level)
- Freedom of entry also means that existing firms are unable to stop new firms setting up in business. If existing firms are earning supernormal profits, new firms will be attracted into the industry, removing any supernormal profit that are enjoyed by the existing firms. (increased competition, lowered profits)
- Similarly, when firms are making losses, they will leave the industry.
- Thus firms in perfect competition earn **only normal profits in the long-run.**

(3) Homogeneous Product (and of same quality)

- The products sold by all the firms are **identical.** They are considered as **perfect substitutes** by the consumers. Thus, buyers would be indifferent to the sources of the product and there is no need for advertisements or branding by any one seller.

(4) Perfect Knowledge

- Producers and consumers have perfect knowledge of market. → Information can be obtained at zero cost.
- That is, producers are fully aware of prices, costs, production methods used by other firms (competitors) & technology and market opportunities.
- Consumers are fully aware of price, quantity (quality), and availability of the product. and all available substitutes.

Please note: The subsequent types of market structures (Monopoly, Monopolistic Competition and Oligopoly) belong to the imperfect market competition and are all price-setter firms. The focus of the syllabus is on the decisions and strategies of such firms, not perfect competition ones, hence subsequently we shall examine the decisions of the **price setter firm where the demand curve is downwards sloping.**

3.1.2 MONOPOLY

While perfect competition occupies one end of the market spectrum, monopoly lies at the other extreme end of the spectrum. A monopoly, in its purest form, is where a single firm controls exclusively the entire output of the industry. It has no competition when selling its goods, and customers would have to buy the product offered by the single firm provider or go without (e.g. Spore's Public Utilities Board (PUB) supplying tap water).

However, in reality, it is unlikely any firms would operate without facing competition. For example, although there is only one supplier of Apple iPads, but with increasing numbers of tablet computers entering the market, Apple Inc. would not be the only firm supplying the broad range of tablet computers.

The way in which the product or market is defined determines the degree of monopoly power of the firms in the market, and so a firm, in general, if it **dominates the market characterized by having large monopoly power (not just by being the only seller, but has other characteristics of monopoly mentioned below)** and notably, an absence of competition can be treated in analysis as a monopoly or monopolistic firm.

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3.1.2.1 CHARACTERISTICS OF MONOPOLY

A monopoly refers to a single supplier of a product or service for which there are no close substitutes. As it is the only seller, the firm is also the industry.

(1) Single seller

- There is only one producer who is supplying the whole market. Therefore, the market demand curve is also the firm's demand curve as the monopolist also represents the industry.
- For example, the Public Utilities Board is the only supplier of tap-water to households in Singapore.
- The monopolist's demand curve is downward sloping. This means that the monopolist must lower the price if it wishes to sell a greater quantity. If it wants to sell at a higher price, then the output must be reduced. In other words, it cannot increase both price and output at the same time.
- Since the monopolist has the ability to affect either price or output, it is a PRICE-SETTER. The firm can raise the price and the consumers either pay or go without the good as they cannot turn to other alternatives.
- The AR and MR curves are both downward sloping.

(2) Unique Product

- There are no close substitutes for the monopolist's product. No other firm produces a similar product or products that vary only slightly from the monopolist's. In this case, the price elasticity of demand for the monopolist's output is very low compared to other market structures.

(3) Imperfect Knowledge of Product

- Consumers and potential competitors are not fully aware of the costs and production of the product. The monopolist is in the position to keep information out of reach to consumers and potential competitors.

(4) High Barriers to Entry and Exit

- Barriers to entry are obstacles that prevent new firms from entering a market to compete with the existing firms.
- In the case of a monopoly, new firms might not be able to enter freely the industry even when there are supernormal profits due to high barriers to entry. Such barriers prevent entry of new firms so that the firm can maintain its monopoly position and retain its supernormal profits in the long-run.
  For example, the high setup cost in activities such as electricity generation may deter potential entrants. Only very large firms will be able to fund the necessary investment. Research and development costs will represent a high proportion of total costs and it will require high sales over a long period of time before the activity becomes profitable.
- Barriers to exit refer to sunk costs, which are cost that cannot be recovered if the firm were to eventually leave the market. → eg. infrastructure (hard to resell when exiting business)
- If costs cannot be recovered in the case of the firm shutting down, because the resources are specialized and are not easily transferable to other uses, they are regarded as sunk costs and act as a barrier to exit from the industry.
- It is therefore the high costs of both entry and exit that deter potential entrants and allow monopolies to earn supernormal profits in the long-run.

high set-up cost → forms high barriers to entry → unable to freely move in & out → deters potential entrants → remains as the single firm

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Difference between barriers to entry and exit:

- There is a difference between start-up costs, which is a form of barriers to entry, and sunk costs, which is synonymous to barriers to exit.
- If sunk costs are high, even if a firm could pay for the high start-up costs and knowing the existing firms are earning supernormal profits, it might be reluctant to enter the industry because the potential losses will be extensive if it were to eventually fail and exit the market.
- Suppose the cost of building a new wafer fabrication plant and the cost of buying a fleet of planes to start a budget airline are both $500 million each.
- If a firm were to invest in wafer fabrication and eventually fail to become profitable over time, it may find it very difficult to sell off the plant and its equipment because of the highly specialised nature of its factory and machinery. However, if a firm were to start a budget airline and fail to become profitable eventually, it can probably sell of its airplanes quite easily with minimal losses to the many other airlines that exist in the world. Hence it will be much harder for a firm to recover its investments in wafer fabrication as compared to air transport.
- So while the barriers to entry (i.e. start-up costs) can be equally high for both sectors, the barriers to exit (sunk costs) are likely to be lower for air transport than for wafer fabrication.
- Thus the distinction between start-up & sunk costs is that high start-up costs makes it difficult for potential entrants to acquire financial resources to enter the market, while high sunk costs makes it riskier for firms to enter the market due to the large losses that it could incur if it were to exit later.

Types of Barriers to Entry → deters firms from entering market

(1) Substantial internal economies of scale

- A **natural monopoly** is likely to emerge if the production involves **very high start-up costs** and together with a **small market, one firm** is able to **satisfy the entire market demand.**
- The natural monopoly needs to produce at a very large scale of production to fully exploit the internal economies of scale and to stay profitable.
- For such firm, the LRAC continues to fall as output expands over a wide range.
- In such industry, there is only one firm in the market and a second firm will mean losses for both.
- If there were two firms and assume each only has half the industry demand, there is no price that would allow them to cover costs, i.e. AR < LRAC at every point. That is to say, only when one firm has the entire market demand, its AR will be above LRAC and allow it to make a supernormal profit.
- For example, two bus companies might find it unprofitable to serve the same routes, each running with perhaps only half-full buses, whereas one company with a monopoly of the routes could make a profit. Electricity transmission via a national grid is another example of a natural monopoly.
- Even if a market could support more than one firm, a new entrant is unlikely to be able to start up on a very large scale. Thus the incumbent monopolist already experiencing internal economies of scale can possibly charge a price below the cost of the new entrant and drive it out of business.

(2) Control of Essential Raw Materials or Wholesale/Retail Outlets

- If a firm controls the **supply of key inputs** necessary for the production of a product, then the firm will be able to prevent other firms from entering the industry.
- In the 20th century, the world's diamond trade was controlled primarily by De Beers Consolidated Mines. De Beers mined diamonds and also bought most of the world's supply of rough diamonds. However, factors such as the decision by producers in Canada and Australia to distribute diamonds outside of the De Beers channel, as well as rising awareness of blood diamonds that forced De Beers to "avoid the risk

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of bad publicity" by limiting sales to its own mined products, have caused De Beers' market share of rough diamonds fell from as high as 90% in the 1980s to 33% in 2013

- Similarly, if a firm controls the outlets through which the product must be sold, it can prevent potential rivals from gaining access to consumers. For example, Coca-Cola supplies chilled display units free of charge to shops on the condition that they stock only Coca-Cola's range of drinks in them.

(3) Legal Barriers

A firm's monopoly position may be protected by law through intellectual property (IP) rights.

- A patent is an exclusive right to produce or sell an innovative product or process. Patents are granted to encourage technological innovation and to reward creative efforts (eg. thumb drive developed by *Trek*, a Singaporean technology company and prescription drugs by pharmaceutical companies). According to the World Trade Organisation (WTO), the term of patents is for 20 years from the date of filing.
- **In contrast, "soft tech" industries like app developers, online news platforms and video game businesses have less need for patents because they can scale their businesses using freely or cheaply-available platforms.**
- Copyrights are part of intellectual property rights that are conferred on the works of writers, software programmers and music composers. Thus, royalties need to be paid in gaining these copyrights (e.g. books, music and songs).

A licence is the right to operate or produce certain goods and services that are granted by the government. For example, the licence to operate a casino is granted by the government to casino operators for a period of time. SJM used to be the only casino operator in Macau before the SAR government liberalised the market by issuing more licences to other operators such as Las Vegas Sands, Wynn and MGM Mirage. (Need licence: Telco, banks, casino, etc.)

(4) Brand Loyalty

A strong brand name is a barrier as a new entrant will have difficulties breaking into the market as it is extremely hard to compete against a well-established brand. The brand name is often established by means of product differentiation, aggressive advertising & attractive after-sales service (e.g. Apple, Samsung and Panadol).

3.1.3 MONOPOLISTIC COMPETITION

3.1.3.1 CHARACTERISTICS OF MONOPOLISTIC COMPETITION

Monopolistic competition is characterised by a large number of small firms, each of which produces a differentiated product or provides a differentiated service. There are little or no barriers to entry. Examples are grocery shops, coffee-shops, hairdressers, video-rental shops and hawker food stalls.

(I) A Large Number of Small Firms

- There are a large number of firms in the industry, with each firm having an insignificant share of the market. This means that none of the firms is large enough to dominate the market, i.e. Firms are small in terms of their market share.
- For example, there are many small boutiques spread across shopping centres in Singapore. Each firm is small and unable to influence the market. (eg. clothing shops, hair salon, spectacle shop)

(ii) Free Entry and Exit of Firms

- There are little or no barriers to entry into, or exit from, the industry. New firms can freely enter the market while existing firms can freely leave the market in response to the profit levels.
- For example, a mobile push cart selling handphone accessories can be rented from a shopping centre at a relatively small sum. The stocks can be purchased from a wholesaler which may not require a large amount of capital. If the business fails, the owner can easily sell the leftover stock to other vendors and thus will exit the industry without the fear of incurring high costs.

Response to profit levels:
- Supernormal: enter
- Subnormal: exit

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(iii) Differentiated Goods

- The clue to the **behaviour of firms in this market structure** lies in the **nature of the good** which is differentiated.
- The **product of each firm differs slightly** from others and a **close substitute** of the product of every other firm in the market.
- Differentiation of the product may be **real:** Quality of materials used, special ingredients used and central location or **imaginary:** Packaging → ppl can be influenced by ads
- Because of product differentiation, each firm in the market **behaves like a monopoly of its own product.**
- Each firm assumes that its actions will not affect the other firms to any great extent. This is called the assumption of **independence**, in which each firm makes its own decision on price and output without having to worry on how the other firms will react.

eg. of MC: cigarettes, wine, shampoo ...

3.1.4 OLIGOPOLY

- Oligopoly is a market structure where there are a **few dominant firms** and their **behaviour is interdependent.** These few firms each share among them a **large proportion of the output** of the industry.
- It is the most prevalent form of market organisation in the manufacturing sector of many industrial countries. Oligopolistic industries are commonly found among industries producing automobiles, electronic equipment, aluminium, oil, steel and beer.

3.1.4.1 CHARACTERISTICS OF OLIGOPOLY

(1) A few dominant firms in the industry

- There are a **few dominant firms** which account for a **significant proportion of the output** of the industry. **Each firm** has a **significant market share.** There may be many other smaller firms in the market, but these small firms' combined total output accounts for only a very small proportion of the market share.
- The firms in the oligopoly market may produce identical product, eg metal, chemicals and crude oil, whilst others produce differentiated products, eg, cars, electrical appliances etc.

The indicator to identify an Oligopolistic Market is the Market Concentration Ratio (MCR):

- **Concentration ratio** of an industry is about the **relative size of firms** in relation to the industry as a whole. This may also assist in determining the market form of the industry. One commonly used concentration ratio is the four-firm concentration ratio, which consists of the market share, as a percentage, of the four largest firms in the industry. In general, the N-firm concentration ratio is the percentage of market output generated by the N largest firms in the industry.
- For example, the market concentration ratio of the pesticides industry in the UK is 75% and that means, the five largest pesticides firms account for 75% of the entire market output in the UK. ***Note:*** *A 2-firm oligopoly is known as duopoly.* (> 50%: relatively high)

(2) High barriers to entry and exit

- Similar to monopoly, there are **various and significant barriers for new firms** to enter the industry such as the **very high start-up costs** and **control of retail outlets.** It also has **high sunk cost** especially in manufacturing industries where machines are highly specialised. As a result, an **oligopolist** is able to **retain supernormal profits** in the **long-run.**

(3) Mutual Interdependence of firms

- As there are **only a few dominant firms** in the industry, **any dominant firm,** before it makes a decision, has to **consider the reactions of the other rival firms** in the industry. These dominant firms are thus **interdependent.**
- Interdependence of firms would mean that each firm will be **affected by its rival firms' decisions** as well as each firm's decisions will also affect the other rival firms.
- Firms must decide on their market strategy to compete with close rivals, but they must also try to **anticipate** their **rivals' reactions** and think what the **next step** should be in the light of this response.

* high degree of rival conscious
↳ way of competitors (eg. Telco firms cut prices)

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- There is a tendency for the prevailing market prices of products to remain quite stable over a long period of time because there is no incentive for the dominant firms in the industry to change the prices for fear of a price war. The uncertainty and risks associated with price competition may lead to price rigidity.
- Due to interdependence, some oligopolistic firms would collude to gain higher profitability. (Details of competition strategies are discussed below).

Note:

- *Features (1) and (3) are unique and key ones to oligopoly.*
- *To illustrate profits, the analysis is similar to that of monopoly – earning supernormal, normal and subnormal profits in the long-run at profit maximising level MR=MC.*
- ***The level of competition is not just about the number of firms in an industry, it should include concentration ratios and market share to assess the extent to which there are large, dominant firms.***

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3.1.5 COMPARING THE FEATURES OF THE VARIOUS TYPES OF MARKET STRUCTURES

Features	Perfect Competition	Monopoly	Oligopoly	Monopolistic Competition
Number of Sellers & Size of firm(s)	**Many + Small** There are **many** sellers and buyers in the market that each is dealing in **very small quantities** relative to the whole market. ***Note:*** *The market share of each individual firm is negligible.* For example, the market for SIA shares is traded in the Singapore Exchange (SGX) by many individual buyers and sellers. It is quite impossible for any single trader to manipulate the price of the share.	**One + Big (Single seller)** There is only **one producer** who is supplying the whole market. Therefore, the **market demand curve is also the firm's demand curve as the monopolist also represents the industry.** For example, Public Utilities Board is the only supplier of tap water to residential households in Singapore. ***Note:*** *In real life, there are not many pure monopolists (100% market share) but* ***'near-monopolists'****. Example: In conjunction with Intel, Microsoft controls the personal computer market by owning over 75% of the market share. For social media, over 71% of online adults use Facebook. Twitter and Google+ are no match for Facebook, which has around 900 million unique monthly visitors compared to Twitter's 310 million and Google's 120 million – some would consider them as dominant firms in an oligopoly.*	**Few + dominant** **The few large firms account for a significant proportion of the output of the industry. Each firm has a significant market share. The market concentration ratio (MCR) is very high.** ***Note:*** *There may be many other smaller firms, which their combined total output accounts for only very small proportion of the market share.* For example, the petrol industry in Singapore is dominated by Shell, ExxonMobil, Singapore Petroleum Company (SPC) and Caltex.	**Many + Small** **Large number of small firms (in the thousands) and each with insignificant market share, dealing in very small quantities relative to the whole market.** **For example, there are numerous blogshops (ranging in the thousands) selling apparel on the internet, hence each firm's market share is very much less than 0.1%.**
Nature of Product	**Homogeneous** **The products sold by all the firms are identical and of the same quality. They are considered as perfect substitutes by the consumers. Consumers are assured the quality**	**Unique** **There are no close substitutes for the monopolist's product and hence demand for is price-inelastic. The amount of monopoly power the firm has**	**Homogenous OR differentiated.** **Homogenous product** **The products sold by the firms are identical and of the same quality. E.g. *crude oil*. The product is so**	**Slightly Differentiated** **Though similar to oligopolistic competition for differentiated product, generally, the products/services here are only slightly different. They are thus close substitutes in which**

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	Is the same no matter which seller supplies this product. Consumers are not brand-conscious. For example, each individual SIA share is identical to one another. There is no difference in holding one SIA share from another.	depends on the closeness of the substitutes produced by rival firms. SPH English newspapers such as the Straits Time, the Business Time & Chinese papers such as Wanbao and Xinmin (now defunct) have very few alternatives. Although there are other newspapers such as Herald and Apple Daily available, the news coverage has little on local news so they are not considered as close substitutes.	highly standardized to the point that consumers are assured the quality is the same no matter which seller supplies this product. Consumers are not brand-conscious. **Differentiated products** For differentiated products – They are thus substitutes in which consumers deem the goods to be alternatives to satisfy similar wants. Differentiation can be real and/or imaginary (perceived) differences can exist. Products may vary in terms of attributes, service, accessibility, branding and packaging. E.g. *petrol*. Though petrol itself maybe rather homogeneous, they are sold under different "iconic" brand names and together with different service, they are deemed different by consumers.	consumers deem the goods to be alternatives to satisfy similar wants. This is because firms do not have high supernormal profits like the oligopoly to do prominent differentiation. Blogshops sellers can try to scout for different designs in other countries but it is easily 'copied' by other blogshops.
Barriers to Entry / Exit They refer to the **various forms of restrictions or obstacles which prevent/deter new firms from entering a market to compete with incumbent firms.** (Examples: extensive internal economies of scale, high start-up costs and	**No barriers to entry/exit** New firms are **free to enter** an industry and existing firms can **leave** the industry without much difficulty. This leads to many firms **with insignificant market shares** in the industry. For example, a person can easily open a trading account with a broker and register himself with the SGX Central depository to start trading SIA shares. As a result, firms here will earn only **normal profits in the long-run.**	**Very High barriers to entry/exit** Firms are unable to enter freely the industry. The barriers are high enough to **prevent entry of new firms so that the firm can maintain its monopoly position.** The high sunk cost to start a business and a small market can result in a natural monopoly such as the TV industry in Singapore. One firm, MediaCorp is able to lower unit cost as it expands its TV programmes until it satisfy the whole market and thus more efficient to have only one firm in the industry.	**High barriers to entry/exit** Firms are unable to enter freely the industry. The **barriers are high enough to prevent entry of new firms.** In the petrol industry, there are barriers such as licence to operate, to compete with strong brand names, high start-up costs to open petrol stations, storage facilities, tank trucks, etc. As a result, firms will be able to **retain supernormal profits in the long run.**	**Low/No barriers to entry/exit** New firms **are free to enter** an industry and existing firms can **leave** the industry without much difficulty. For example, internet business' start-up cost is minimal – setting a blog is free and the only thing is the knowledge to set up a blog. The cost of the items sold on the internet can be low, depending on the quality and quantity the owner wants to sell. As a result, the cost of exit is low too as sellers can exit without much penalty. She can simply sell the clothes to other sellers, wear the clothes herself or give away as gifts.

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technological know-how, legal barriers such as patents/licence) ***Note:*** *You must be able to elaborate on these.*		As a result, firms will be able to **retain supernormal profits in the long run.** ***Note:*** *Without barriers to entry, other firms will start entering the industry. Examples: when the government deregulate the Telco and airline industry, other firms enter and make it oligopolistic. As technology-know-how life span is getting shorter, it's harder to monopolize the market.*		As a result, firms here will earn only **normal profits in the long-run.**

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TYS 2007 CSQ2(cl)

(1) **Table 4: Top four UK supermarkets: share of grocery sector**

Share of Grocery Sector (by value of total sales)	2004 (%)	2005 (%)
Tesco	28.1	30.5
Asda	16.6	16.7
Sainsbury	15.4	15.7
Morrison's	13.9	11.3

Describe the type of market structure operating in the UK grocery sector in 2004 [2].

Oligopoly. [1] Because 4 supermarkets dominated the market with the 4 firm market concentration ratio $MCR_4 = 74.2\%$ [1]
must calculate MCR and link to a few dominant firms to justify market structure.

(2) **2016 HCI BT2 CSQ1(e)**

Table 1: World Market Share of Tyre Makers (2004 & 2013, in percent)
Source: US Tyre Business

Name of Company	2004	2013
Michelin	19.2	14.0
Bridgestone	18.0	15.3
Goodyear	17.7	10.1
Continental	6.0	5.8
Pirelli	4.3	3.6
Sumitomo	3.7	4.1
Others	31.1	47.1

With reference to Table 1, has there been a change in the types of market structure for the global tyre industry? Please explain. [2]

There is no change and the market structure remains an oligopoly. [1]
Although the 6 firm concentration ratio fell from 68.9% in 2004 to 52.9% in 2013, the market share of 6 top producers reduced with more firms joining the industry resulting in greater competition, the market is still dominated by a few large firms in the market.

OR: Using MCR_4, the concentration ratio has fallen to 45.2% [1] Hence, it can be argued that the industry has become more monopolistically competitive with the top 4 firms having less than half of the market share. [1]

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3.2 TYPES OF STRATEGIES & DECISIONS

We shall now turn to the various types of strategies that a firm could use under different circumstances that would enable it earns higher profits through raising revenue or lowering costs. Often, if we are able to identify which market structure a firm belongs to, it will help us spot the various strategies and decisions by the firm.

The strategies include both types: price and non-price:

- Growth: expansion and diversification
- Innovation: research and development
- Marketing
- Collusion with other firms
- Price competition
- Third degree price discrimination

If the firm, instead of making profits, enters into a loss (subnormal profit in the long run), then the firm should consider shutting down to minimise loss (to minimise loss is also considered a profit maximising behaviour).

- Shut-down

3.2.1 NON-PRICE STRATEGIES

3.2.1.1 GROWTH STRATEGIES: EXPANSION AND DIVERSIFICATION

Growth (ie, output expansion) enables a firm to capture market share, which leads to increased market power, thus allowing it to charge higher prices and earn more revenue. Growth may also allow a firm to enjoy lower costs through the reaping of internal economies of scale.

A firm can grow in size or scale of production by **internal expansion** or via **merger and acquisition.** Mergers and acquisitions (M&A) is a general term that refers to the consolidation of companies or assets. A merger means a combination of two companies to form a new company, while an acquisition is the purchase of one company by another in which no new company is formed. However, excessive growth can be detrimental as it may result in poorer quality products which may harm the firm's revenue, or the firm may experience diseconomies of scale which may raise the firm's costs.

BENEFITS of increasing scale of production

When a firm grows and becomes larger with larger output, it can enjoy **revenue advantages** and **cost advantages.**

Revenue advantages enjoyed by large firms include **pricing power** and the **ability to practise non-price competition.** This enables the firm to **increase their market share** resulting in **higher total sales revenue.**

(P>MC)

Pricing power: The **ability to set higher prices** is dependent on the **price elasticity of demand** faced by the firm. Big firms enjoy **larger market share;** thus they face a more **price inelastic demand curve.** This gives them the ability to set higher prices to raise total revenue.

Non-price competitive strategies: Big firms have revenue advantage as they have **access to larger revenue** and **resources** to enable them to engage in **non-price competition**, like **product development** (i.e. R&D and innovation) and **product promotion** (e.g. advertising) to **raise demand** for their products and go on to earn even more revenue.

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Cost advantages refer the **benefits** gained from **internal economies of scale** when a firm **expands its scale for production** (refer to Section 2.1.3.3)

3.2.1.1.1 FIRMS EXPAND BY INTERNAL EXPANSION OR BY MERGING AND ACQUISITION

Internal Expansion

This requires **increase in sales**, which in turn requires an **increase** in firm's **scale of production.** In order to increase sales, the firm is likely to engage in **extensive promotion** and to try to **launch new products.** In order to increase production capacity, the firm will **require new investment** such as building a new plant or **buy new machinery.** Both activities will **require finance.** The firm can increase its finance by borrowing, drawing on previously retained profits or by issuing new shares.

The route to growth via internal expansion is an **uncertain one**. **How likely** is it that a **sales campaign** will be **successful** in **securing extra market share** from the firm's competitors? It usually **takes time** to win new customers. Thus, internal expansion seems to be inferior growth strategy compared to buying another rival firm to expand its size. Hence **merger** seems to offer a **quick and more certain route** to **greater size over time.**

External Expansion – via Mergers and Acquisitions (M&A)

Instead of internal expansion, firms can also expand via merging with other firms or acquiring other firms. **A merger refer to the voluntary amalgamation of two or more firms into a single business entity, whereas acquisition refers to the takeover of existing businesses through buying over the shares from their owners.** A merger or acquisition increases a firm's capacity and market share rapidly. In addition, M&A allows firms to **reduce cost** through **cost rationalisation**. This is due to the ability to **eliminate duplicate labour**, machineries or other **factors of production** when 2 firms undergo M&A.

There are 3 kinds of integration- horizontal, vertical and conglomerate integration.

(a) Horizontal integration

Horizontal integration occurs when 2 or more firms producing the **same product or service** (in the same stage of production) **join together.** Such mergers allow for **economies of scale to be reaped** and make the firm **more competitive** in the industry. An example of horizontal integration is the merging of DBS and POSB in the banking sector, and Scoot and Tigerair in the airline industry.

(b) Vertical integration

Vertical integration involves joining of firms that are at different stages of production. This form of merger can be further categorized into 2 types- forward integration and backward integration.

- **Forward integration** occurs when a firm merge with another at a later stage of production. For instance, an automobile manufacturer may acquire a chain of showrooms or distribution outlets to sell his cars.
- **Backward integration** occurs when a firm merge with another at an earlier stage of production. For example, a car manufacturer requiring supply of steel may merge with a steel producer to ensure a regular supply of steel.

(c) Conglomerate integration

This form of merger involves the combination of different industries that do not have anything in common. The objective for such mergers is **risk diversification**. Risks are being spread out since different industries react differently to economic fluctuations. For instance, British American Tobacco (BAT) has diversified into hotels, frozen foods and many other lines to protect itself against the risk of a decline in tobacco sales.

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COMMENTS ON M&A: POSSIBLE SIDE EFFECTS

Acquiring a rival firm in the same industry to form a horizontal merger not only add extra market share but have other benefits. If a competitor is now eliminated a firm can hope to gain greater market power and thus enhance its profitability. Whether or not this is achieved, at the very least the reduced number of competitors does help reduce the amount of uncertainty facing firms if they are operating in an **oligopolistic** market structure.

However, growth via merger may involve the acquiring firm biting off more than it can chew and as a result burden itself with debt in financing an acquisition. Moreover, excessive growth may result in poorer quality products which may harm the firm's revenue, or diseconomies of scale which may raise the firm's costs.

3. What are the pros and cons of internal expansion as compare to a mergers and acquisitions?

	(+)	(-)
Internal expansion		
M&A		

3.2.1.1.2 DIVERSIFICATION AND GROWTH

Diversification (through vertical and conglomerate integration) enables a firm to achieve new sources of revenue and allows it to spread its risks as losses incurred for one product can be offset by profits earned from another.

Diversification also allows a firm to enjoy economies of scope e.g., the costs spent on promoting a firm's brand can be spread over more output if it has a wider range of products.
Moreover, diversification through vertical integration (ie. merging with or acquiring another firm in the same

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industry but at a different stage of production). This allows the firm to secure access to retail markets or production inputs, thus enabling it to protect itself from competitors.

However, there is also risk in product diversification: Entering an unknown market puts a significant risk on the firm. Therefore, firms should only pursue a diversification strategy when their current market demonstrates slow or stagnant future opportunities for growth.

Examples of Successful Diversification

Here are two notable examples of successful diversification:

General Electric
General Electric commonly comes into discussions when talking about successful diversification stories. GE began as an 1892 merger between two electric companies and now operates in several segments: Aviation, energy connections, healthcare, lighting, oil and gas, power, renewable energy, transportation, and more.

Walt Disney
Walt Disney Company successfully diversified from its core animation business to theme parks, cruise lines, resorts, TV broadcasting, live entertainment, and more.

3.2.1.2 INNOVATION

Innovation refers to the efforts put in by a firm to come up with new, improved or differentiated products. If successful, this will raise its market power as demand for its products increase, enabling it to earn higher revenue. In addition, the demand for the product would become relatively more price inelastic, and firm could now raise price and total revenue would increase.

Innovation can also take the form of new or improved production processes, which raises productivity or lower costs.

Innovation can be low cost in nature (eg, improving the packaging of the product) or may involve costly research and development (R&D), especially if it is technology related.

Incumbent firms could also be using such strategies to deliberately raise entry and exit barriers of potential entrants as the latter would also need to engage in such costly strategies to compete effectively with the former. Such strategies would make the market less contestable[1], thereby enabling the incumbents to potentially earn higher profits in the long run.

Apple is well known for its innovations in hardware, software, and services. Apple's innovation approach focuses instead on making people's lives better with smart and intuitive products. This 'people first' approach is at the very heart of Apple's innovation culture.

3.2.1.3 MARKETING

Marketing refers to efforts taken by the firm to promote its product. This largely takes the form of advertising although it can be also done through other means, e.g., free gifts, fee samples and lucky draws. Advertising can be persuasive in nature where a firm aims to subjectively influence consumers about the quality or desirability of its product. It can also be informative in nature, where a firm aims to inform consumers about

[1] A contestable market has both low barriers to entry and exit, providing incentive for potential firms to enter and enjoy some of the high profits the existing firm is earning. A market is considered less contestable when barriers to entry and exit are higher and there is less incentive for potential firms to enter the market.

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the prices of its products, the tangible characteristics of its products, or the locations and conditions of sale.

Even big firms engage in marketing to boost demand and eventually turning in large sales revenue. For example, Nike – this is one of the top brands in the world due to its great marketing: the swoosh logo, "word of foot" advertising, also sponsoring athletes and the famous tagline: "Just Do It".

To boost the sales of their products, **monopolistic competition firms** engage in product promotion as part of marketing to create awareness and attract consumers to buy their products. Small shops usually use banners and flyers as a form of advertisement.

The above strategies like growth, diversification, innovation and marketing may cause both revenue and costs to rise. Hence a firm will only carry out such strategies if it expects the **rise in revenue to exceed the rise in costs.**

3.2.1.4 COOPERATION OR COLLUSION WITH OTHER FIRMS

Collusion refers to the situation where firms in a market cooperate to jointly fix prices or output. Collision can be tacit in the form of price leadership, or explicit in form of cartels. Collusion collapses when one or more of the firms involved cheat by charging less or producing more than the agreed price or output respectively. This often results in price wars which may lead to huge losses for all firms involved. Collusion is more likely to occur and continue if (1) the market is more concentrated, (2) there is a clear market leader and (3) the extent of product differentiation is low.

The behaviour of oligopoly firms can follow two very different routes. There are examples that suggest cooperation and even collusion to maximise profits whilst in others, aggressive competition to gain bigger share of industry profits.

- **Cooperative or collusive model**
- **Competitive or non-collusive model**

Collusion of oligopolist firms

- There are situations where big firms find that it is in their interest to cooperate with rivals in the form of strategic alliances or joint ventures. One key area of cooperation is where research and development costs are high as a proportion of total costs and where the pace of technical change is very rapid. It is in the interests of all the firms to pool their knowledge and agree on technical standards.

- One common example is an airline alliance in the aviation industry in which arrangement was made between two or more airlines agreeing to cooperate on a substantial level. One main benefit to the airlines is cost reduction from sharing of sales offices, maintenance facilities, operational facilities (e.g. catering or computer systems) and operational staff (e.g. ground handling personnel, at check-in and boarding desks). Travelers also benefit from lower prices due to lowered operational costs for a given route, a wider range of airport lounges shared with alliance members and faster mileage rewards by earning miles for a single account on several different carriers.

The Cartel Theory

A cartel is a formal collusive agreement between, usually to fix price or output. They behave like a monopoly. The centralised cartel makes the following decisions:

- sets the monopoly price for the commodity
- allocates the output or quota among the members which is usually according to their market share.

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An example is the oil cartel formed by Organisation of the Petroleum Exporting Countries (OPEC) which managed successfully to jack up the price of crude oil through restricting production quotas among members in the 70s.

Find out more on the recent development of OPEC →

- However, a key drawback for a sustained cartel is the tendency for members within the cartel to cheat on agreed production quotas so as to earn more profits.
- Alternatively, individual members might be tempted to undercut the cartel's price to increase profits.
- The danger with either selling above quota or cutting price is that this would invite retaliation from the other members of the cartel, with a resulting price war. Price would then fall and the cartel well break up in disarray.

Factors which will allow collusion of any kind to work best:

- There is a small number of participants so that the agreement can be policed;
- There is a strong element of trust exists among them;
- There is a clear leader;
- The firms have similar cost structures;
- The market conditions are stable;
- The government will not intervene.

In many countries, cartels are illegal as it is being seen by the government as a means of driving up prices and profits and it is against public interest.

Tacit collusion

Collusion is tacit when the behaviour of each firm follows an unwritten agreement rather than a formal one. They could do this tacitly by following the pricing policy of a recognised leader which is usually the dominant firm with the largest market share. This is akin to like a price leadership model where the informal group of firms follow the pricing as set by the leader.

Price would only change if a rise in costs affects the profit margin. An example is ComfortDelgro- the dominant taxi company in Singapore of almost 60% market share is always the one that initiates a fare hike while the rest will follow suit.

(oligopoly)

In general, firms in more concentrated/less competitive industries tend to experience a higher degree of mutual interdependence and are thus more likely to collude and employ non-price competition over price competition.

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Extract 2: Woes of Rubber Cartel and Devastating Environmental Effects of Rubber Plantations

The world's top three rubber producers, Indonesia, Malaysia and Thailand, which together produce around 70% of the world's rubber, have come together to form the International Tripartite Rubber Council (ITRC), a body that has been likened to oil cartel Organization of the Petroleum Exporting Countries (OPEC), given its potential control over supply.

ITRC is currently looking into ways to stem the steep decline in prices of natural rubber, such as reducing exports. However, it remains to be seen if this latest effort to raise the price of natural rubber will pull through as the three countries have been known to cheat in the past and did not commit to the promise they made together.

Source: Various

Explain why a cartel like the International Tripartite Rubber Council (ITRC) may fail to raise the price of natural rubber. [2]

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TYS 2014 CSQ1: Changes in the world market for oil and gas

Extract 1: United States (US) to become world leader in oil and gas

According to this year's World Energy Outlook report from the International Energy Agency (IEA), the US will overtake Saudi Arabia and Russia to become the world's biggest producer of oil and natural gas in the next five years. This is because the controversial practice of 'tracking' has enabled the country to increase production massively, and is expected to result in the US providing all its own energy by 2035.

Fracking is the hydraulic breaking apart of shale, which is a type of rock, in order to release oil and natural gas. Fracking involves blasting a mixture of sand, water and chemicals into shale rock to release the oil or gas inside. The process, which requires high capital expenditure, has been linked to earth tremors and water pollution. It has boomed as rising oil prices and new drilling techniques have made resources accessible that were previously thought too expensive to extract.

The fracking boom will push US oil production up from 8.1 million barrels a day last year to 11.1 million in 2020 while gas extraction will jump from 604 billion cubic metres a day to 747 billion, the IEA said. The IEA executive director said, 'North America is at the forefront of a sweeping transformation in oil and gas production that will affect all regions of the world'. The US currently imports about a fifth of its energy and has increasingly relied on Middle Eastern crude oil over the past five decades. However, by the time the country is self-sufficient in energy in 2035, nine tenths of Middle Eastern crude oil exports will be consumed by Asia, with China being a particularly big customer.

Source: Tom Bawden, *The Independent*, 13 November 2012

Extract 2: Shale oil will change global supply, OPEC admits

The Organisation of Petroleum Exporting Countries (OPEC) is a cartel currently responsible for 40% of the world's crude oil production. In its world oil outlook report, its twelve members, which do not include the US, said: 'Shale oil represents a large change in supply', whereas previous reports indicated that no significant shale oil contribution to oil supply was envisaged.

In the US, production has markedly increased. OPEC cut its forecast for demand for its own crude oil supplies, while forecasting that non-OPEC oil supply would grow significantly. Between 2011 and 2016 non-OPEC oil supply would be boosted by increased output 'mainly from shale oil in the US and Canada'. However, it said that future shale oil production was 'likely to be beset by several constraints and challenges, such as environmental concerns, questions over the availability of equipment and skilled labour, and rising costs'.

Source: Emily Gosden, *Daily Telegraph*, 8 November 2012

Explain the likely impact on the OPEC cartel and its individual members following the increased production of oil as a result of the fracking boom. [5]

Hint: Individual members are countries and not firms.

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3.2.2 PRICING STRATEGIES

A firm in theory set prices at where MC=MR to maximise profits. Should costs or demand fall, the firm will lower its prices so that it can move to its new profit maximisation position. Moreover, it may also lower its prices to earn more revenue if it perceives the demand for its products to be price elastic.

In terms of price competition, a firm may also lower its prices to deter entry of new firms (ie, limit pricing) or drive out existing competitors (predatory pricing).

3.2.2.1 LIMIT PRICING (To create barriers to entry)

Limit pricing is designed to prevent new firms from entering the market rather than by forcing the existing firms out. This strategy involves charging a price that may be only a little above its average cost but could be lower than the estimated average cost of the potential rivals. It is therefore a way of creating an artificial entry barrier.

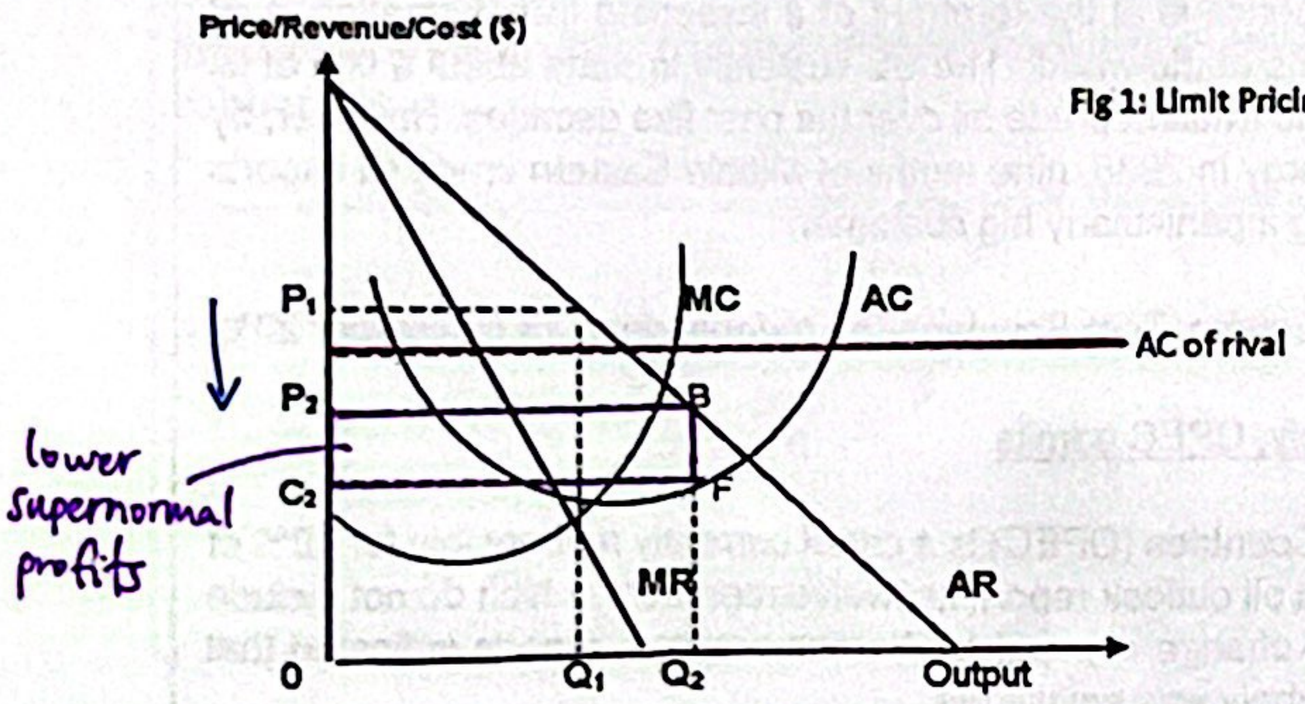

Fig 1: Limit Pricing by a firm

Aim: To protect monopoly power & retain supernormal profits

From Fig 1 on limit pricing, the firm may decide to sacrifice some short term profits by pricing lower at P_2 and selling a higher output (this increases its market share). Total profit is lower - shown by P_2BFC_2. This new low price P_2 is below the estimated average cost of the potential rival firm, and assuming that firms in the market sell at the same price, then the potential rival firm may face the risk of big losses if it enters the market. (discouraged from entering market)

3.2.2.2 PREDATORY PRICING (To create barriers to entry)

Predatory pricing is the practice of charging a very low price with the intent of forcing competitors to leave the market. A sign of predatory pricing is when a company chooses temporarily to sell its product at a loss. This is when the firm is pricing below its marginal costs, doing so the firm is voluntarily making additional losses and presumably the motivation for this is to eliminate its competitors.

Proven cases of predatory pricing are rare. This is because when the dominant firm start to raise prices once its rivals are forced out of the competition, this increases the incentive for other new firms to enter the market. No long term gain can be reaped from this predatory action. However, if the dominant firm can acquire a reputation for predatory pricing, this may help to deter new entry to its market in the future – it works like another way of creating an artificial entry barrier. (No incentive for potential firms to enter market)

Predatory pricing is likely to be against the interests of the consumers because it helps firms to protect powerful market positions. In predatory action by one firm, especially due to interdependency in an oligopolistic market, it would likely see rivals respond with price cuts of their own, resulting in a price war.

A price war may initially seem like good news for the consumer. Consumer surplus grows as existing customers benefit from lower prices and demand extends, with new customers entering the market. Price wars, however, are not always to the benefit of consumers. For example, firms may respond to a price war

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by attempting to cut costs in order to restore profit margins on each unit of the good supplied. One way to cut costs is to reduce the quality of the product or service offered.

3.2.2.3 PRICE RIGIDITY – UNCHANGED PRICES (To raise revenue)

However, the characteristics of interdependence among firms in the **oligopolistic** market could also see rival firms refrain from price competition based on the kinked demand theory. In the kinked demand theory, it is assumed that rival firms will match any price decrease initiated by any one firm among them, but will not match any price increases.

If a firm raises the price of its product above the current ruling price, rival firms will not follow suit because then they can gain the customers who switch away from buying from the higher priced firm. This means that the firm that raises its price would experience a more than proportionate fall in its quantity demanded, and thus a fall in its total revenue. Thus, the firm would be reluctant to raise its price.

However, if a firm were to lower its price, rival firms would lower their prices to prevent loss of their customers and to preserve their market share. The firm would thus experience only a less than proportionate increase in quantity demanded, and it would experience a fall in total revenue. Thus, the firm would be reluctant to lower its price.

Since any price change results in less total revenue than before, any oligopolist would have no incentive to alter the market price.

If there is no significant change in the marginal cost of the oligopolist, the oligopolist will absorb the higher costs and leave the existing price-output combination unchanged.

3.2.2.4 PRICE DISCRIMINATION (To raise revenue)

In the real world, not all firms charge all consumers the same price for all units sold. However, a price setter can in fact charge different prices for the same product in different markets. Efforts could be taken by a firm to raise its price in the market where demand is price inelastic and lower its price in the market where demand is price elastic, thus enabling the firm to earn higher revenue and hence higher profits from both markets as compared to charging a single price. This is called **price discrimination**.

Price discrimination is the practice of charging different prices for the same product to different groups of consumers, not due to differences in costs.

The above definition of price discrimination is more appropriately known as **third-degree price discrimination.** This occurs when the producer charges different prices for the same commodity in different sub-markets (ie, different segments of the main market).

The result is a higher revenue for the producer than when a uniform price is charged. This is because if a uniform price is charged, the price would likely be too high for consumers in the sub-market with the relatively price elastic demand and there will be zero quantity demanded in that sub-market.

CONDITIONS FOR EFFECTIVE PRICE DISCRIMINATION

For price discrimination to occur, the conditions are: (1) the price-setter firm has monopoly power (2) the price elasticities of demand differ for different markets; (3) the markets can be effectively segmented and resale must be prevented (or seepage) between markets.

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(1) Price-setter with monopoly power

The firm must be able to set its price, indicating that the producer has some market power. A producer wishing to practise price discrimination effectively should have a degree of monopoly power so that consumers who are charged the higher price find it difficult to turn to an alternative supplier who might offer lower prices.

(2) Different Price Elasticities of Demand in Different Markets

Different buyers have different degrees of willingness to buy a product and this is reflected by their different price elasticities of demand.

Hence, if the producer has two markets with different price elasticities of demand, he/she will charge a **higher** price in the market for consumers with a relatively less price-elastic demand and quantity will only fall less than proportionate and a **lower price** in the market for consumers with a relatively more price-elastic demand and quantity will rise more than proportionately.

Students & seniors versus adults can be charged different prices for the same cinema show, since a similar ticket price takes up different proportions of their incomes and hence the price elasticity of demand for these different segments of the customers would be different, with students and seniors having a relatively more price elastic demand whilst adults have a relatively more price inelastic demand. Although it does not cost a movie-theatre operator less to fill a seat with a student than an adult, charging students at a lower price allows the operator to earn more revenue than if fewer of them would attend at the higher adult fare.

(3) Separate markets and prevent resale (No seepage)

The producer must be able to segregate and keep the market in separate and identifiable groups, such as by geographical boundaries or age group.

This will ensure that there will be **no seepage between markets, i.e. no resale.** That is, it is impossible or prohibitively costly for consumers to buy in the lower-priced market and sell to other consumers in the higher-priced market.

One example to illustrate the prevention of seepage between different markets by firms:

In a cinema, at the point of ticket purchase, identification cards for students and seniors are verified before tickets are sold to them and also at the entry into the cinema, the ticket held is again visibly checked.

Benefits and Costs of price discrimination

Benefits

Under third degree price discrimination, the lower income consumer group belonging to the more price-elastic demand market will be able to consume a good or service which they could otherwise not be able to afford; and **gain consumer surplus**. In this way, price discrimination is likely to **increase output** and make the good or service available to more people and this helps to **improve equity**.

If the firm reinvests its higher profits/revenue they earn from price discrimination in **research and development** leading to innovation or lower costs and hence lower prices in the future, it might be beneficial to the society.

Costs

In 3rd degree price discrimination, consumers with more price-inelastic demand who are charged a higher price will also experience a fall in consumer surplus. Since it involves a transfer of consumer surplus from the consumers to the producers as profits, this **exacerbates inequity** as profits are concentrated in the hands of a few firms at the expense of consumers who have to pay higher price.

The firm may use price discrimination to **drive competitors out of business**, which is seen previously in **predatory pricing**. For example, in some UK towns, large bus companies used profits they make in other

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towns where they have a monopoly to cross-subsidise their bus fares in another town, to drive competitors out of business only then to raise prices above those that the competitors have been charging. If that happens, it will lead to loss of consumer choice and a fall in consumer surplus.

Note: Both monopolists and oligopolists (especially those who collude) are in good position to practise price discrimination effectively since consumers will not be able to turn to cheaper substitutes.

DIFFERENCE BETWEEN PRICE DISCRIMINATION AND PEAK-LOAD PRICING

- A common form of price discrimination in the real world is peak-load pricing. This is where people are charged more during peak periods demand and less during off-peak period.
- Take the case of a holiday. High-season prices are often considerably higher than low-season prices. Similarly, call charges for telephones are often much higher during weekdays than in the evenings and weekends. Other examples of peak-load (or peak period) pricing are rail and air fares, prices in the cinemas and restaurants (higher in the evenings) and charges made by health and sports clubs (higher during weekends and in the evenings).
- The reason for the higher prices charged at during peak periods has partly to do with price elasticity of demand. Demand is less price elastic during peak periods. For example, many commuters have little option but to pay higher rail fares during the peak period. This is genuine price discrimination.
- **But if the higher charges are to do with higher marginal cost incurred during peak periods, then it is not true price discrimination.**
- With the various fixed factors (such as plant and equipment), marginal costs are likely to rise as output expands to meet higher demand. This could be due to diminishing returns of the variable factors; or it could be due to having to use additional equipment with higher operating costs.
- Using electricity as an example, during off-peak timing, power stations with the lowest operating costs will be used. These are normally the nuclear and coal-fired stations. However, during periods of peak demand, stations with higher operating costs, such as oil-fired stations, will have to be activated. (Oil-fired stations are relatively cheap to build, but have higher running costs.) As a result, the marginal cost of generating electricity is higher during peak periods than off-peak).

6

The price for all weekly issues of the Economist magazine for a year is $650 if you buy it at the newsstand, $192 for a standard subscription and $130 for a college student subscription. Explain if these pricing policies are examples of price discrimination.

NO, it is not PD	YES, it is PD
- Difference between newsstand cost & standard subscription rate reflects at least in part the higher cost of selling at a newsstand (eg. rental & manpower costs) rather than mailing the magazines directly to customers ⇒ Reason is difference in costs, hence it is NOT PD - The standard subscription comes with online user ID & password to access the Economist online version (soft+hardcopies), unlike the student subscription package with comprises the print copy only. ⇒ the product may be considered to be different. Hence it is not PD.	- Assume rental costs of newsstands & making delivery to subscribers are roughly the same ⇒ This could be a case of price discrimination. -

$650 vs $192

$192 vs $130

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3.2.3 SHUT DOWN DECISION

When a firm is making sub-normal profits, ie, TR < TC, it needs to decide whether to continue producing or shut down to minimise its losses (minimising loss is also a part of profit maximisation). The decision to shut down varies depending on whether it is in the short run or long run period and can it still able to cover all its variable costs.

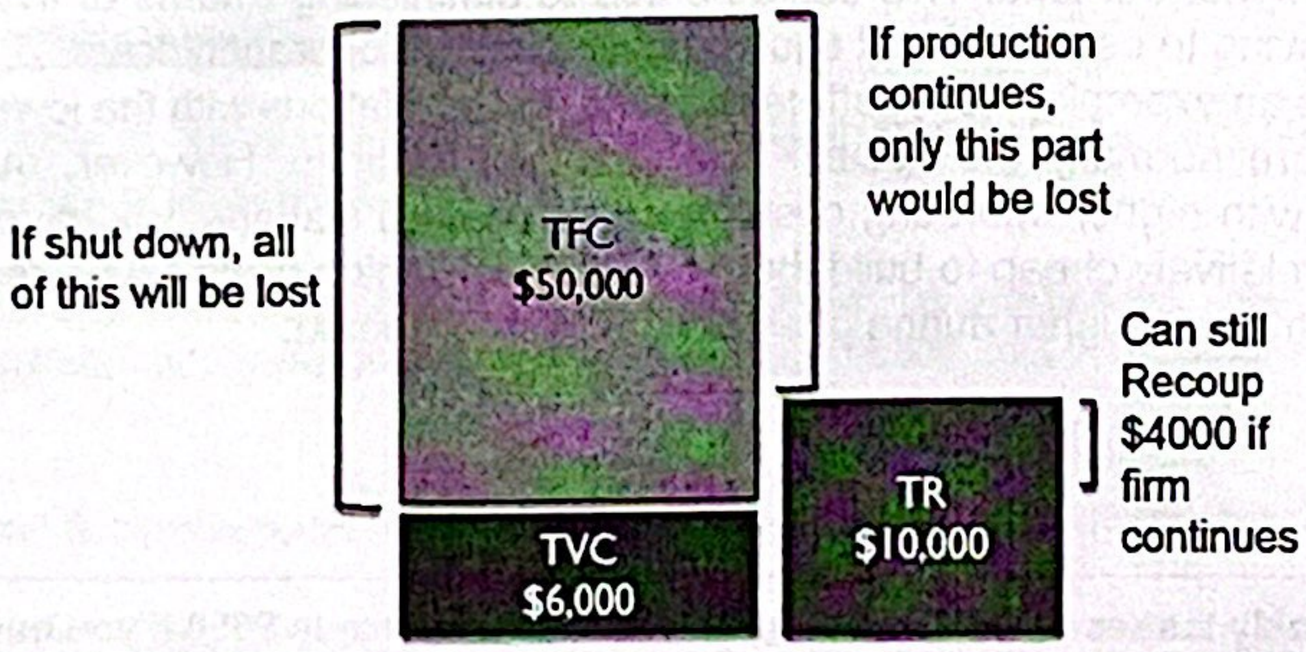
3.2.3.1 SHORT RUN SHUT-DOWN CONDITION

Situation 1: A firm in the short-run earning subnormal profit but continues production (AR>AVC)

In a situation where the firm is able to cover all its total variable cost but not all its total fixed cost from his total revenue, the firm will still continue production, despite earning subnormal profit.

Why? This is because if the firm closes down, the firm will incur all its fixed cost. However, if the firm can cover all its variable cost but not all its fixed cost, it will still be profitable to continue production since only a fraction of total fixed cost cannot be recovered from the sale of goods.

Chart A: Reason why a firm making subnormal profits can continue production in the short-run



In Chart A, the firm has invested $50,000 (total fixed costs) into the business. Its revenue is $10,000, and has to pay a total of variable cost of $6,000 for wages and utility bills. If it were to shut down, it will lose the entire $50,000 start-up cost. However, if it continues to produce, not only can it pay all the variable costs, it still has $4,000 left to recover part of its start-up capital.

Why should a rational loss-making firm still produce in the short-run when it can at least cover all variable costs?

- There is no marginal cost in using the fixed assets [plant capacity]. Fixed costs are costs that firms need to incur even if they are not producing any output, remain the same and do not rise with the level of output. Hence, they are not an important consideration in the firm's decision to continue production if variable costs can be covered.
- Current situation could be temporary [e.g. during a recession, demand is low that results in AR<AC] and there could be a turnaround in the future.
- Closing down even temporary may mean loss of the client base and current staff which means hiring of new staff which requires training and time.

Situation 2: A firm in the short-run earning subnormal profit and shuts down (AR<AVC)

- In a situation where the firm is unable to recover all of its total variable cost and any of its total fixed cost from the sale of goods (total revenue), the firm will shut-down in the short-run.
- **Why?** Under such circumstances, it makes sense for the firm to stop producing since it cannot cover the

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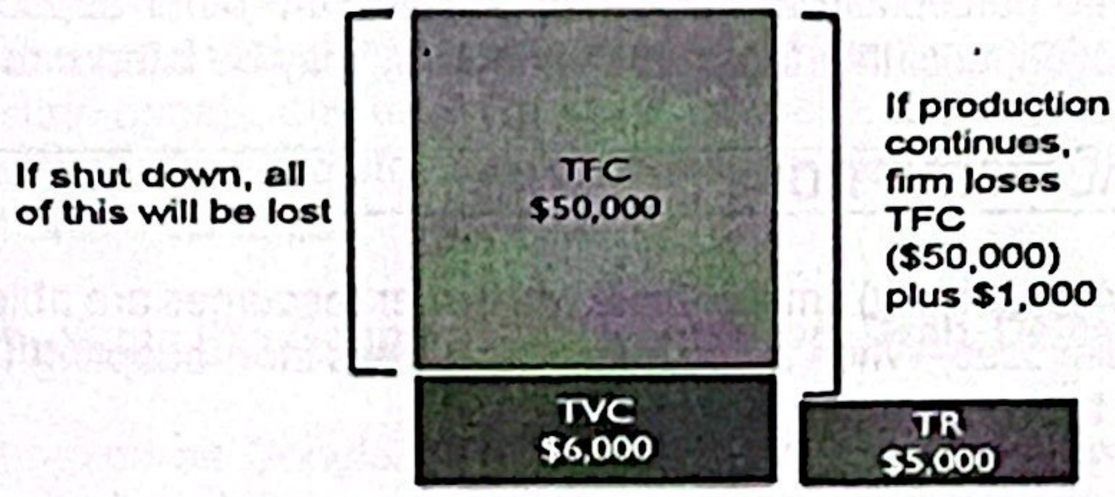
cost of its total variable inputs required to produce its goods (Chart B). The only cost the firm will incur when it closes down would be its fixed cost, which is lower than the total cost of production (total variable cost and total fixed cost).

- When a firm decides to shut down, it is really a **temporary suspension of production.** The firm is not going out of the industry. It may again resume production if situation becomes favourable. Hence shutting down is a short-run affair. A firm that has decided to shut down operations cannot avoid its fixed costs.

Chart B: Reason why a firm making subnormal profits shuts down in the short-run



The firm has invested $50,000 (total fixed costs) into the business. Its revenue is $5,000, and has to pay a total variable cost of $6,000 for wages and utility bills. If it were to shut down, it will not be able to recover any of its $50,000 start-up cost. However, if it continues to produce, not only would it be unable to recover the $50,000, it has to fork out more, in this case, another $1,000 to pay for the variable costs. So it is better to shut down temporary to prevent further losses, while waiting for the situation to turn more favourable.

Situation 3: A firm in the short-run earning Subnormal Profit and is indifferent to whether to continue or shut down (AR=AVC)

This is when the firm is only earning just enough revenue to cover its total variable costs.

In summary, a firm will shut down in the short run when its TR is unable to cover TVC, or its AR is unable to cover AVC.

3.2.3.2 LONG-RUN SHUT DOWN CONDITION

In the long run, there is no fixed cost. All costs are variable costs. As long as the total revenue is unable to cover total cost, i.e., the firm is making subnormal profits, it will **shut down permanently** and **leave the industry.** When a firm exit, it basically winds up all its operations. The capital resources thus get free for use in another venture.

3.3 OTHER INFLUENCES ON FIRM BEHAVIOUR

3.3.1 BEHAVIOURAL ECONOMICS

Besides the need to consider the reactions of competitors (which include both existing and potential firms in same industry), there is the need to consider the likely reactions of its consumers, notably the following cognitive biases of consumers when deciding on their business strategies.

- Sunk cost fallacy arises when a person's decision is affected by fixed rather than marginal costs. For example, a firm may try to get its customers to sign up and pay to become a member of its loyalty program as this may cause these customers to be more inclined to buy from the firm as they may feel compelled to spread out the cost of the membership fee.

- Loss aversion refers to the tendency for people to prefer avoiding a loss over making an equivalent or greater gain. For example, telecommunications providers often require their customers to sign contracts

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whereby early termination results in losses due to the payment of termination fees. Such strategies enable these firms better retain their customers as some of them may not want to break their current contracts and incur any losses even though they may gain more by switching over to other providers which offer cheaper rates.

- Saliency bias refers to the tendency for people to focus on information that is more prominent and over other less prominent but equally relevant pieces of information. For example, a TV manufacturer may decide to highlight that its products have higher resolution screens as compared to equivalent models by its competitors. Some consumers may then decide to buy this brand of TV even though the difference in resolution may not be perceptible to the naked eye and the other aspects of the product like the sound, power consumption, user interface and connectivity may be inferior to the other brands.

3.3.2 TECHNOLOGICAL DISRUPTION

"Disruption" is often seen when (initially) smaller firms with fewer resources are able to successfully challenge established incumbent businesses. When mainstream customers start adopting the new entrants' offerings in large volume, disruption has occurred.

In general, major technological disruptions in an industry can affect all firms' revenue, costs and profits. Firms which are able ride on and exploit such technological changes will expand and may eventually dominate the market eg, Grab and Uber in the ride-hailing market, and Amazon and Lazada in the market for online retailing. Other firms which are slow to respond to technological changes may eventually exit and disappear even though they could have once been a dominant force in that market eg, Nokia in the mobile phone market and Kodak in the photographic film market.

3.3.2.1 EXAMPLES OF HOW TECHNOLOGY HAS AFFECTED FIRMS IN SOME SECTORS

The rise of online retailing

Before the development of online shopping, people would browse at the physical retail store, make their choices and purchase the item from the store. Price and product comparisons, consumer reviews, were largely absent in this decision making process. Consumers have relatively less information and weak consumer sovereignty. However, technological advancement has altered this phenomenon and the internet has now enable consumers to research about their impending purchases in a more efficient way than before, and also placing orders and paying remotely, without the need to visit a store. For the sellers, technology has improved compiling, distributing and tracking orders have become much more efficient, to the extent that 'next day' or 'same day' delivery is no longer unusual.

Fixed costs are costs that do not change with production in the short run, and when a firm is operating it adds variable factors to fixed factors. For a physical retail store, a large proportion of costs is fixed, eg, rent, permanent staff and stocking contracts. If most of the retail store's costs are fixed, it **can only maximise profits by maximising revenues.** Therefore, they have to get more people to physically come by their shops to buy the goods, assuming the firm does not operate an online service. In this respect, it suffers cost disadvantages compared to online retailer such as Amazon.

Most physical retailers in large countries are located near city centres where customers usually gather, and where rentals are high. Conversely, retailers who only sell online can operate with a relatively small number of distribution centres at far away from city where rentals are lower.

Internal economies of scale can be reaped by online retailers. Larger warehousing operations can be built, larger vehicles for transportation can be used, and greater specialisation in the work operations, all contributed to lower average cost of production.

Indeed, the presence of greater competition and transparency from the rise of online retailers increases the price elasticity of demand of goods, making it difficult for the physical stores to maintain sales at higher prices. Therefore, sales revenues suffer while the firm is saddled with a higher base cost than online competitors.

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This is evident as a number of previously solid retail businesses have collapsed and exited the market in Singapore. For example, Robinsons, Naiise Iconic and Sportslink.

Many customers either do not visit physical stores at all, or they visit them as a showroom to try something before going away and order online. This is particularly apparent with consumer durables, and generally with any branded goods where the consumer can be assured that the physical and online purchases will be the same product.

As the internet has greatly increased contestability (the ability of firms to enter a market and compete) and reduced entry barriers, the response by physical stores for survival must be to limit contestability from online firms. The other way is to also pivot to their business model into the online platforms especially in areas like fashion, travel agents or estate agents, and even banking. For these sectors, store closures are less driven by market environment and more by store structural changes, as customers increasingly expect to interact with their service providers online via apps.

The rise of dominant tech-giants like Google, Alibaba, Amazon, Grab, Deliveroo and Facebook

Firms in high-tech markets such as Google, Alibaba, Grab and Facebook have quite different business models and are often referred to as **platforms or intermediaries** since they bring the two-sides of the market together (buyers and sellers). However, the two-sided nature of markets is not restricted to digital markets and has been around for a long time. For example, shopping malls also bring together retail outlets and consumers. There has been increasing attention paid to two-sided markets recently due to the growth of e-commerce and digital platforms such as Google, Alibaba, Facebook, Amazon and Deliveroo. Why these firms are taken note of is because they are some of the fastest growing businesses in the world and increasingly dominant in their markets.

Platforms play a wide variety of roles in markets. Some focus primarily on bringing information together for sharing (Airbnb). Others such as Twitter and Instagram enable social interaction between users. In some cases, platforms not only match buyers and sellers but also facilitate the transaction and delivery of the product (Amazon, Deliveroo, Alibaba). In a similar fashion to newspapers, some digital platforms profit through advertising or selling data on their users (Facebook, Google). These diverse and interrelated roles mean that competition can be quite different across different platform markets. However, one key characteristic that two-sided markets share is the important role of network externalities.

There are positive network externalities in the operations of tech giants. Network externalities occur when the value of the platform increases as the number of people using the same platform increases. Like in social media where the spillover effect is positive, the value to the user of the platform increases when more other users join the connections.

Network externalities are also reaped when users on one side of the market are affected by the increases in the number of participants on the other side of the market. For example, in ride hailing service, Grab or Gojek, the commuters (buyers) would benefit if the number of drivers (suppliers) also increases as more join the same platform, as this would mean a short waiting time for customers looking for a ride. Likewise, the drivers would also benefit with increases in the number of customers who use the platform in the form of more businesses (calls) and higher potential earnings.

Implications of network externalities for platform operators such as Apple (runs Apple App Store)

Let's consider the market for apps from the Apple App store. This online platform facilitates trade between the suppliers of applications (ie, the developers that write the software) and consumers who want to download them to their mobile devices.

If there were no cross-market externalities, Apple would maximise by pricing each of the sides of the markets individually ie, pricing will depend upon matching the marginal revenue and marginal costs on each side separately.

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However, because of the presence of network externalities, and that usually the relative strength of one side may be greater in one direction than the other which would mean users on one side of the market paying lower prices, unrelated to any variation in costs. In some cases, consumers do not have to pay to use the services of an app store, while app developers are charged fees. (Similarly, in the case of social media sharing like Facebook and Instagram, users who sign up an account do not have to pay while advertisers are charged fees).

3.3.3 CORPORATE SOCIAL RESPONSIBILITY AFFECTING FIRM BEHAVIOUR

Firms may consider the impact of their goods and production processes on society and the environment and hence use less harmful inputs or production methods. For example, food manufacturers may use healthier ingredients like unsaturated oils to cook their products or bio-degradable packaging like paper rather than non-biodegradable ones made from plastics to pack and store their products.

While critics may consider such actions to be merely responses that cater to the demand of increasingly health and environmentally conscious consumers, it is possible that the managers or owners of some of these firms could be undertaking such decisions at the expense of profits as they have altruistic intentions.

However, an argument could be that seeking to please a wide range of stakeholder groups could also lead to businesses gaining consumer loyalty and increasing market share. This may indirectly lead to firms maximising their profits, especially in the long run, as a firm may build up a strong reputation for social responsibility.

Important note:
WATCH THIS VIDEO TO SEE IF YOU COULD IDENTIFY SOME OF FIRM BEHAVIOUR AS DESCRIBED ABOVE IN THE REAL WORLD. WE NEED TO CREDIT THE TEACHERS (INCLUDING MR CHONG'S DAUGHTER) AND STUDENTS FOR PRODUCING THIS VIDEO. ENJOY!!

HCI A-Musing Economics Ep1. Market Structure

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PART 4: FIRMS' STRATEGIES & DECISIONS ON EFFICIENCY & CONSUMER WELFARE + GOVERNMENT INTERVENTION

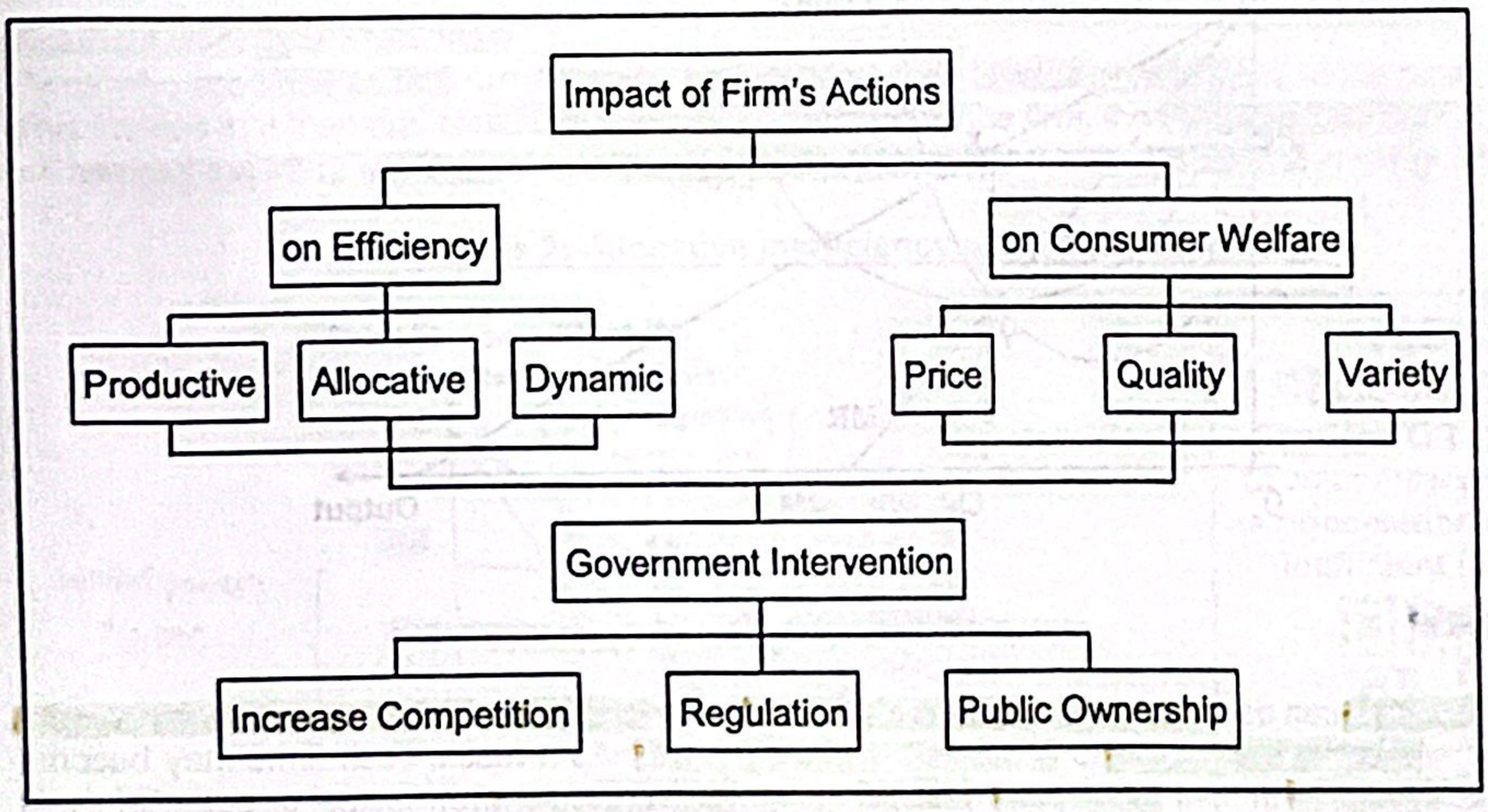
PART 4 OUTLINE

4.1 IMPACT OF FIRMS' STRATEGIES & DECISIONS ON EFFICIENCY
4.1.1 PRODUCTIVE EFFICIENCY
4.1.2 ALLOCATIVE EFFICIENCY
4.1.3 DYNAMIC EFFICIENCY

4.2 IMPACT OF FIRMS' STRATEGIES & DECISIONS ON CONSUMER WELFARE

4.3 GOVERNMENT POLICIES TOWARDS MARKET DOMINANCE (CONTROL OF MONOPOLY POWER)

Concept Map



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4.1 IMPACT OF FIRMS' STRATEGIES & DECISIONS ON EFFICIENCY

A firm's behaviour and strategies to acquire greater market power can affect the level of welfare in society in terms of productive, allocative and dynamic efficiency.

4.1.1 PRODUCTIVE EFFICIENCY

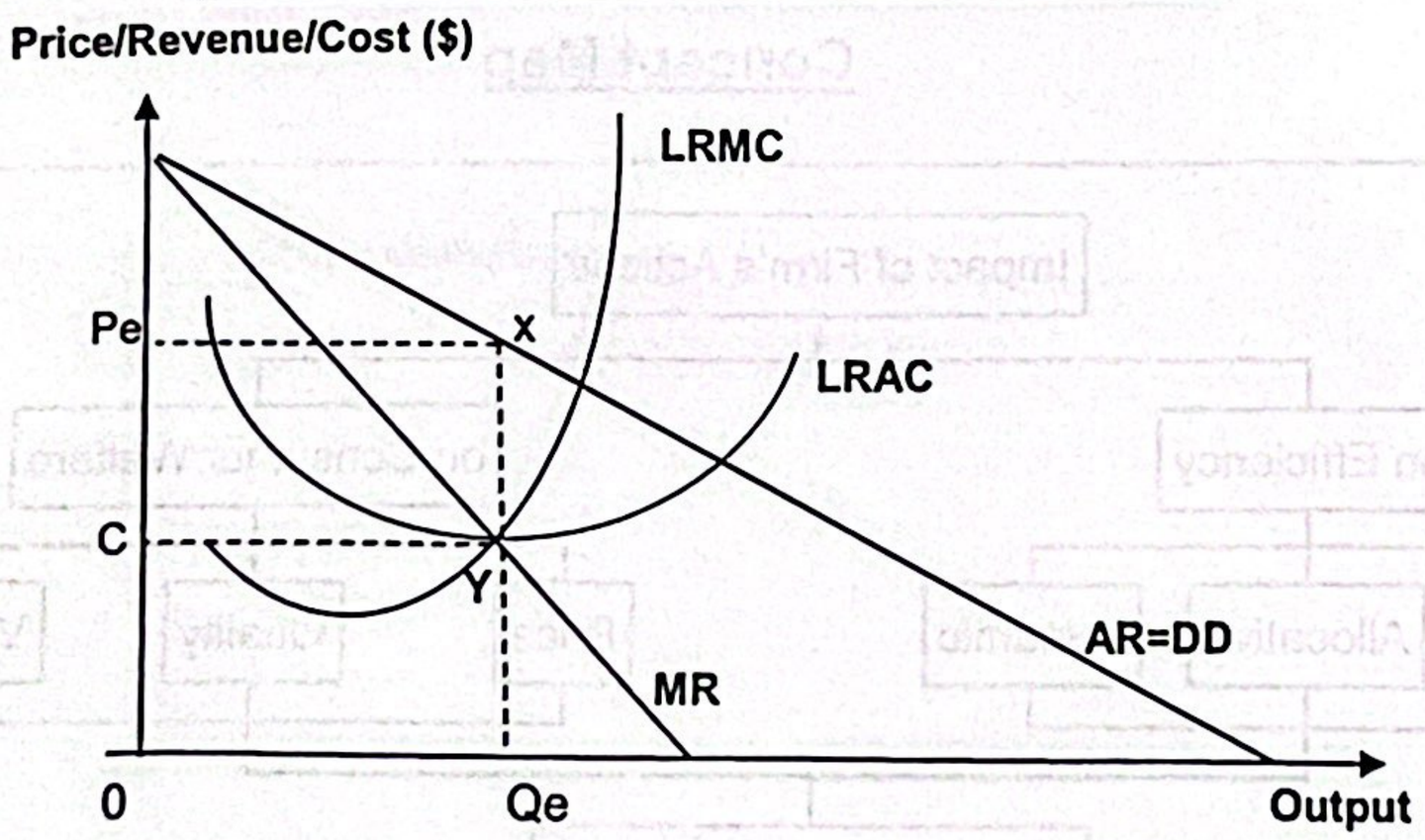
- Productive efficiency is achieved when a given level of output is produced at the lowest cost. At the firm level, any point on the SRAC and LRAC can be considered as being productive efficient in the short and long run respectively. At the industry or societal level, productive efficiency is achieved at the minimum points of the LRAC.

- A firm with market power may not produce at the minimum point of the long-run average cost, thus not all internal economies of scale are exhausted and productive efficiency is not achieved.

- However, a firm could, by coincidence, earn supernormal profits in the long-run, and also produces at produces at the minimum point of LRAC (refer to Fig 1 below) and thus it is productive efficient.

Please note: An imperfectly competitive firm will often only be productive efficient if X-inefficiency is eliminated due to the threat of competition and the minimum point of LRAC confidentially cuts (MR=MC) and enable it to produce at Q_{MES} (see below diagram).

Figure 1: Firm achieving productive efficiency



X-INEFFICIENCY

Large dominating firms can earn sustained supernormal profits in the long run as high barriers to entry prevent competitors from entering the market to compete away their profits. As a result, such firms may become complacent and inefficient in their production. Without competitive pressures from actual or potential rivals (in a contestable market[1]), cost controls may become lax.

[1] A contestable market has both low barriers to entry and exit, providing incentive for potential firms to enter and enjoy some of the high profits the existing firm is earning. A market is considered less contestable when barriers to entry and exit are higher and there is less incentive for potential firms to enter the market.

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This could result in X-inefficiency, where the firms have little incentive to control costs, causing costs of production to be higher than necessary. For example, overstaffing, spending lavishly on buildings and fixtures, as well as reduced effort to keep up and be updated in the use of technology. The effect of this X-inefficiency is to make the **AC and MC curves higher** than they would otherwise be (i.e. not on LRAC).

This is illustrated in Figure 2 below. The lowest average cost of producing at output 0Q1 is achieved at C1 where the firm is operating at a point on the LRAC curve. However, due to X-inefficiency, the firm produces output 0Q1 with a higher average cost, C2, which is above the LRAC curve.

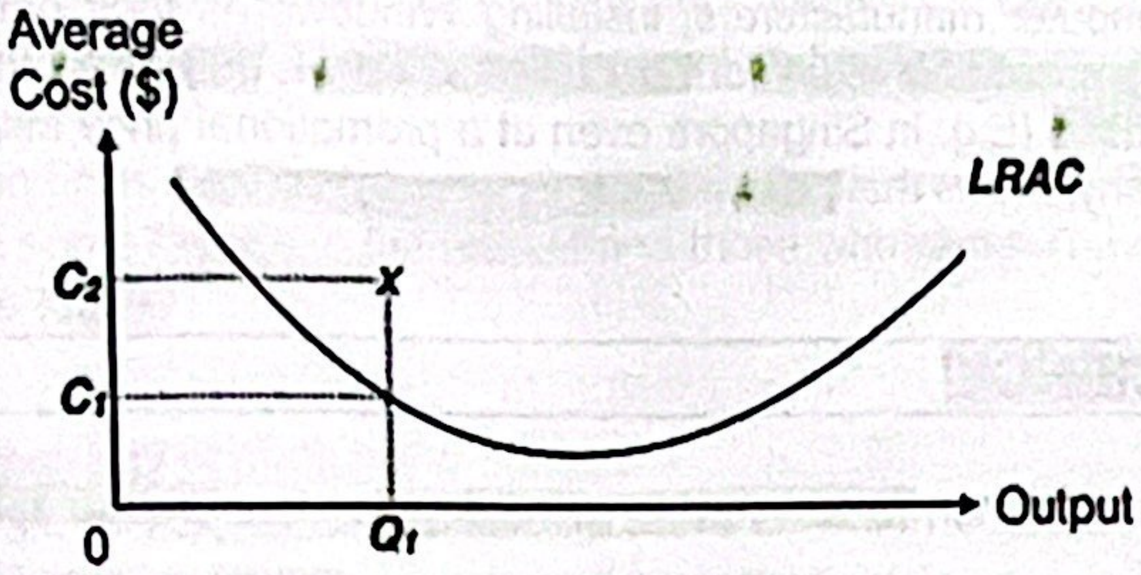


Figure 2: Effect of X-inefficiency

As the firm produces output $0Q_1$ with a higher average cost of C2, there is productive inefficiency.

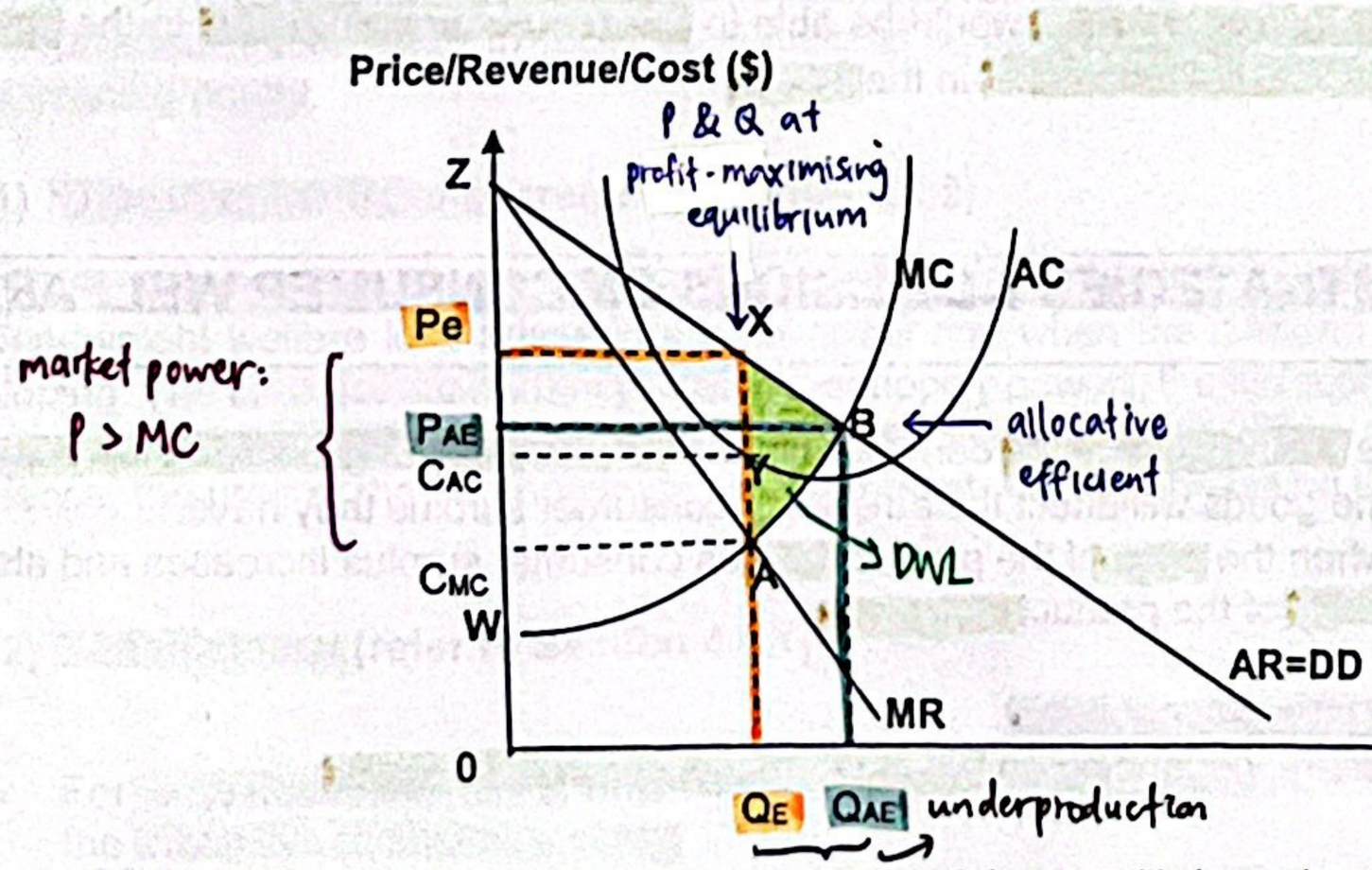
4.1.2 ALLOCATIVE EFFICIENCY

Allocative efficiency can be defined as the output level where society's welfare is maximised. At the firm level, this is achieved when Price (P) = Marginal Cost (MC), where P represents the value placed on the good by consumers and society and MC represents the marginal cost of producing the good.

ALLOCATIVE INEFFICIENCY

Firms who are price setters are allocative inefficient as their level of production is at the point where P>MC. This implies that if an additional unit of good is produced by the firm, the Marginal Benefit (Price) of that unit will exceed the Marginal Cost. Hence society will be better-off if this additional unit of the good is produced.

Figure 2: Allocative Inefficiency of a Price-Setter Firm



HIGHLY RECOMMENDED:
Scan the QR Code below to watch the video on why a price-setter is allocative inefficient (4min 13s).

- With reference to Figure 2, at the profit maximising equilibrium where MR=MC, the equilibrium price and output is P_E and Q_E respectively and profit is $P_EC_{AC}YX$.

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- However, at Q_E, the price is larger than marginal cost, $P_E > C_{MC}$. This means the consumers place a higher value on an additional unit of the good produced than what it costs the firm to produce it.
- Q_E is less than the allocative efficient output Q_{AE} where P = MC which is achieved at point B.
- Hence there is **underproduction** Q_EQ_{AE}.
- For the amount of goods Q_EQ_{AE}, the incremental welfare gain is represented by the area $Q_EQ_{AE}BX$ while the incremental cost is $Q_EQ_{AE}BA$. Since benefits foregone outweigh costs not incurred, the society suffers from a welfare loss of ABX for Q_EQ_{AE} of goods not being produced.
- Question: What is the area WZB? Watch the video to find out.
- A classic example will be Microsoft Windows OS. Microsoft is able to charge high price for its product due to its tie-up with computer manufacturers, installing Windows as their default OS. Though the marginal cost of producing an additional unit of Windows software is negligible, the price is charged for the software is relatively high. (E.g. in Singapore even at a promotional price Microsoft office is priced at around $200). This clearly shows that price is more than marginal cost.

4.1.3 DYNAMIC EFFICIENCY

- Dynamic efficiency is achieved when firms invest in technology so that product quality and productivity will improve over time.
- A dominant firm with strong market power (due to high barriers to entry) may not have the incentive for it to do R&D. Also, innovation may erode the value of a monopoly's existing products and thus it may prefer to stay status quo. For example, the discovery of a cheaper and faster microprocessor will lower the price of all its existing microprocessors.
- Nonetheless, if the barriers to entry and exit are lowered, the firm will innovate to secure its position.

Innovation
product process

- Innovation is used as a means to erect barriers to entry to deter entry of new rivals and to stay ahead of the competition (e.g. introduce new products and better techniques of production). It can innovate in terms of production processes/machines that reduce costs so as to enable the firm to charge a low price to deter other firms which cannot match the low price from joining; or to come up with better quality goods (revenue side) to harness loyalty from consumers and this will serve as a barrier to entry to potential competitors.
- A firm might need to periodically innovate come up with better products to sell to the existing consumers and at the same time attract new consumers. For example, Apple has introduced different versions of its phones almost every year, enticing its existing consumers to constantly upgrade and new consumers to buy its products. All these add on more revenue and thus profits to the firm.
- Besides, the firm that conducts successful R&D would be able to retain supernormal profits in the long-run and this in turn helps it to fund more innovation in the future.

4.2 IMPACT OF FIRMS' STRATEGIES & DECISIONS ON CONSUMER WELFARE

- Consumer welfare refers to the individual benefits derived from the consumption of goods and services.
- The price consumers pay for the goods will affect the amount of consumer surplus they have.
- Consumer welfare increases when the price of the product falls as consumer surplus increases and also if the variety of choices and quality of the product improves.

Impact on price and output (hence consumer surplus)

- Impact on consumer welfare differs, depending on which strategies different firms use:

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- When oligopolies collude to form a cartel in their competition strategies, consumers are adversely affected as the cartel can raise its price by manipulating supply and consumers have no alternative firm in the industry to turn to.
- In competitive oligopolies, however, there may not be price competition due to price rigidity, hence consumers can enjoy a low price even if when costs have risen.
- If a firm practices price discrimination, it can result in reduction in consumer surplus as the firm's profits increase.
- On the other hand, to maintain its monopoly power, a firm may use aggressive pricing like predatory pricing, selling below marginal cost to drive out competitors. Consumers might benefit in the short term, but once the other competitors exit the market, the firm might raise its prices to the detriment of the consumers.
- Likewise, when firms decide to engage in price war, consumers will benefit from lower price in short run, but when some firms exit the market and those who remain have more monopoly power, price may rise in the future.

Impact on variety and quality of products

- When firms engage in non-price competition, there is a high chance that there are improvements in innovation and consumer choice.
- However, if the non-price competitive strategy is centred on branding and persuasive advertising, they only give an illusion to consumers that they have a wider choice when in actual fact the products may be similar. So consumer choice may not improve and may even worsen consumer choice if consumers are swayed into buying goods and services that add less marginal benefit to them than what the consumers perceive. (In other words, perceived marginal private benefit > actual marginal private benefit).

4.3 GOVERNMENT POLICIES TOWARDS MARKET DOMINANCE (CONTROL OF MONOPOLY POWER)

REASONS FOR GOVERNMENT INTERVENTION

When firms grow and expand, either by collusion or merger, its market power increases, and with greater market power, firms have ability to set higher prices, and gain larger profits. In doing so, they may engage in certain behaviour and gain larger supernormal profits, which may have detrimental effects on society. Government intervention in markets is justified when market dominance can lead to inefficiency and/or worsening equity.

(1) Allocative Inefficiency (refer to Section 4.1.2)

Deadweight welfare loss arises in a price setter firm when the demand curve facing the firm is downward sloping. The stronger the market power (or monopoly power), the more price inelastic demand is the demand curve, the greater will be the allocative inefficiency (P> MC is larger for a relatively steeper demand curve). Hence, the greater the firm dominates in the market, the larger shall be the allocative inefficiency.

(2) X-inefficiency (refer to Section 4.1.1]

- For large dominating firms which limited or no competition/ rival, it is questionable whether they will have the **incentive to minimise costs.**
- In other words, it might be **complacent** and suffer from inefficiency due to the lack of competition. This lack of incentive to control costs is known as X-inefficiency.

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- Hence AC and MC curves would be higher than they otherwise would.

(3) Dynamic inefficiency (refer to Section 4.1.3)

- in certain markets, dominant firms have no incentive to innovate. In such cases, market dominance may lead to dynamic inefficiency. ↗ low BTE, incentive for potential firms to enter market (& share supernormal profits)
- When the market is not contestable due to prohibitively high barriers to entry, it is highly likely that the dominant firm has no incentive to innovate. This is because the firm, regardless of its innovation efforts, will retain its position as the dominant party in the market and continue making supernormal profits in the long run.
- Since the firm has no incentive to spend millions on R&D and risk failure, it will not do so. Thus there will be no innovation to improve the quality of the product or bring down costs in the long run.

(4) Market dominance can worsen equity

Large firms with high barriers to entry can set high prices and earn sustained supernormal profits. This means that the large firms are charging high prices and earning large supernormal profits, which are enjoyed by the few shareholders of each firm at the expense of consumers.

OBJECTIVES OF GOVERNMENT INTERVENTION

- **Improving consumer welfare and equity:** Firms' profits are transferred to consumers as lower price and a rise in consumer surplus.
- Promoting **economic efficiency** by reducing allocative inefficiency (to reduce the gap between MC and Price) and promoting productive efficiency (reducing unit cost in the long run).
- Ensuring big firms **remain viable** in producing goods and services so as to **remain innovative.**

The policies the government can use respond to the problems of market dominance include:

- Ways make the dominant firms in the market more competitive
- Regulating the behaviour of the dominant firms
- Turning some private dominant firms into public enterprises

(1) Increase competition with Competition Laws/Antitrust Laws

- The government implements competition acts or antitrust laws, aimed at curbing monopoly power of dominant firms. Different jurisdictions may have different laws e.g. Singapore has the legislation such as Competition Act, while in the US, it is the Antitrust Laws.

- The laws give the government various ways to promote competition. They allow the government to prevent mergers and break up firms. Finally, these laws prevent firms from coordinating their activities in ways that make markets less competitive. E.g. The formation of cartels is illegal in many countries.

- In Singapore, the Competition Commission of Singapore (CCS) was set up in 2005 to administer and enforce the Competition Act. It is not against dominant position of a firm, instead it acts against the abuse of dominant position (e.g. predatory pricing, limiting production or markets). Examples of firms found to be anti-competitive include SISTIC, coach operators providing services to and fro Malaysia, pest control companies, maid agencies and modelling agencies.

Competition Laws & Antitrust Laws may be a blunt instrument at times: (Evaluation)

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Antitrust laws have costs as well as benefits. Sometimes firms merge not to reduce competition but to lower costs through more efficient joint production. These benefits from mergers are sometimes referred to as the creation of synergies. For example, the merger of many banks helps to reduce administrative staff. If antitrust laws are to raise social welfare, the government must be able to determine which mergers are desirable and which are not. That is, it must be able to measure and compare the social benefits from synergies to the social costs of reduced competition.

(2) Regulation

Another way in which the government deals with the problem of monopoly is by regulating the behaviour of the dominating firms. This solution is common in the case of natural monopolies[2], such as water and electric firms. These firms are not allowed to charge any price they want. Instead, government agencies regulate their prices.

Marginal Cost Pricing: For the case of natural monopoly, one might conclude that the price should equal to the natural monopoly's marginal cost. If price equals marginal cost, consumers will buy the quantity of the monopolist's output that maximises social welfare, and the allocation of resources will be efficient.

Marginal Cost Pricing may be detrimental to the firm:

Natural monopoly has a large declining average cost as it has huge internal economies of scale, and marginal cost will be less that the firm's average cost. If regulators set price equal to price marginal cost, that price will be less than the firm's average cost and thus firm will suffer losses (subnormal profits) and may eventually leave the market.

Regulators could respond in various ways, though none is perfect. One way is to subsidise the natural monopoly. However, to pay for the subsidy, the government needs to raise funds through taxation.

(3) Public Ownership

The third policy to deal with the dominant firm is through public ownership. That is, the government can run the firm itself. This solution is common in many European countries, where the government owns and operates utilities such as the telephone, water and electric firms.

Government may lack incentive to keep firm profitable:

The key issue is how the ownership of the firm affects the costs of production. Private owners have an incentive to minimise costs as long as they reap part of the benefit in the form of higher profit. If the firm's managers are doing a bad job of keeping costs down, the firm's owners will fire them. By contrast, if the government bureaucrats who run the enterprise do a bad job, the losers are the consumers and taxpayers, whose only recourse is the political system.

Conclusion:

Each of the policies analysed above aimed at reducing the problem of the dominating firm has drawbacks. As a result, it may be argued that it is often best for the government not to try to remedy the inefficiencies of monopoly pricing for the proper role of the government in the economy requires judgements about politics (government failure) as well as economics.

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[2] A natural monopoly is a special case where one large firm can supply the entire market at a lower long run average cost. This is because of the nature of costs in a natural monopoly where there are very high fixed costs and low marginal costs. With a natural monopoly, the internal economies of scale available to one large firm means that there is a tendency for one firm to dominate the market in the long run.

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Chapter #4: Microeconomics II – Markets: Firms and Decisions

Tutorial 4

Part 1: Objectives of Firms

Essay Q1

Adapted from DHS 2019 Prelim Q2

In the real world, a firm's pricing and output decision take into account the interests of stakeholders, such as the shareholders, managers and employees.

(b) Discuss whether a firm's decision on price and output follows the profit maximising principle. [15]

Part 2: Cost & Revenue + Types of profits

Essay Q2

HCI 2015 Prelim Q3

In recent years, natural calamities such as floods and earthquakes have caused the cost of raw materials to rise.

(a) Distinguish between variable costs and fixed costs and explain whether a rise in these costs will affect a firm's pricing decision differently. [10]

Part 2: Profit Maximisation Price and Output

Essay Q3

'Barriers to entry' are discussed in detail in Part 3: Strategies & Decision.covered:

TYS: N2008 Q2

(a) Explain why barriers to entry are a key determinant in firms' pricing decisions. [10]

Essay Q4

TYS: N2016 Q3

In Australia, small and remote communities face high and stable prices for petrol. The petrol is supplied by one or two small petrol stations owned by small independent retailers. Prices are lower and more volatile in the large cities, where there are a large number of big petrol stations owned by a small number of big oil companies.

Source: Australian Institute of Petroleum

(a) Explain why less market competition might lead to higher and more stable prices. [10]

(b) Assess whether differences in the level of competition are likely to be the main reason for differences in the retail prices of petrol in rural and urban areas of Australia. [15]

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Chapter #4: Microeconomics II – Markets: Firms and Decisions

Tutorial 4

CSQ1

Case Study Question 2 (Adapted from HCI 2014 TA2)

The Global Aircraft Manufacturing Industry

Extract 1: China's Entry into Aircraft Manufacturing

The Chinese government is looking to target the fast-growing global market of single-aisle aircraft with the C919. China has set its sights on commercial aircraft manufacturing - a sector that has arguably more hurdles and stumbling blocks than any other.

The state-owned Commercial Aircraft Corporation of China (Comac) is the one tasked with helping Beijing break into the sector. Comac is up against one of the world's strongest duopolies of Boeing and Airbus. Set up in 2008, the firm is betting on its C919 aircraft – a single-aisle plane that can seat up to 156 passengers - to be its launch pad. It is priced competitively at US$68 million each. The company is targeting the market for 100 to 200-seat single-aisle planes which is forecasted to be worth a lucrative US$20 trillion over the next 20 years. So far all of 400 Comac's orders have been from China.

However, Comac is up against stiff competition. The sector is dominated by Airbus A320 with more than 6,000 built and Boeing 737, with 8,000 already in service. The price of an Airbus A320 is at a whooping US$93.9 million while the Boeing 737 is at a slightly lower US$84.4 million.

"The barriers to entry in commercial aircraft manufacturing are extremely high, and they are not just technological. When it comes to aircraft manufacturing, perception is everything." says Richard Bitzinger, a senior fellow at Singapore's S. Rajaratnam School of International Studies. Perhaps an even bigger hurdle is winning the trust and loyalty of airlines that it can build a reliable and safe plane, not least because hundreds of lives are at stake every time a plane is airborne. Planes are highly complex machines. Thousands of parts need to be fitted and integrated together for them to function properly and any faults can create serious problems. This is where, analysts say, China's reputation over safety issues may prove to be a stumbling block.

Source: Adapted from BBC News 10 Feb 2014

Table 1: Market Share (in %) of Global Wide-Body Aircraft Capacity, 2012

Aircraft Manufacturer	%
Boeing	57.6
Airbus	37.5
Others	4.9

Source:innovata.com

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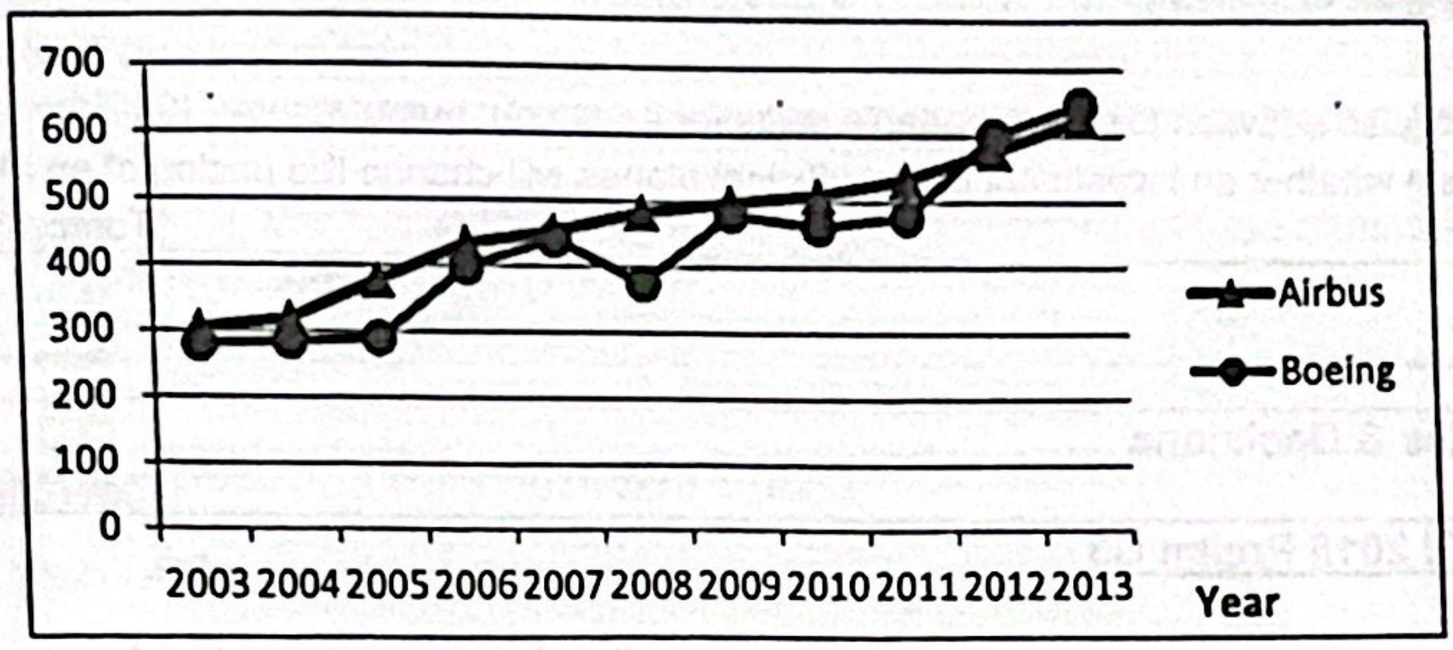
Tutorial 4

Figure 1: Total Deliveries of Aircraft by Manufacturer, 2003-2013 (Units)



Source: Boeing and Airbus websites

Extract 2: Boeing Overtakes Airbus as Problems Gather

Boeing reclaimed the title of world's biggest aircraft maker, overtaking European arch rival Airbus, even as it grapples with its most serious crisis in years.

But the grounding of its Boeing 787 Dreamliners could deal a serious blow to its prospects, particularly if the U.S. investigation into a problem with its battery reveals flaws in the design of the lightweight, carbon-composite aircraft. The Dreamliner's batteries are energy efficient, light and compact, but they generate a lot of heat.

In recent years, aircraft manufacturers have been trying to find ways for more fuel efficient planes as airlines' profit margins are squeezed by high oil prices and the weak global economy. Experts said Boeing would need to move quickly to contain any loss of confidence in its aircraft but that there could be broader anxiety among airlines about the shift to new and unproven technologies.

Any cost increase due to Boeing's problems with the Dreamliner would be painful. Union Bank of Switzerland (UBS) already expects Airbus to lose up to 700 million euros on the new Airbus A350 in 2014 as production costs exceed launch prices. This spells trouble for the two manufacturers which are considering either slashing their budgets on the R&D for the new generation of aircrafts or abandoning their new projects altogether.

Source: Adapted from CNN Money 17 January 2013

Questions

(a) Compare the trend in total aircraft deliveries by Boeing and Airbus from 2003 to 2013. [2] **[2]**

(b) Explain two possible internal economies of scale that could be reaped by Boeing. [4] **[4]**

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(c) With the aid of a diagram, explain the change in profits for Boeing when there is an entry of a competitor such as Comac. [3] [3]

(d) (i) Distinguish between fixed and variable costs for an aircraft manufacturer. [2] [2]

(d) (ii) Explain whether an investment in fuel efficient planes will change the pricing of an airline. [2] [2]

[Total: 13 marks]

Part 3: Strategies & Decisions

Essay Q5

HCI 2015 Prelim Q3

In recent years, natural calamities such as floods and earthquakes have caused the cost of raw materials to rise.

(b) Discuss the extent to which a rise in cost of raw materials will result in an oligopolistic firm changing its price in reality. [15]

Essay Q6

TYS: N2009 Q3

A very popular band is due to play one concert at a 5000 capacity venue. The plan is to charge different prices according to the area in which the seat is located.

(a) Explain whether this pricing policy could be considered to be an example of price discrimination. [10]

Essay Q7

N2018 Question 1

The average price of tickets for two concerts performed by singer-song writer Ed Sheeran in November 2017 at the Singapore Indoor Stadium was S$180. Tickets went on sale six months earlier and both concerts sold out almost immediately. Some tickets were later being offered for resale at prices well above face value.

b. Discuss possible strategies that concert organisers could use to improve the market outcome for this type of concert for producers and consumers. [15]

Essay Q8

TYS: N2013 Q3

'Recession put weak firms out of business whilst strong firms use a recession to become more efficient.'

(a) Explain the relevance of different types of cost in the decision of a firm to close when faced by a fall in demand for its products. [10]

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Essay Q9

N2020 Question 3

Expectations of quick service restaurants (QSRs) or fast-food chains are changing. Innovation is required to keep abreast of changing consumer taste and to maintain a competitive advantage in Singapore, a market known for its discernment of food.

b. Discuss whether innovation is the best strategy for fast food chains seeking to increase their profits. [15]

CSQ2

Case Study Question (Adapted from 2010 BT2 CSQ1)

Extract 1: Analysis of the global airline industry

The airline industry in most countries globally has been deregulated such that entry barriers for new entrants are lower and this has posed a challenge to the incumbent airlines. Airlines are now free to negotiate their own operating arrangements with different airports; enter and exit routes easily; and set fares and flight volumes according to market conditions. Nonetheless, established airlines continue to hold the monopoly over time slots for landing and take-off at certain airports, making it harder for new airlines to infiltrate.

Beside rising competition, airlines are losing billions of dollars due to rising fuel prices. But instead of raising airfare to cope with the higher costs, every carrier is looking to cut costs so as not to lose customers. Limited by restrictions on mergers with foreign airlines and waiting for someone else to make the next move, airlines are now seeking to expand their alliances and trying to extend synergies within current partnerships. The three major alliances -- Star, SkyTeam and oneworld -- are global networks of carriers that allow members to streamline costs while sharing revenue.

Source: Adpated from Datamonitor, December 2009 and

Airline alliances becoming the new "mergers", Reuters, 26 Feb 2010

Table 1: Top 4 Airlines in Asia-Pacific Region

Share of Asia-Pacific Airline Industry (by value of total revenues)	2007 %	2008 %
Japan Airlines	24.13	21.32
All Nippon Airways	15.62	14.22
Qantas Airways	13.74	13.38
Singapore Airlines	11.11	11.16

Source: Datamonitor, December 2009

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Extract 2: Low-cost expansion

Full service carriers everywhere are struggling to stay afloat, with Japan Airlines succumbing to bankruptcy only last month. In contrast, the region's low-cost airline sector is buzzing with passenger growth and expansion plans.

For the moment, many of the Asian no-frills carriers are declaring profits. AirAsia booked a net profit of RM$130m (US$37m) for the quarter to September, and Cebu Pacific posted net income of 1.8bn pesos (US$38m) for the first half of 2009. Such low-cost carriers compete with full service carriers by undercutting prices. They could lower price by using aircrafts more frequently, packing in more seats, selling tickets directly via websites rather than travel agents and cutting in-flight services.

Source: The Financial Times, February 2010

Extract 3: SIA expansion of its budget carrier services

Singapore Airlines (SIA) passengers could find themselves connecting to destinations offered by Tigerair, as the country's national carrier finally brings the budget carrier into its fold. With the acquisition of Tigerair, SIA adds to its stable of the premium parent carrier, SilkAir and Scoot. "With all these four vehicles, we have basically covered the full spectrum of travel segments," said chief executive officer Goh Choon. "We will be able to provide the right vehicle for anyone on any sort of budget or destination."

Passengers will eventually be able to purchase one ticket with SIA and travel to destinations offered by all four of its airlines. Mr Goh said this arrangement will be rolled out on a "gradual basis".

In practice, a passenger from Nanjing in China - which is not served by SIA or SilkAir - would be able to travel on Scoot to Singapore and transfer onto the parent carrier to connect elsewhere in the world.

But Mr Goh added that brand dilution and confusion was a concern, and the group was approaching this cautiously so as not to diminish the parent carrier's premium image. "We have to make sure our customers understand they are connecting onto a budget product and what to expect from that - that's education that we would have to do," said Mr Goh.

Source: The Straits Times on March 02, 2016

Questions:

(a) Describe the type of market structure in the Asia-Pacific airline industry. **[2]**

(b) Discuss how the airlines might compete against one another in the midst of the challenges presented in the case. **[8]**

[Total: 10 marks]

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Part 4: Efficiency + Consumer Welfare

CSQ 3

2017 HCI TA2

The Online Media Industry

Extract 1: Online Advertising – Best Way to Reach the Audience

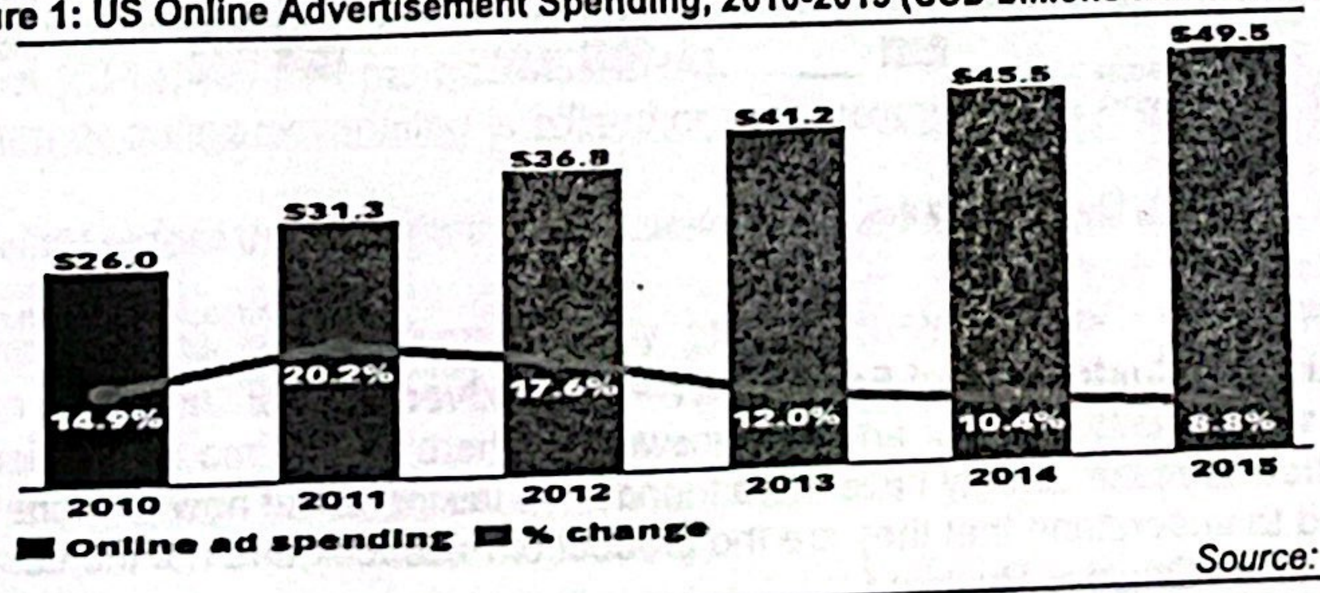
Online advertising which uses the internet to deliver promotional marketing messages to consumers has surpassed television to become the largest advertisement in existence in America. Many Americans are spending more time on various online social media and apps. Online advertising frequently involves both an internet media publisher, for example Facebook, Google or even a private blog, which integrates advertisements into its online content and an advertiser, who would pay for the advertisement and provide the ad displays on the publisher's content.

The cost of advertisement to advertisers varies among the different platforms. However, there are two common ways advertisers are charged and they are based on 'click per impressions (CPM)' or 'click per actions (CPA)'. CPM model is one where the advertiser pays each time an ad is displayed online for a stipulated period of time. The advertisement charges will be based on an agreed rate for the duration of the time that the ad is exposed to the public regardless of whether anyone views the ad or not. For CPA, what the advertiser needs to pay is not the time exposure of the ad, but only when there is a viewer who has decided that the service or good advertised suits him and hence he makes a purchase of the good/service by clicking on the ad. Hence the advertiser only pays for the ad when there is a sale.

In digital advertising landscape, it is all about the power of platforms. Large networks of platforms are usually more valuable to advertisers. Hence, internet media firms that have created or bought platforms full of user-generated content that people use every day like Facebook, YouTube (owned by Google), Twitter, Snapchat and LinkedIn will make the cut as the top revenue earners in the industry as they have gained massive platforms.

Source: Curtis, Anthony (2013). "The Brief History of Social Media". Mass Communication Department, University of North Carolina at Pembroke.

Figure 1: US Online Advertisement Spending, 2010-2015 (USD billions and % change)



Source: eMarketer, June 2016

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Tutorial 4

Extract 2: Facebook's Profit from Online Advertising

Founded in 2004 at Mr Zuckerberg's college dorm at Harvard, Facebook was initially available only to students at selected universities – its expansion was slow initially but over time Facebook has gone from strength to strength through mergers and acquisitions where it now owns Instagram, a photo-sharing site, Whatsapp, a messing service, and Oculus, a virtual-reality firm.

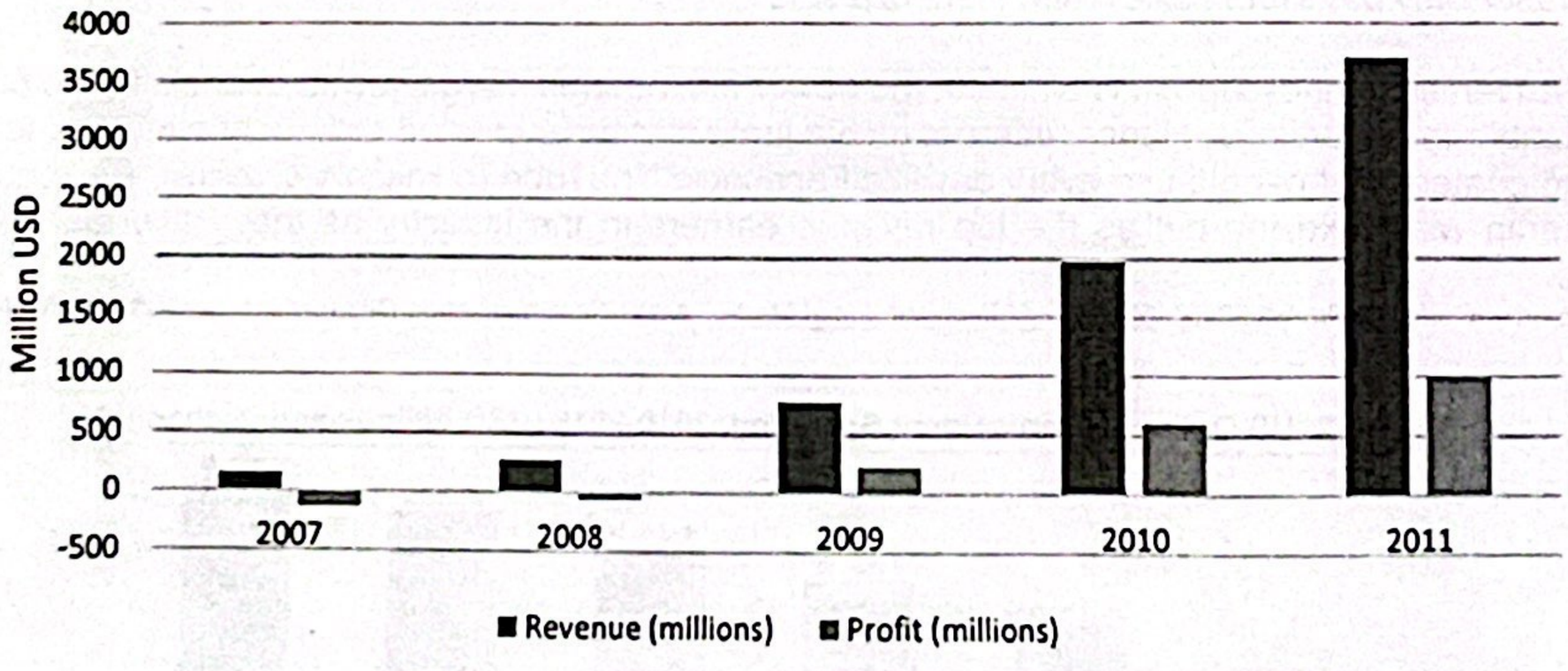
In its early years, Facebook encountered growing pains. Slow revenue growth and huge costs incurred from acquisitions pressured the firm into losses. Infrastructure is Facebook's biggest cost as it is expensive to build and operate. The bulk of money was related to data centre equipment and Facebook has to rapidly scale up to support growing traffic and network complexity. Fortunately, Facebook managed to find avenues to generate sales and grew to become the world's largest social network platform. In less than eight years it has grown to host 526 million daily users, 300 million daily photo uploads, and nine million applications.

Facebook has used that advantage of its network to become one of the most powerful forces in the advertising business. Facebook and Twitter track people's movements around the web such as where people shop, what they buy online and also their jobs and incomes. The huge amount of "network information" could be daunting to any newcomers intending to come in the foray of the market. Hence, Facebook took in a large slice of the online advertising market revenue, and its profit soared, initially tripling in 2010 but moving forward, whether it is going to maintain the same profit growth rate is uncertain.

Though high costs are incurred in establishing a network, Facebook continues to expand its infrastructure and server capability as not only are there potential gains from extra revenues, but the long run cost per user diminishes.

Source: The Guardian, 2 Nov 2016

Figure 2: Facebook Revenue and Profit 2007 - 2011



Source: https://techcrunch.com/2012/02/01/facebook

Extract 3: Who are the Customers of Facebook? – The Advertisers

Ask Johnny, a kid what Facebook is for and he'll answer 'it's there to help me make friends'. But Facebook isn't talking about how to make Johnny have more friends. It's talking about how to monetize Johnny's social graph. People need to understand that they are the product of Facebook and not the customer, according to media theorist and writer Douglas Rushkoff.

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He added, 'Ask yourself who is paying for Facebook. Usually the people who are paying are the customers. Thus, advertisers are the ones who are paying so they are the consumers. Users are not the customers of Facebook, they are the product. Facebook is selling them to consumers, the advertisers".

Source: Douglas Rushkoff, "Program or Be Programmed: Ten Commandments for a Digital Age", 2010

Extract 4: The Impact of Growing Online Business Platforms

In the digital landscape, the most important factor is the power of connectivity. Mr Zuckerberg of Facebook is determined to see his company becoming a tech-titan, making inroads into messaging services, artificial intelligence and virtual reality. Facebook's plan is to embed itself deeper into people's daily lives. That will make it harder for users to leave or switch to competitors like Twitter and Google.

Facebook is also changing its algorithm to send less traffic to other competitors' content sites. Users would find that they are not able to connect to friends and family as well as before. Moreover, advertisers will feel the pinch because they will have lesser captive audience for their advertisements. However, there is argument that monopolies can be agents of progress. The promise of years of monopoly profit provides a powerful incentive to innovate. And the profits monopolies can bring allow bold long-term plans and ambitious research projects that "firms locked in competition cannot dream of".

With dominance by Facebook, its advertisers now face steadily rising ad costs. In online advertising where soliciting online advertising space is often done through agencies which would help advertisers select which media publishers or firms to advertise in, advertisers are particularly worried as Facebook is offering agencies undisclosed rebates for buying their ad space and on another hand raising the advertising rates.

The returns from online businesses have been lucrative and many of the world's richest people own online establishments, for example, the fourth richest man, Jeff Bezos, is the founder chairman of online shopping giant Amazon whose wealth is valued at $63.1 billion. The eight and nine wealthiest persons are Facebook's Zuckerberg and Larry Ellison of Oracle Corporation, each with wealth of $49.7 billion and $43.4 billion. Notwithstanding the huge profits that big internet firms, there are also risks that can threaten their positions. Social audiences can be fickle, and young people can move to other social networks. The entry of new and smaller startup which does not try to compete directly with the incumbent Facebook but still able to have features that will attract users to it could upsurge Facebook eventually and capture the market.

Source: The Economist, 27 Nov 2014

Questions

(a) Describe the trend of US online advertisement spending from 2011 to 2015. [2]

(b) Extract 1 states two common ways advertisers are charged which are 'click per impressions' (CPM) or 'click per actions' (CPA).
Explain whether online advertising is a fixed or variable cost to the advertiser. [3]

(e) Assess to what extent the change in Facebook's profit in Figure 2 will continue in future.[8]

(f) Discuss the impacts on efficiency, equity and consumer welfare from mergers and acquisitions in the online media industry. [10]

[Total: 23]

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Part 4: Government Intervention

Essay Q10

TYS: N2015 Q3

'Market dominance is the main factor determining the profitability of firms.'

(b) Discuss whether government intervention is always needed when a firm dominates the market. [15]

CSQ4

TA2 C2 2018

Recent Developments in MRT Transport

Extract 1: Things you need to know about the New Rail Financing Framework

The Mass Rapid Transit (MRT) is a mode of transport taken by most Singaporeans and is run by two operators SMRT Train Ltd and SBS Transit.

SMRT Trains Ltd operates the following lines:
- North-South Line
- East-West Line (including the Changi branch line)
- Circle Line

SBS Transit operates these lines:
- North East Line
- Downtown Line

1. What does the New Rail Financing Framework mean for you?
With Land Transport Authority (LTA) as the owner of all operating assets, it will be able to build up, replace and upgrade the assets in a timely manner. Rail operators can then focus on providing reliable and well-maintained rail services for commuters. Fares will also not be affected as they are regulated by the Public Transport Council (PTC). Commuter interests remain at the heart of the transition to the New Rail Financing Framework (NRFF).

2. What operating assets will be transferred to LTA?
The operating assets include the trains, signalling system and maintenance equipment such as rail grinding vehicles, electrical and fire protection equipment as well as equipment for power and building services. There are over 60,000 operating asset items.

3. Will this transition affect SMRT Trains' and SMRT Light Rail's staff?
No. The transition only involves the transfer of ownership of operating assets and will not have an impact on SMRT Trains' and SMRT Light Rail's staff.

4. Is Singapore moving towards a nationalised rail sector?

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No. The Government is not nationalising the rail sector. A nationalised system is one where the Government itself operates the rail services. Under the NRFF, private rail operators licensed by LTA will continue to run the rail services.

Source: https://www.gov.sg, 4 October 2016

Extract 2: Transport Minister Khaw Boon Wan believes the new rail financing framework will benefit commuters

The Singapore Transport Minister, Mr Khaw Boon Wan noted that the new framework was first implemented for the SBS Transit's Downtown Line. "We now look forward to its extension to all the SMRT train lines," he said, adding: "The new rail financing framework will benefit commuters."

Mr Sitoh Yih Pin, chairman of the Government Parliamentary Committee for Transport, concurs. He said the operator will be able to focus on service to commuters and maintenance of the rail system. There will be no more large capital expenditures for the operator," he said. SMRT continues to retain a share of the earnings from fare collection.

Mr Sitoh added that the new format also paves the way for "greater contestability" "The reduction of the licence period from 30 to 15 years will hopefully translate to more competition, improved service levels and cost-efficiency," he said.

In a Facebook post, National Transport Workers' Union executive secretary Melvin Yong said the union will study the new arrangement in greater detail to assess its implications on our rail workers. "We will continue to work closely with LTA and SMRT to ensure that our workers' interests and welfare are taken care of," he added.

SIM University senior lecturer Park Byung Joon said the new framework translates to more public funding and accountability. "The responsibility to invest in assets to improve the system now lies with the Government," he said. "Although there is no guarantee that this will lead to better service, there is no reason to doubt that it won't," he added.

National University of Singapore transport researcher Lee Der- Horng said: "I think commuters will benefit if it all goes as planned. Hopefully, the operator can focus more on operations, and the Government can make the right judgment on the upgrade and renewal of the system. In a way, it is like getting the best of both worlds."

Source: *The Straits Times*, 16 July 2016

Extract 3: Bus and train fares reduced by overall 4.2 per cent

Bus and train commuters will enjoy an overall fare reduction of 4.2 per cent from Dec 30, the Public Transport Council (PTC) announced on Thursday (Oct 27).

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For adults using travel cards, this will translate to savings of between 1 and 27 cents for a journey. Senior citizens will have their fares lowered by 1 to 7 cents, and students by 1 cent across the board.

The Government also said on Thursday that it will reduce fares for lower-wage workers and persons with disabilities, by a proportionate level to the PTC's fare adjustments.

Concessionary card fares for lower-wage workers will be lowered by 1 to 25 cents. Concessionary card fares for persons with disabilities will be lowered by 1 to 7 cents.

The Gini coefficient, which measures income inequality and assigns lower scores to more equal societies, went down from 0.463 in 2015 to 0.458 in 2016.

Source: *The Straits Times*, 27 October 2016

Extract 4: Can Singapore match Taipei's rail reliability?

Last month, Transport Minister Khaw Boon Wan set a lofty target for Singapore rail operators. He wants Singapore's rail network to achieve Taipei Metro's 2015 reliability standard of 800,000 train-km between disruptions.

For sure, Singapore will have a tougher time than Taipei. Taipei's system is nationalised. There is only one operator, and it is the government. There are two private operators in Singapore, each answerable to its own shareholders, and each operating a system that is significantly different from the other. So, even if the Government and operators can work seamlessly together, we have a huge duplication of resources.

When (or if) the Government manages to convince operators to switch to the new rail financing framework, things will be somewhat easier. Because then, the Government will decide when to replace assets. And it will (hopefully) set clear targets for the operators, with suitably large carrots and an even bigger stick to spur them on.

Source: *The Straits Times*, 9 Jun 2016

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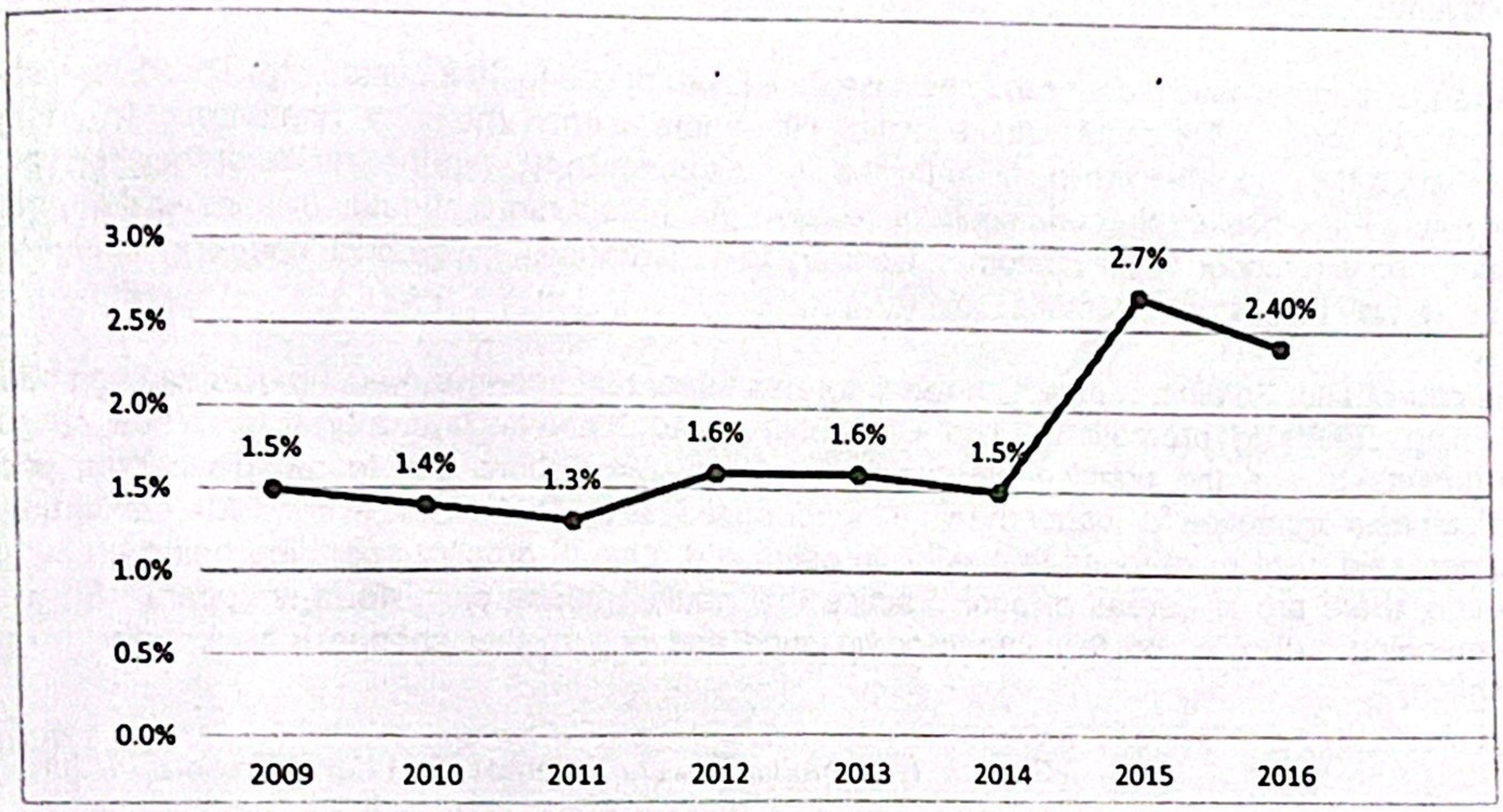
Figure 1: Annual Total Expenditure by Singapore Government in Transport (% of GDP)



Source: Singstats, accessed on 17 April 2018

Questions

(e) Discuss whether market dominance is the main reason for government to intervene in the train industry. [8

(f) Assess the impact of the New Rail Financing Framework (NRFF) on consumers, existing firms and the government. [10

[Total: 18]

CSQ5

2017 BT2 CSQ QP

Supermarket Development and Competition

Extract 4: Price competition in UK supermarkets and confusing promotion

Grocery pricing is mysterious and highly competitive in the UK grocery retail market.

Tesco, a relatively larger player in the retail market in UK reaps larger economies of scale and Asda, with larger resources because it is owned by the American giant Wal-Mart, are keen to compete on price and often offer prolonged discounts. During periods of recession in the UK economy where consumers are

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likely to be particularly sensitive to prices, supermarkets also tinker with lower prices to salvage falling sales revenues.

Indeed supermarkets have facilities to showcase their lower prices to their customers. Tesco, for instance, has a price checker facility on its website inviting customers to enter the name of a product to get a price comparison with Asda. Meanwhile, Asda invites its customers to type in the details of their receipt on a website, and if the basket of goods could have been purchased more cheaply at another supermarket, the difference is refunded to the customer. Contrary to appearances, these price checking schemes may in fact be a way to limit price competition.

On the other hand, Britain's competition regulator has found that supermarkets are misleading shoppers by running confusing promotions. The Competition and Markets Authority (CMA) has called for supermarkets to end the practice of running "was/now" promotions where the discounted price is advertised as a promotion for longer than the higher price was applied. Nisha Arora, CMA senior director, consumer, said: "We have found that, with an estimated 40pc of grocery spending being on items on promotion, there are still areas of poor practice that could confuse or mislead shoppers. "So we are recommending further action to improve compliance and ensure that shoppers have clear, accurate information."

Source: *Economics Today*, December 2014 and *Telegraph*, July 2015

Table 2: Market shares of UK supermarkets in 2014 (in %)

Supermarkets	2014
Tesco	28.8
Asda	17.1
Sainsbury's	16.5
Morrisons	12.6
Aldi	6.9
Co-op	6.1
Waitrose	5.2
Others	6.8

Source: *Daily Mail*, 8 March 2015

Extract 5: Number of online grocery purchases 'set to soar' in Singapore

With the increasing popularity of online grocery shopping, lugging home heavy bags on public transport or making an after-work dash to the supermarket could soon become a thing of the past. One online grocery retailer is Singapore-based RedMart. Chief executive officer Roger Egan said online grocery shopping "makes sense for Singapore with its busy working population and sophisticated e-commerce infrastructure". He added that the company's business has doubled about every six months since its

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Extract 8: Could Britain's supermarkets be about to merge in the face of falling sales?

British supermarkets are suffering as British households turn their back on their traditional habit of a weekly shop at an out-of-town store. This is partly due to the economic downturn that has caused a squeeze on household incomes. Besides, British shoppers now have more choices than before thanks to the online shopping revolution and the arrival of foreign budget supermarkets Aldi and Lidl. This has helped to fire a disillusionment with the prices, quality and customer service on offer at the "Big Four" supermarkets Tesco, Asda, Sainsbury's and Morrisons.

One solution proposed by analysts is for Sainsbury's and Morrisons to merge. The Competition Commission's investigation into the supermarket industry in 2008 established that consolidation was unlikely to be approved because of the need to protect customers against the ills of monopoly power. However, the chances of a deal getting the green light now has been boosted by the gloomy health of the industry. "We think that competition authorities may prefer a merger to a bankruptcy as the latter could result in massive unemployment," they said. Sainsbury's and Morrisions together employ hundreds of thousands of staffs.

However, while a merger would provide scale when dealing with suppliers, the enlarged company has to bring together hundreds of thousands of staff, and revamp hundreds of stores and IT systems for tills and stock. Not only is this a costly process, it forces a company to take its eye off how the customer is changing. So while Morrisons was converting Safeway stores which it bought over, it forgot to launch a website, an error that it is still suffering for.

Source: *The Telegraph*, 25 June 2015

Questions

(a) **(i)** Using Table 2, identify and explain the type of market structure that best describes the UK grocery retail sector in 2014. **[2]**

(b) Assess the extent to which an online supermarket would be more profitable than a traditional offline brick and mortar supermarket in Singapore. **[8]**

(c) Discuss the factors that are likely to influence the government's decision whether to approve the merger between Sainsbury's and Morrisons. **[10]**

[Total: 20m]

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